OECD Digital Economy and Society Outlook 2026



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Please cite this publication as:
OECD (2026), *OECD Digital Economy and Society Outlook 2026*, OECD Publishing, Paris, *https://doi.org/10.1787/022ed474-en*.

ISBN 978-92-64-58269-9 (print)
ISBN 978-92-64-99780-6 (PDF)
ISBN 978-92-64-94118-2 (HTML)

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Foreword

The *OECD Digital Economy and Society Outlook (DESO)* is a flagship publication that analyses trends in technology development, digital policies and digital performance in OECD Member countries and partner economies. It draws on indicators from the *OECD Going Digital Toolkit*, the *OECD ICT Access and Usage*, and the *OECD Broadband Statistics* databases, among other data. The 2026 edition also benefits from responses to the *DESO 2026* data collection that provide insights into digital priorities and policies in OECD Member countries and partner economies.

Beginning with an overview chapter that analyses recent developments in the digital policy landscape across countries and economies, the remainder of the *DESO 2026* is structured around three main pillars. First, a technology pillar monitors key developments in access and connectivity and provides insights into the future of artificial intelligence (AI) compute. Second, an economy pillar analyses how people, firms and governments are adopting digital technologies and sheds light on innovation in privacy-enhancing technologies. Third, a society pillar focuses on the two ends of the age spectrum by exploring child well-being in video gaming and how older adults engage with digital environments in the AI age.

The *DESO 2026* represents the collective work of staff in the OECD Directorate for Science, Technology and Innovation (STI) supporting the OECD Digital Policy Committee (DPC), chaired by Yoichi Iida (Japan). The publication has benefited from valuable comments from delegates to the DPC and its Working Parties. The DPC declassified content in the *DESO 2026* by written procedure on 10 June 2026, 26 June 2026, 24 July 2026, 28 July 2026 and 4 September 2026.

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The following OECD colleagues provided valuable input to the *DESO 2026* in their respective areas of expertise: Giorgia Bergamo (Chapter 1); Kohsuke Ikeda (Chapter 2); Luis Aranda, Celine Caira, Flavio Calvino, Peter Gal and Molly Lesher (Chapter 3); Molly Lesher (Chapter 4); Luis Aranda, Andrés Barreneche, Tana McCauley, Jeff Mollins and Karine Perset (Spotlight 1); Hélène Dernis (Spotlight 2); Nicolas Benoit, Giorgia Bergamo, Elif Koksal-Oudot and Molly Lesher (Spotlight 3); and Nils Adriansson, Alexia González Fanfalone and Elif Koksal-Oudot (Statistical Annex).

The publication benefited from comments, support and input by Jerry Sheehan (Director), Audrey Plonk (Deputy Director), Clarisse Girot (Head of Division), Sara Rendtorff-Smith (Head of Division) and Gallia Daor (Senior Advisor) of STI.

Andreia Furtado, Mark Foss, Alice Weber, Sebastian Ordelheide and Angela Gosmann provided communication and editorial support. Bestiario created the infographics. Graphic design expertise from Fabio Parmeggiani and secretarial assistance from Sean Brish, Christy Dentler, Stephanie Root and Alice Weber are gratefully acknowledged.

Table of Contents

Foreword 3
Reader's guide 7
Executive Summary 11

Chapter 1 **DIGITAL PRIORITIES, POLICIES AND GOVERNANCE** 15
Key findings 17
Introduction 17
Digital government remains the top digital policy priority, with growing focus on cybersecurity and technology development 18
National digital strategies are increasingly developed by bodies dedicated to digital affairs 20
Mapping the national digital policy landscape beyond national digital strategies 22
Conclusion 27
Annex 1.A. The Going Digital Integrated Policy Framework 2026 28
Annex 1.B. National digital strategies 29
Annex 1.C. Digital policy priorities 31
Annex 1.D. Country coverage 32
References 33
Notes 33

Chapter 2 **TRENDS IN ACCESS AND CONNECTIVITY** 35
Key findings 37
Introduction 38
Developments in connectivity: Where do we stand? 38
Special focus: Submarine cables to support next-generation networks 47
Main trends in connectivity policy and regulation 51
References 60
Notes 64

Spotlight **POWERING AI PROGRESS: THE FUTURE OF COMPUTE** 67
Introduction 69
Compute in the AI stack: Bottlenecks and opportunities 69
The economics of AI compute: Investment, appropriate access and market dynamics 75
Planning for the future: Compute as a foundation for shared AI progress 77
References 78
Notes 81

Chapter 3 **DIGITAL TECHNOLOGY DIFFUSION AND THE ECONOMY** 83
Key findings 85
Introduction 85
Diffusion of data-driven technologies: Current and future trends 85
Trends and drivers of AI use by businesses and individuals 91
Beyond adoption rates: ICTs as drivers of economic growth and resilience 97
Maximising the benefits of digital technologies for the economy and society 103
Annex 3.A. Methodology for the diffusion path forecasts and regression tables 104
Annex 3.B. Methodology for nowcasting AI uptake in enterprises in 2025 105
Annex 3.C. Methodology for ICT linkages and results 107
References 108
Notes 109

Spotlight **THE INNOVATION LANDSCAPE OF PRIVACY-ENHANCING TECHNOLOGIES** ..113
Introduction ..115
Research, open-source development and patent filings in PETs have surged since 2015, partly driven by regulatory incentives ..116
Generative AI and blockchain drive the current wave of research and innovation on PETs ..118
Health and finance are the most active application domains for PETs ..120
International patent filing trends reveal divergent national concentrations and specialisations in PETs between 2010 and 2022 ..122
Limited awareness, unclear return on investment and regulatory uncertainty remain primary barriers to PETs adoption ..124
Governments and regulators deploy co-ordinated complementary measures to accelerate adoption of PETs ..125
Annex 2.S.A. Glossary and typology of privacy-enhancing technologies ..127
Annex 2.S.B. Methodology ..128
References ..131
Notes ..133

Chapter 4 **LEVELLING UP CHILD WELL-BEING IN VIDEO GAMING** ..137
Key findings ..139
Introduction ..139
The features of games and gaming environments ..140
How much do children game and how does gameplay relate to school performance? ..146
What are the benefits of gaming for children? ..154
What are the downsides of gaming for children? ..157
Challenges for ensuring safe gaming spaces for children now and in the future ..160
Annex 4.A. Methodology and results: Gaming and school performance ..162
References ..164
Notes ..169

Spotlight **GROWING OLDER IN THE AI AGE** ..171
Introduction ..173
Older adults are increasingly adopting digital technologies, including those with AI capabilities ..173
Older adults and AI: Adoption, opportunities, barriers and risks ..178
Policy approaches to support older adults in the AI age ..182
References ..184

Statistical Annex ..189
ICT access and usage indicators ..190
Experimental estimates of economic activity ..223
Communication markets indicators: OECD communication price baskets ..235
References ..256

List of Figures ..257

List of Tables ..259

List of Boxes ..261

Reader's guide

Acronyms

5G	Fifth generation of wireless cellular technology
6G	Sixth generation of wireless cellular technology
AI	Artificial intelligence
AWS	Amazon Web Services
BEREC	Body of European Regulators for Electronic Communications (European Commission)
CAGR	Compound annual growth rate
CC	Cloud computing
CNMC	Commission on Markets and Competition (Spain)
CRM	Customer Relationship Management
DEO	*Digital Economy Outlook*
DFFT	Data free flow with trust
DIPs	Digital intermediation platforms
DNA	Digital Networks Act (European Commission)
DPC	Digital Policy Committee (OECD)
DSA	Digital Services Act (European Commission)
DSIT	Department for Science, Innovation and Technology (United Kingdom)
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EECC	EU Electronic Communications Code (European Commission)
ESCS	Economic, Social and Cultural Status
EU	European Union
FCC	Federal Communications Commission (United States)
FTTH	Fibre-to-the-home
FWA	Fixed wireless access
FV	Fixed voice
GenAI	Generative artificial intelligence
GDP	Gross domestic product
GDPR	General Data Protection Regulation (European Commission)
GPU	Graphics processing unit
HBSC	Health Behaviour in School-Aged Children: WTO Collaborative Cross-National Study
ICIO	Inter-Country Input-Output
ICT	Information and communication technology
IEA	International Energy Agency
IoT	Internet of Things
ISP	Internet service provider
LAC	Latin America and the Caribbean
MMORPG	Massively multiplayer online role-playing game
MOBA	Multiplayer online battle arena
MPC	Multi-party computation
MSS	Mobile satellite service
MVD	Mobile voice and data
NDS	National digital strategy
NHS	National Health Service (United Kingdom)
NTN	Non-terrestrial networks
OLS	Ordinary least squares

OSS	Open-source software
OTT	Over-the-top
PEGI	Pan-European Game Information
PETs	Privacy-enhancing technologies
PISA	Programme for International Student Assessment (OECD)
p.p.	Percentage point
PUE	Power usage effectiveness
R&D	Research and development
RMSE	Root mean square error
RPG	Role-playing game
RTS	Real-time strategy
SMEs	Small and medium-sized enterprises
SMP	Significant market power
TEE	Trusted execution environment
TiVA	Trade in value added (OECD and WTO)
USF	Universal Service Fund (United States)
WPCSI	Working Party on Connectivity Services and Infrastructures (OECD)
WPDEMA	Working Party on Digital Economics, Measurement and Analysis (OECD)

Abbreviations

For most of the charts, this publication uses ISO codes for countries or economies.

ARG	Argentina	ITA	Italy
AUS	Australia	JPN	Japan
AUT	Austria	KAZ	Kazakhstan
BEL	Belgium	KOR	Korea
BGR	Bulgaria	LTU	Lithuania
BRA	Brazil	LUX	Luxembourg
CAN	Canada	LVA	Latvia
CHE	Switzerland	MEX	Mexico
CHL	Chile	MLT	Malta
COL	Colombia	NLD	Netherlands
CRI	Costa Rica	NOR	Norway
CZE	Czechia	NZL	New Zealand
DEU	Germany	PER	Peru
DNK	Denmark	POL	Poland
EGY	Egypt	PRT	Portugal
ESP	Spain	ROU	Romania
EST	Estonia	RUS	Russian Federation
FIN	Finland	SAU	Saudi Arabia
FRA	France	SGP	Singapore
GBR	United Kingdom	SVK	Slovak Republic
GRC	Greece	SVN	Slovenia
HRV	Croatia	SWE	Sweden
HUN	Hungary	THA	Thailand
IDN	Indonesia	TUR	Türkiye
IND	India	TWN	Chinese Taipei
IRL	Ireland	USA	United States
ISL	Iceland	VNM	Viet Nam
ISR	Israel	ZAF	South Africa

Country groupings

Euro Area Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, the Slovak Republic, Slovenia and Spain.

EU Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, the Slovak Republic, Slovenia, Spain and Sweden.

G7 Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.

G20 Argentina, Australia, Brazil, Canada, France, Germany, India, Indonesia, Italy, Japan, Mexico, the People's Republic of China, the Russian Federation, Saudi Arabia, South Africa, Korea, Türkiye, the United Kingdom, the United States and the European Union.

OECD Austria, Australia, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom and the United States.

Executive Summary

From rapid advances in artificial intelligence (AI) compute that are reshaping the technology frontier to screen-time dynamics that are affecting the academic performance of children, digital transformation has evolved from a simple question of Internet access into a much more complex phenomenon. The *OECD Digital Economy and Society Outlook 2026* helps chart the path ahead by providing evidence-based analysis on today's key technological trends and their impacts. It examines new directions in digital priorities, policies and governance, and explores key technologies that underpin digital transformation, as well as their economic and societal effects. A Statistical Annex completes the publication.

Key findings

Technology-neutral policymaking is giving way to technology-specific digital policies

The growing complexity of digital transformation is reflected in a more diverse policy environment. "Artificial intelligence" was the most cited technology in digital policies in 2025, while quantum technologies, semiconductors and satellites have become more prominent since 2023. Digital government has consistently been the top digital policy priority over the past decade, but cybersecurity and technology development grew in importance in 2025. The share of OECD Member countries and partner economies that assign primary responsibility for developing their national digital strategy to dedicated digital ministries reached 60% in 2025, up from 24% in 2016.

Digital infrastructure powers today's economies and societies

As digital technologies become more pervasive and capable, demand for high-quality, resilient and affordable connectivity is increasing. Gigabit subscriptions as a share of total fixed broadband across the OECD grew sixfold between 2020 and 2025, and fibre's share rose from 31% to 51%. Prices for mobile voice and data services fell by more than half over the past decade, and prices for fixed broadband services by 25-37%. However, as recently as Q2 2026, people in cities experienced broadband speeds 42% higher than those in rural areas across the OECD. In response to growing complexities in the connectivity ecosystem, two-thirds of OECD communication regulators' mandates have expanded over the past three years to address wider issues, including AI, cloud computing and online platforms.

AI compute is becoming a strategic asset

AI development and deployment are placing new demands on digital infrastructure. Alongside skills, data and algorithms, AI progress depends on computing and investment in AI compute is booming. Governments are announcing major commitments and venture capital investment for AI firms in information technology infrastructure and hosting rose from USD 54.5 billion in 2024 to USD 123.9 billion in 2025. International co-operation and cross-sectoral partnerships are critical to scaling AI compute efficiently.

Information and communication technologies (ICTs) fuel global growth, but uptake varies and interdependencies have emerged

Technological developments are unfolding alongside continued growth in the ICT sector and wider adoption of digital technologies. The ICT sector is estimated to have grown at 5% in 2025 across the OECD although value creation and sourcing remain highly concentrated, reflecting both efficiency gains and cross-border interdependencies. More than half of all firms and over 80% of large firms used cloud computing in 2025, while AI uptake reached 20% for all firms and

52% for large firms. The integration of complementary digital technologies remains limited, with the combined use of AI, cloud computing and big data analytics concentrated in large firms and knowledge-intensive sectors. Among individuals, generative AI use reached 37% in 2025, with higher uptake among younger, highly educated and higher-income groups.

Innovation in privacy-enhancing technologies (PETs) has surged in recent years

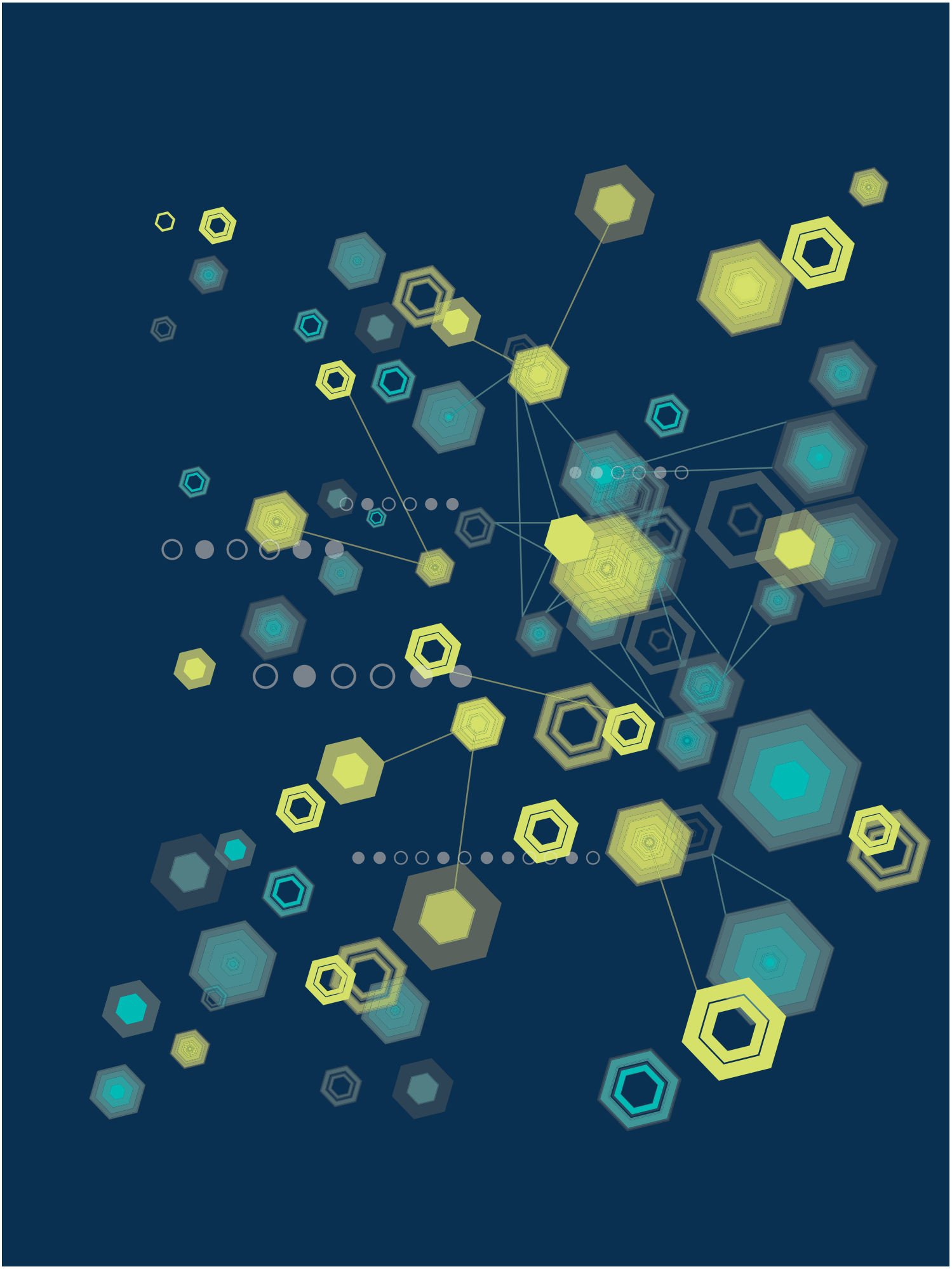
As digital technologies become more widely adopted, protecting privacy while enabling access to and use of data is increasingly important. Innovation in PETs has risen significantly since 2015, closely following the enactment and updating of comprehensive data protection regulations around the world. Generative AI and blockchain are driving the current wave of PET-related innovation, due in large part to the need to train models on sensitive data while preserving privacy. However, deployment is limited by persistent and interrelated barriers. Countries are responding with measures to support PET adoption, including via regulatory guidance, regulatory sandboxes, and research and development support.

Boys videogame more than girls, with intensive use associated with lower academic performance

Digital technologies not only underpin innovation, but also leisure, and children across the OECD are keen gamers. In 2025, 54% of 15-year-olds in the OECD played video games moderately on weekdays (up to three hours) and 26% gamed intensively (more than three hours). Across the OECD in 2025, boys from disadvantaged backgrounds spent 21 hours gaming per week (13 hours for girls) versus 17 hours for boys from advantaged backgrounds (9 hours for girls). Video gaming can support cognitive skills, creativity and well-being, but intensive gaming is associated with lower academic performance, particularly for girls and students from advantaged backgrounds. Online safety, privacy, and consumer and financial protection policies and approaches play a central role in safeguarding child well-being.

Older adults continue to lag in the uptake of digital technologies, particularly the most advanced

For older adults, digital technologies offer leisure opportunities and can support independence and quality of life, but adoption is lower. In 2025, 68% of older adults used online public services (versus 81% overall), with similar gaps in e-commerce and online banking. Older adults also trail in AI adoption (14% versus 68% for 16–24-year-olds). Among older adults in 2025, 43% perceived no need for AI – almost double the rate of 16–24-year-olds (25%). Furthermore, 12% lacked the necessary skills and 9% were unaware of the technology. Policy can help older adults reap more benefits from digital technologies, including AI, by focusing on three core areas: boosting skills, raising awareness of AI opportunities, and improving the accessibility of online government services.



Chapter 1

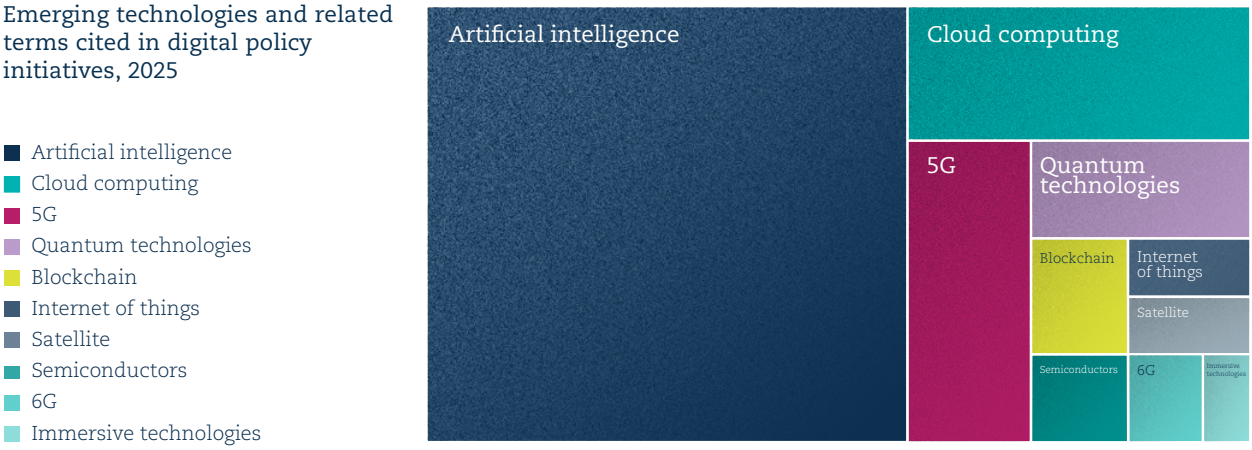
Digital priorities, policies and governance

Using newly collected data from OECD Member countries and partner economies and the OECD Going Digital Integrated Policy Framework 2026 as a guide, this chapter examines trends in digital policy priorities. It finds that while digital government has consistently been the top digital policy priority over the past decade, cybersecurity and technology development became more important in 2025. It also analyses national digital strategies in the countries in which they exist and the governance approaches in place to design, implement and monitor them. The data show that responsibility for developing and co-ordinating national digital strategies is increasingly led by dedicated digital ministries rather than at the centre of government. Finally, the chapter explores the broader digital policy landscape. It shows that technology-neutral policymaking is giving way to technology-specific digital policies, and that most digital policies today aim at increasing effective use, unleashing digital innovation, and societal issues.

Technology-specific policies are reshaping digital governance

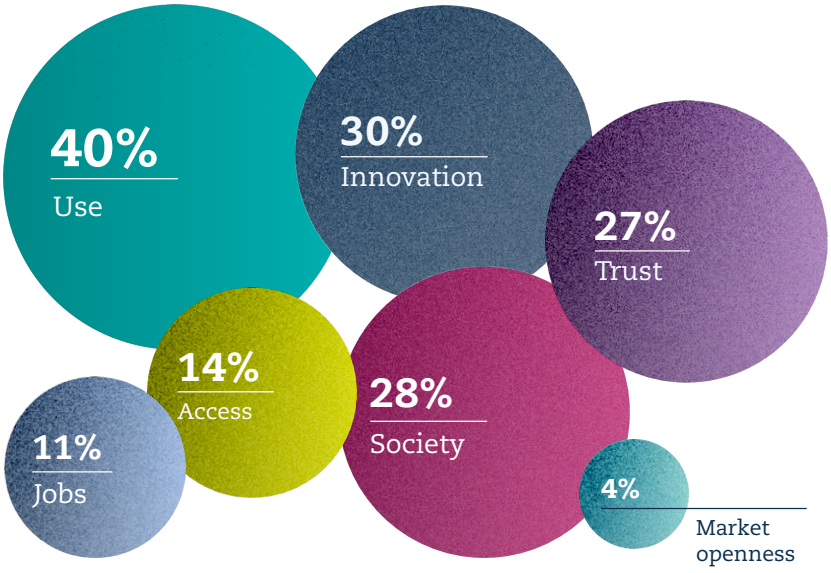
AI, cloud computing and 5G dominate the digital policy landscape.

Emerging technologies and related terms cited in digital policy initiatives, 2025



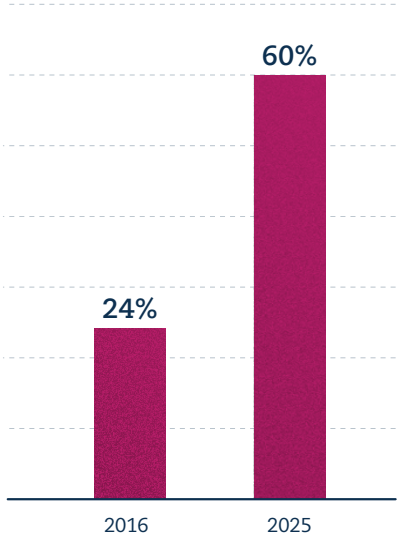
Digital policies focus most on use of technologies, innovation, and societal impacts.

Distribution of initiatives across dimensions, Going Digital Integrated Policy Framework, 2025



Dedicated digital ministries are the lead body for national digital strategies.

Share of national digital strategies led by dedicated digital ministries



Key findings

Digital government remains the top digital policy priority, with growing focus on cybersecurity and technology development

- Connectivity, skills, cybersecurity and technology development were regularly ranked in the top five of countries' digital policy priorities from 2016 to 2025. As of 2025, cybersecurity emerged as the second highest digital priority among the OECD Member countries and partner economies surveyed.
- Over the past decade, digital government has consistently ranked as the top digital policy priority in the OECD Member countries and partner economies for which comparable data exist.

Responsibility for developing and co-ordinating national digital strategies is increasingly led by dedicated digital ministries rather than at the centre of government

- The share of OECD Member countries and partner economies that assign primary responsibility for developing their national digital strategy to dedicated digital ministries reached 60% in 2025, up from just 24% in 2016. Of these countries, 68% also assign co-ordination tasks to a dedicated digital ministry or body.
- In parallel, the share of national digital strategies developed at above ministerial level (such as the Prime Minister's Office, Presidency or Chancellery) declined from 42% in 2023 to 26% in 2025.

The digital policy landscape is characterised by initiatives that aim to increase effective use and unleash digital innovation, as well as societal issues

- Among the almost 1 500 policy initiatives collected across 42 OECD Member countries and partner economies in 2025, about 40% focus on effective use of digital technologies, 30% on digital innovation and 28% on societal issues.
- Skills is the most prominent policy domain in the digital policy landscape, with initiatives concentrated on improving information and communication technology skills across demographic groups.

Technology-neutral policymaking is giving way to technology-specific digital policies

- "Artificial intelligence" is the most oft-cited term in digital policies over 2023-2025, reflecting the ubiquity of the technology and its importance to policymakers.
- As of 2023, quantum technologies, semiconductors and satellites have become more prominent in digital policy initiatives. This is exemplified by the emergence of dedicated semiconductor strategies and an increasing focus on quantum computing, communications and sensing, and low earth orbit satellites.

Introduction

Digital technologies and data shape how individuals, businesses and governments live, work, communicate and access services. As digital transformation accelerates across sectors, addressing digital policy issues across silos has become essential to ensure coherent and effective policy responses that maximise the opportunities of digital technologies while managing risks. In this context, greater understanding of the digital policy landscape across countries provides critical insights for effective policymaking.

The OECD Going Digital Integrated Policy Framework 2026 (hereafter "the Framework") (OECD, 2026[1]), provides a flexible, whole-of-government approach to developing digital policies (Annex 1.A). Using the Framework as a guide, this chapter is informed by responses to the *OECD Digital Economy and Society Outlook (DESO) 2026* data collection. It examines trends in digital policy priorities across countries; analyses national digital strategies in the countries for which they exist and the governance approaches in place to design, implement and monitor them; and explores the broader digital policy landscape across countries.

Box 1.1. Surveying digital policies yields valuable insights, but qualitative surveys come with caveats

The analysis in this chapter is based on the three parts of the *DESO 2026* data collection: national digital strategies[1] (see Annex 1.B) and their governance arrangements; digital policy priorities (Annex 1.C); and digital policy initiatives (excluding national digital strategies). The latter part includes information on the following special topics: children in digital environments; media and digital literacy initiatives; and policies to support older adults in the digital age.

References to "countries" in this chapter reflect the OECD Member countries and partner economies that responded to data collections for the *OECD Digital Economy Outlook (DEO) 2017*, *2020* and *2024*. New data from the *DESO 2026* data collection appear in three parts. Part 1 reflects data from 42 countries on national digital strategies and governance arrangements, 7 of which reported having no strategy. Part 2 comprises data from the same countries on their digital policy priorities, 16 of which provided no priority ranking and 4 of which provided incomplete data. Part 3 comprises information from 42 countries on major digital policies, including the special focus topics.

The *DESO 2026* data collection was administered to OECD Member countries and partner economies that are actively involved in the work of the OECD Digital Policy Committee, the OECD's lead digital policy and measurement body. Not every country responded to each part of the data collection; a full list of countries covered for each part can be found in the Annex 1.D.

Policy survey data provide comparable insights on countries' policymaking approaches and enable the categorisation and quantification of information, but the data come with important caveats. For example, the data emphasise the number of policy initiatives rather than their actual impact, offering a view of what exists rather than how well it works. In addition, the responses are typically shaped by the perspectives of the policymakers completing the surveys, who may interpret questions differently. Since there is no agreed definition of "digital policy" across and within countries, it is unlikely that such surveys capture all relevant initiatives.

Note: The country coverage for each part of the 2017, 2020, 2024 and 2026 data collections can be found in Annex 1.D.
1. The national digital strategy list provided in Annex 1.B is based on the *DESO 2026* data collection and desk research.

Digital government remains the top digital policy priority, with growing focus on cybersecurity and technology development

Since 2016, digital government has been identified as governments' top digital policy priority (Table 1.1). This reflects the recognition that digital technologies are essential to improving public service delivery, strengthening trust in government and enhancing policy effectiveness. Governments are increasingly investing in digital technologies and data to make services more user-centric, data-driven and accessible, while also improving administrative efficiency and resilience.

Table 1.1. Digital policy priorities are becoming more diverse, but some have demonstrated strong continuity over time

Policy priority	2016 (ranking)	2019 (ranking)	2023 (number)	2025 (ranking)
Digital government	1	1	1	**1**
Cybersecurity	4	5	5	**2**
Skills	3	4	3	**3**[1]
Technology development and diffusion	6	7	4	**3**[1]
Connectivity	2	2	2	**3**[1]

Notes: The rankings are based on self-reported priorities from 35 countries for 2016, 33 countries for 2019 and 42 countries for 2023 and 2025. Please refer to Annex 1.C for definitions of the policy priorities in the *DESO 2026* data collection.
1. Tied for third priority.

Source: OECD, based on data collections for the *DEO 2017*, *2020* and *2024* and the *DESO 2026*.

In 2025, cybersecurity emerged as the second most important digital policy priority across countries for the first time in the ten years these data have been collected. This move reflects a recognition by governments of the need to protect critical infrastructure, public services, economic activity and citizens from an increasingly complex and evolving threat landscape. The rise of cybersecurity in digital policy agendas suggests that policymakers are increasingly concerned about the risks associated with cyber incidents, including financial and reputational damage, and potential disruptions to critical activities.

Technology development and diffusion also moved to its highest position in 2025 – tied for third position with connectivity and skills.[1] Policymakers increasingly recognise that targeted investment in digital research and development, alongside the availability of key enabling resources such as data, capital, digital infrastructure and digital skills, is critical. Together, they strengthen national technological capabilities and accelerate adoption of digital technologies by individuals and businesses to support productivity, competitiveness, innovation and economic growth.

The 2025 ranking of digital policy priorities suggests that the top priorities across countries are becoming more diverse. A relatively smaller number of top priorities were identified in 2016, 2019 and 2023, but three priorities in 2025 were tied for third place (connectivity, skills, and technology development and diffusion). At the same time, some top priorities have been relatively constant over the last decade – digital government, connectivity and skills have remained at the top of the priority list. This indicates strong continuity with previous years despite the fast-changing digital technology landscape.

Four of the five countries from the Latin American and the Caribbean (LAC) region that responded to the *DESO 2026* data collection ranked "digital inclusion" as one of their top three digital policy priorities. The strong emphasis on this priority suggests that enhancing participation in digital economies and societies across a range of characteristics, such as age, education level, firm size, geography, income level or sex, is considered a foundational step for advancing the region's digital development. Moreover, these five LAC countries (Argentina, Brazil, Chile, Colombia and Costa Rica) all include references to "digital inclusion" in their national digital strategies, either underpinned by the need to increase access to connectivity services and infrastructure or to promote skills development among the population.

In addition to identifying the top digital policy priorities for the next five years reported by countries, examination of existing policies can also provide insight into national priorities. Using a text-mining approach, the 30 most frequently occurring bigrams (or clusters of two words) were extracted from the policy initiatives submitted in response to the *DESO 2026* data collection (Figure 1.1).

Figure 1.1. Artificial intelligence is the most oft-mentioned term in digital policy initiatives, with skills being the most prominent policy domain

Top bigrams (clusters of two words) extracted from policy initiative descriptions across all dimensions, 2025



Notes: Data are based on survey responses from 42 countries. Each term was counted a maximum of once per policy initiative submitted.

Source: OECD based on the *DESO 2026* data collection.

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Notably, "artificial intelligence" has overtaken "digital transformation" as the most oft-cited bigram in the digital policy descriptions collected over 2023-2025. This reflects the ubiquity of the technology and its importance to policymakers and further confirms a move away from technology-neutral policymaking. This approach also highlights other priorities. For example, the word "resilience" features in several prominent bigrams, highlighting focus on the resilience of critical digital infrastructure and related recovery plans. Other issues that emerge as important include those related to data protection, cybersecurity, innovation and media literacy.

At the same time, the findings reflected in Figure 1.1 are mirrored in the top self-reported priorities of countries for the next five years identified in Table 1.1. The word "public" is included in four of the most mentioned bigrams, underscoring the importance of the public sector and digital government initiatives in current digital policy initiatives. Skills, which decreased somewhat in importance among top-ranked policy priorities in 2025, is nonetheless the major policy domain reflected in Figure 1.1.

National digital strategies are increasingly developed by bodies dedicated to digital affairs

A national digital strategy (NDS) is understood as the government's most comprehensive digital strategy at the national level that exclusively or primarily addresses digital policy issues across policy domains affected by or affecting digital transformation (Gierten and Lesher, 2022[2]). Today, most OECD Member countries have an NDS in place to guide and co-ordinate their national digital policies and provide key objectives and measurable targets.

Effective governance is central to the success of national digital strategies. As governments around the world continue to design and refine their approaches to digital transformation, understanding how these strategies are developed, co-ordinated, implemented, monitored and evaluated is increasingly important.

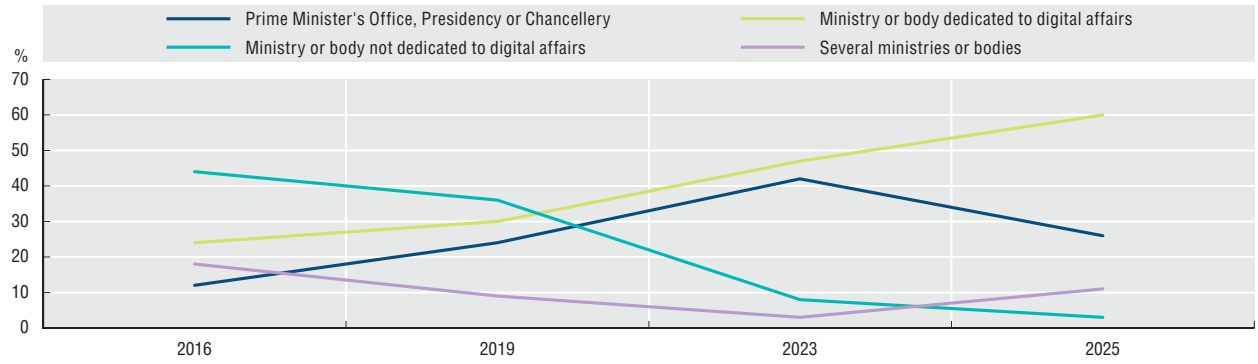
In 2016, only 24% of the countries that responded to the *DEO 2017* data collection assigned bodies dedicated to digital affairs with the development of their NDS (OECD, 2017[3]). Almost a decade later, in 2025, that share rose to 60% (Figure 1.2). This trend suggests that countries place growing value on specialist knowledge, concentrating the development of their national digital strategies in a single dedicated entity that can also help bring greater coherence to the government's digital portfolio. This trend likewise reflects the recognition of digital policy as a dedicated policy domain that needs to be institutionalised.

Between 2016 and 2023, as the share of countries that allocated the responsibility of developing their national digital strategies to bodies dedicated to digital affairs grew, so did the percentage that opted for oversight at the highest levels of government. Over this period, the share of governments assigning primary responsibility for their NDS to the highest levels of central government (such as the Prime Minister's Office, Presidency, or Chancellery) rose markedly — from 12% in 2016 to 42% in 2023. By 2025, however, this share had dropped significantly, with only 26% of respondents reporting that their NDS was developed at the Prime Minister, Presidency or Chancellery level (Figure 1.2) although the share of countries that allocated the responsibility of developing their national digital strategies to bodies dedicated to digital affairs continued to rise.

The share of respondents whose NDS is primarily developed by a ministry or body not dedicated to digital affairs continued to fall steadily – from 44% in 2016 to 3% in 2025. Similarly, while multiple ministries or bodies developed 18% of strategies in 2016, only 11% of countries chose this approach in 2025 (Figure 1.2).

Figure 1.2. National digital strategies are increasingly developed by dedicated digital ministries rather than at high level and at the centre of government

Responsibility for lead strategy development of national digital strategies across countries, 2016-2025



Notes: Data for survey responses are based on the following: 38 countries for 2016, 2019 and 2024, and 35 countries for 2026.

Source: OECD calculations based on data collections for the *DEO 2017*, *2020* and *2024* and the *DESO 2026*.

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Since the *DEO* data collection started in 2016, responsibility for the co-ordination of national digital strategies has been increasingly allocated to bodies or ministries dedicated to digital affairs. In 2025, 68% of countries had a dedicated digital ministry or body co-ordinating their NDS (Table 1.2), compared to 30% in 2016. The share of countries allocating co-ordination to a ministry or body not dedicated to digital affairs continued to decline – from 39% in 2016 to 3% in 2025. In 2025, the share of countries that co-ordinated their NDS at above ministerial level (18%) remained relatively constant compared to 2016 (15%). Regarding the implementation of their national digital strategies, most countries (57%) delegated the responsibility to several ministries or bodies.

Table 1.2. Allocation of NDS responsibility by country

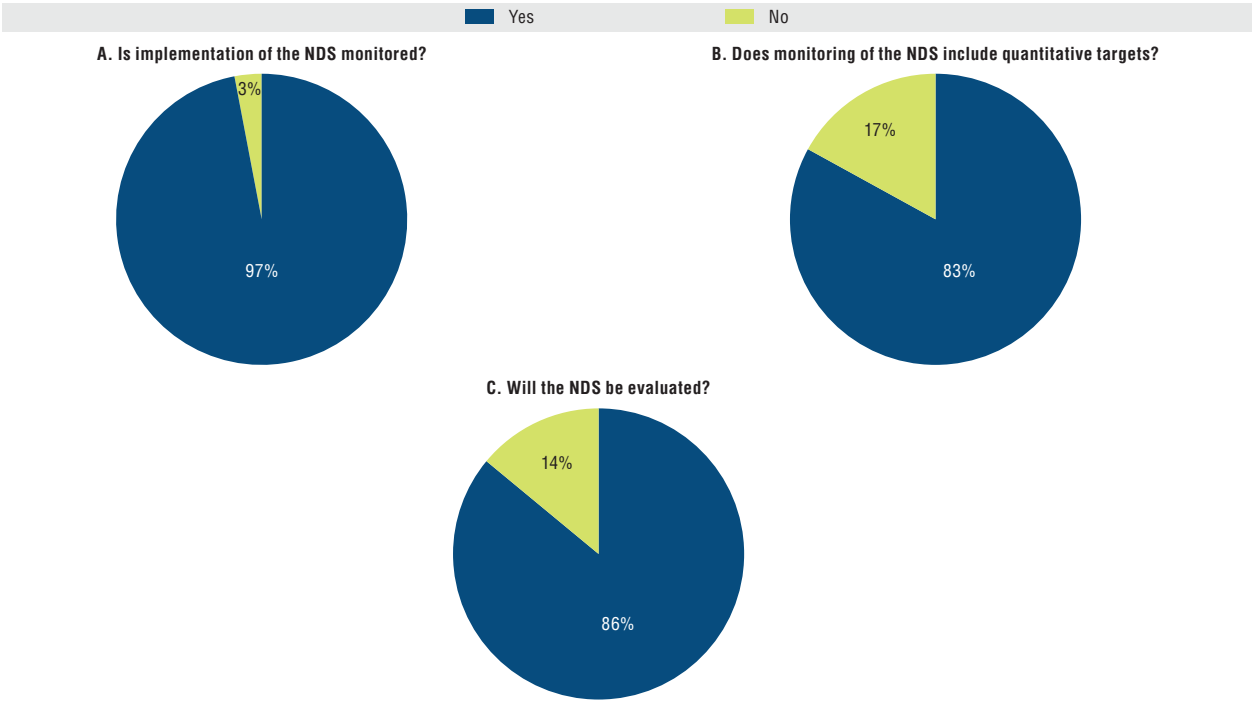
2025	Prime Minister's Office, Presidency or Chancellery	Ministry or body dedicated to digital affairs	Ministry or body not dedicated to digital affairs	Several ministries or bodies
Lead strategy development	Austria, Croatia, Czechia, Hungary, Ireland, Italy, Korea, Peru, Switzerland	Argentina, Bulgaria, Brazil, Canada, Costa Rica, Denmark, Finland, Indonesia, Israel, Japan, Jordan, Latvia, Mexico, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Thailand, the United Kingdom	Chile	Colombia, Greece, Luxembourg, the Netherlands
Co-ordination	Austria, Brazil, Ireland, Korea, Peru, Switzerland	Argentina, Bulgaria, Canada, Costa Rica, Croatia, Czechia, Finland, Greece, Hungary, Israel, Italy, Japan, Jordan, Latvia, Mexico, the Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Thailand, the United Kingdom	Chile	Colombia, Denmark, Luxembourg, Sweden

Notes: NDS = National digital strategy. Indonesia did not provide a response on its NDS co-ordination governance arrangement.
Source: OECD based on the *DESO 2026* data collection.

To track progress towards the policy objectives and priorities of national digital strategies, regular monitoring and evaluation are essential. All respondents to the *DESO 2026* data collection indicated their NDS is monitored, except for Argentina. More than eight in ten (83%) countries use quantitative targets to monitor their NDS. Meanwhile, 5 of 35 countries (Argentina, Canada, Colombia, Costa Rica and Denmark) reported that their NDS is not evaluated (Figure 1.3).

Figure 1.3. Almost all countries monitor their national digital strategies and most countries evaluate them

Monitoring and evaluation of national digital strategies, 2025



Notes: NDS = National digital strategy. The data are based on survey responses from 35 countries.
Source: OECD calculations based on the *DESO 2026* data collection.

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Mapping the national digital policy landscape beyond national digital strategies

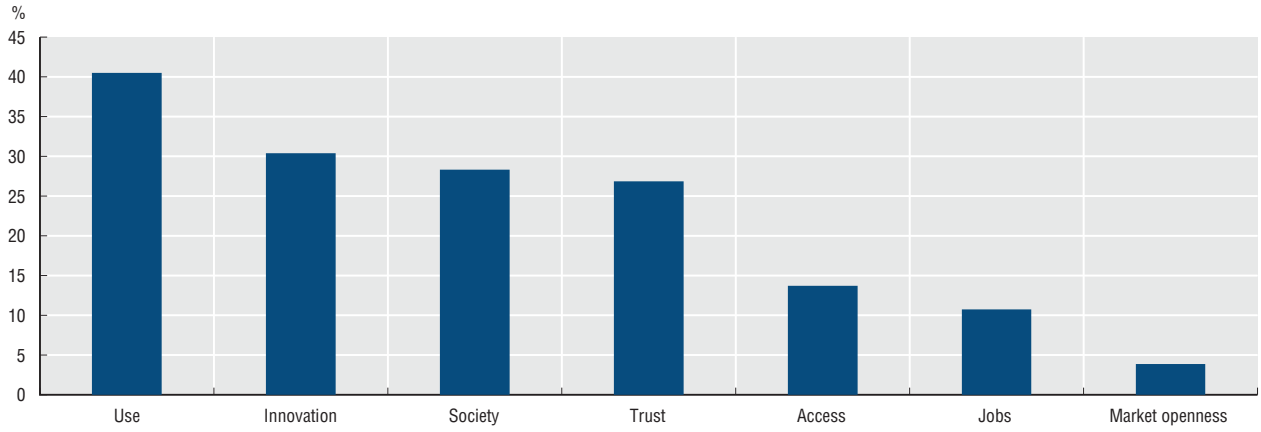
The third and final stage in mapping the digital policy landscape entails a comprehensive examination of all policy initiatives implemented within a given country. This stage is particularly important for countries that do not develop an NDS, as they often rely on multiple sector-specific strategies and a diverse array of complementary policies that collectively define their national digital policy landscape. Most countries with an NDS also have digital policies that pre-date, are more recent or may otherwise be outside the scope of their current NDS. This section analyses the broader digital policy landscape across countries through the lens of the Framework.

Figure 1.4 provides an overview of the digital policy initiatives provided by 42 countries and mapped to the Framework. The digital policy landscape among the countries covered is predominantly aimed at increasing effective use, unleashing digital innovation, and societal issues. Given the importance of skills and digital government in the Use, Innovation and Society policy dimensions in the Framework, it follows that these policy domains are well covered in digital policy initiatives in force (Figure 1.4). Together, policy initiatives in the Use, Innovation and Society dimensions represent around 70% of all initiatives across countries.

Digital policy initiatives in other dimensions, such as Access and Trust, may reflect broader strategies. Broadband Plans (Access) and Cybersecurity Strategies (Trust), for example, are among the earliest types of digital policy initiatives, and are often comprehensive. Including many aspects of broadband connectivity and cybersecurity in a dedicated strategy may alleviate the need for many smaller strategies, thus decreasing the overall number of initiatives in these dimensions.

Figure 1.4. Policy initiatives aim at increasing effective use, unleashing digital innovation, and societal issues dominate the digital policy landscape

Distribution of digital policy initiatives across Framework dimensions, 2025



Notes: Data are based on survey responses from 42 countries and comprise 1 497 policy initiatives. Data are presented as the share of the total number of policies in each dimension. Some initiatives are considered under multiple policy dimensions based on their scope, so the individual bars do not add up to 100%.

Source: OECD calculations based on the *DESO 2026* data collection.

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While cross-country patterns reveal valuable insights, a nuanced understanding also requires in-depth examination of individual countries. Figure 1.5 maps the digital policies for the 42 countries that provided data on a critical mass of initiatives (i.e. countries that provided at least one initiative in at least three of the Framework's seven dimensions).

Figure 1.5. Beyond national digital strategies, the policy landscape differs across countries

Distribution of digital policy initiatives, by Framework dimension, 2025

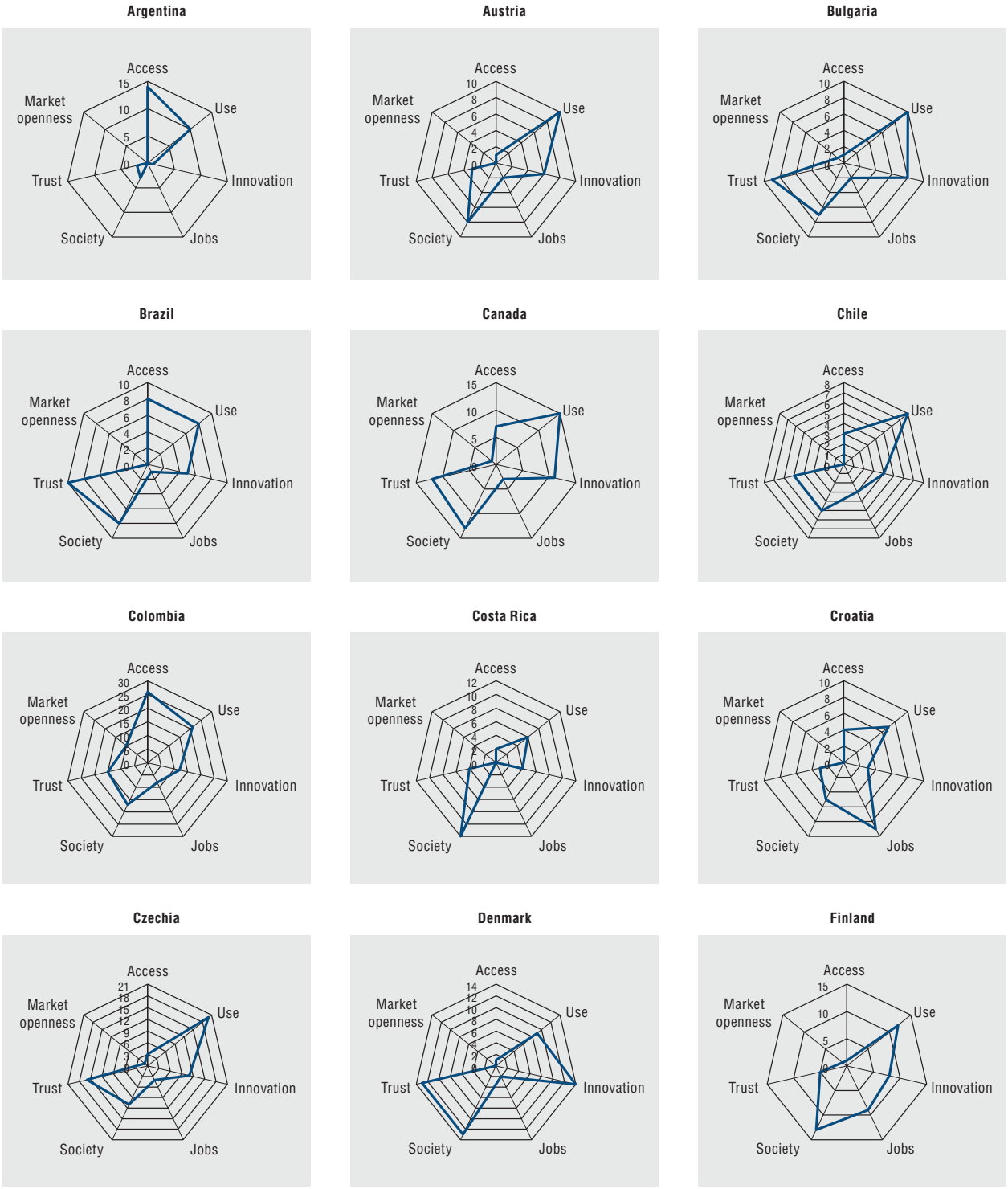


Figure 1.5. Beyond national digital strategies, the policy landscape differs across countries *(cont.)*

Distribution of digital policy initiatives, by Framework dimension, 2025

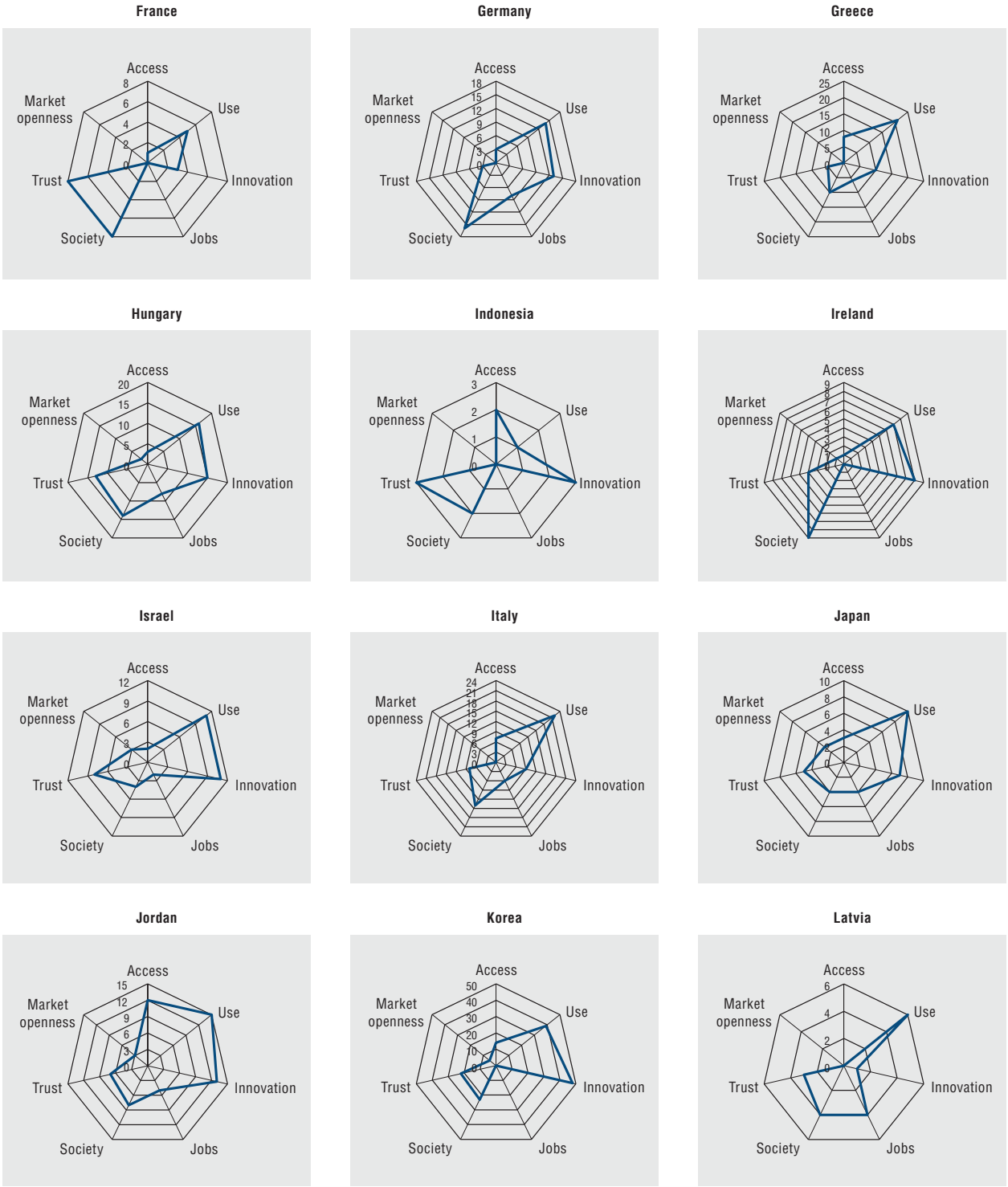


Figure 1.5. Beyond national digital strategies, the policy landscape differs across countries *(cont.)*

Distribution of digital policy initiatives, by Framework dimension, 2025

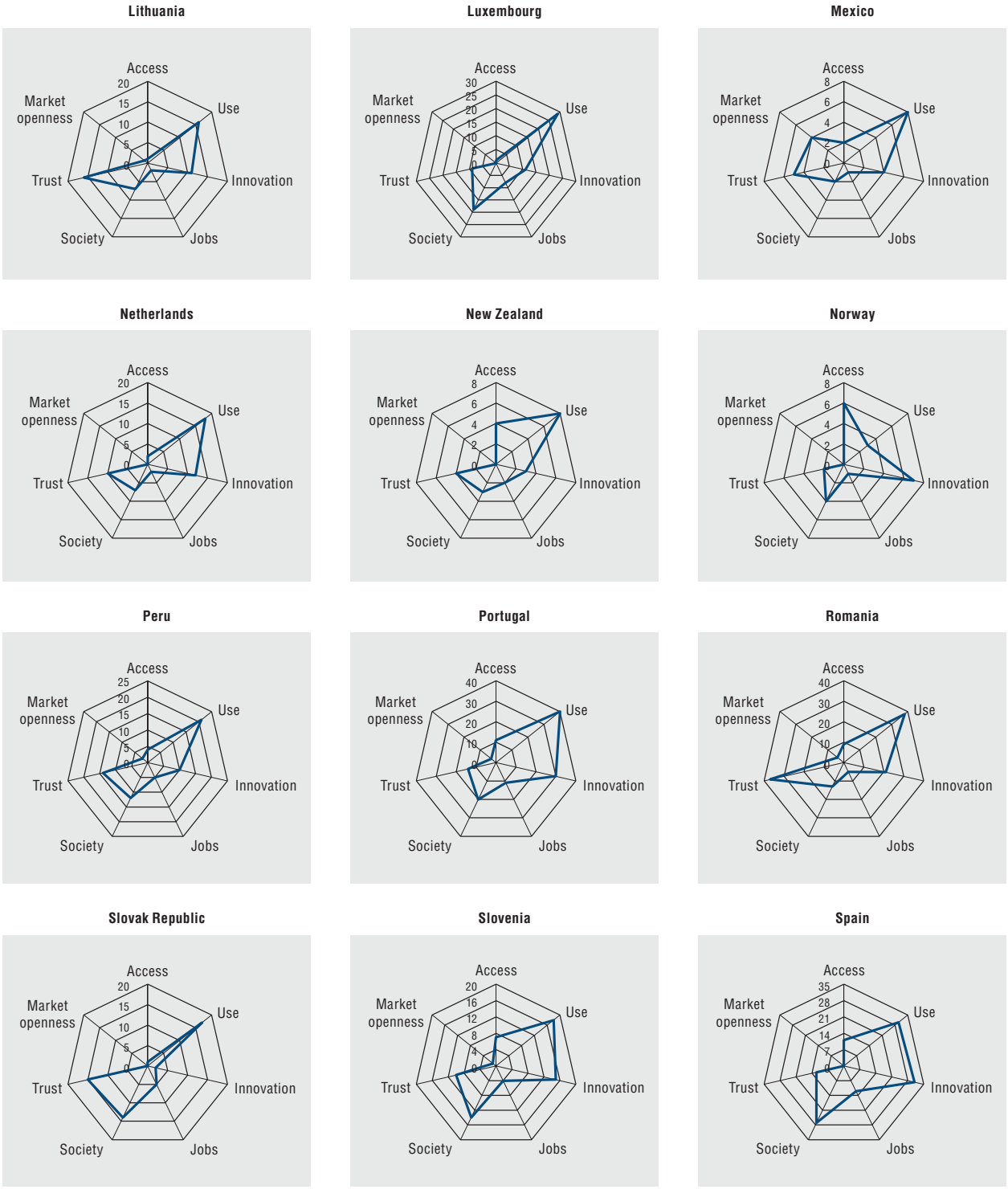
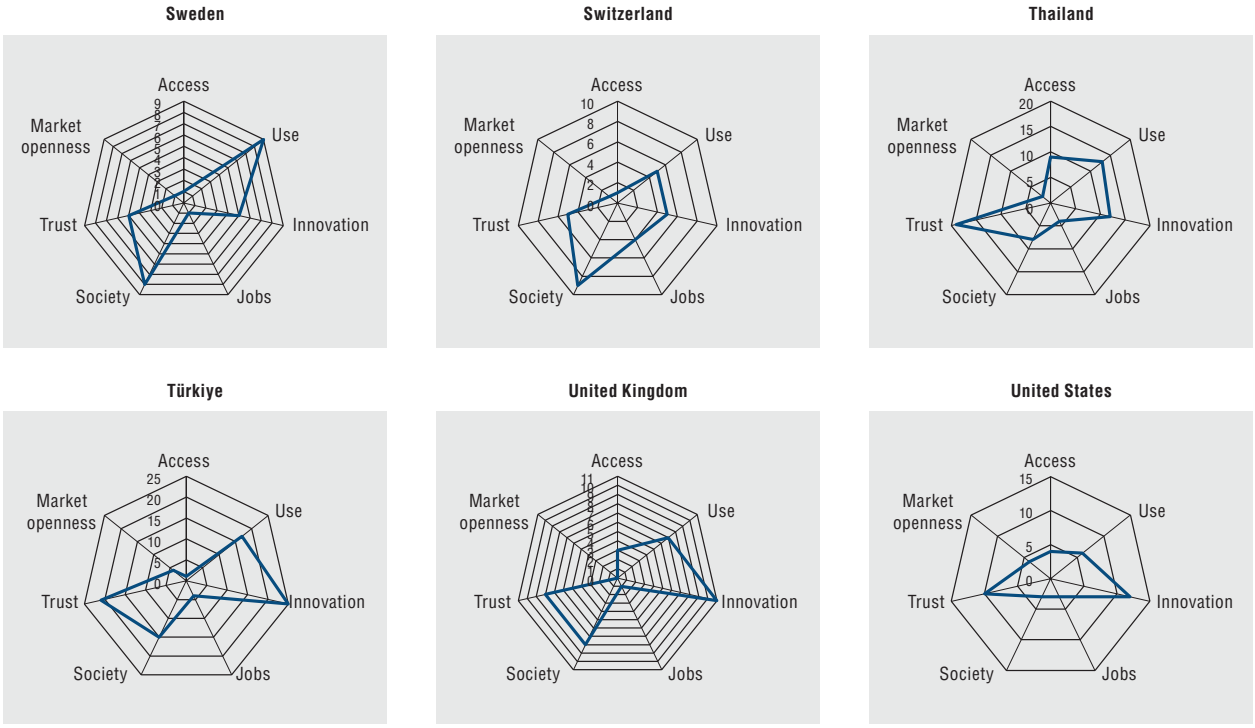


Figure 1.5. Beyond national digital strategies, the policy landscape differs across countries *(cont.)*

Distribution of digital policy initiatives, by Framework dimension, 2025



Notes: Some policy initiatives are considered under multiple policy dimensions based on their scope. Therefore, adding up the numbers of initiatives by Framework dimension does not necessarily equal the total number of policy initiatives collected per country.

Source: OECD calculations based on the *DESO 2026* data collection.

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These charts highlight marked differences across countries in the number of reported policies and in how comprehensively these policies cover all dimensions of the Framework. Some countries, such as Greece, Korea and Sweden, have many initiatives in a few dimensions. In contrast, Japan and Switzerland report fewer policy initiatives but cover the Framework more comprehensively. This analysis only considers the number of measures submitted for each dimension of the Framework. Therefore, it should not be considered as an assessment of the quality of each country's digital policy landscape.

AI remains the dominant digital technology in digital policy initiatives

Digital transformation policies have become more targeted. Such policies used to be largely technology-neutral, emphasising broad objectives such as promoting business digitisation and enhancing digital skills. However, certain technologies – most notably AI – have prompted governments to adopt more targeted, technology-specific policy responses. This tendency is particularly evident in the case of emerging technologies whose societal implications remain only partially understood or not yet fully assessed. For this analysis, data on digital policy initiatives were parsed through a custom dictionary to determine which of the most prominent digital technologies appeared most frequently in 2025 (Figure 1.6).

Figure 1.6. Among digital technologies, AI, cloud computing and 5G dominate the digital policy landscape

Digital technologies and related terms cited in policy initiatives, 2025



Notes: Data are based on survey responses from 42 countries. The figure shows occurrences of selected terms from the custom dictionary. "Artificial intelligence" also includes occurrences of "AI". "IoT" also includes occurrences of "Internet of Things". "VR" also includes occurrences of "immersive technologies", "metaverse" and "virtual reality". "Cloud computing" includes all occurrences of the term "cloud". "Quantum technologies" includes all occurrences of the term "quantum".

Source: OECD calculations based on the *DESO 2026* data collection.

StatLink https://stat.link/cbu9ly

The predominance of AI – which has even grown since a similar analysis in 2023 – indicates its centrality in national and international digital policy agendas, reflecting widespread recognition of its transformative economic and societal impacts (OECD, 2024[4]). Fifth generation of wireless cellular technology (5G) and cloud computing also feature prominently, underscoring their foundational role in supporting digital infrastructure and connectivity. At the same time, quantum technologies, semiconductors and satellites are becoming more prominent than they were in 2023. This is especially the case due to the emergence of dedicated semiconductor strategies and the proliferation of low earth orbit satellites to increase connectivity in sparsely populated areas.

In contrast, technologies such as the IoT and blockchain were explicitly mentioned in digital policy initiatives less often in 2025 than they were in 2023, suggesting a less dedicated policy focus. The small increase in references to sixth generation of wireless cellular technology (6G) could imply that countries are still moving to standalone 5G before moving on to 6G as a strategic focus. Attention on immersive technologies, like virtual reality, has remained relatively small, and it could reflect bottlenecks associated with adopting such technologies (OECD, 2024[5]) or perhaps a desire by firms and governments to concentrate on other technologies, such as AI.

Conclusion

Rapid technological changes have resulted in a shift from technology-neutral digital policymaking to more technology-specific digital policies. This chapter shows that "artificial intelligence" is the most oft-cited term in digital policies over 2023-2025, reflecting the ubiquity of the technology and its importance. At the same time, quantum technologies, semiconductors and satellites are becoming more prominent in digital policy initiatives than they were in 2023, particularly with the emergence of dedicated semiconductor strategies and increasing focus on low earth orbit satellites.

Despite rapid technological change, digital government has consistently ranked as the top digital policy priority over the past decade. Over this period, the same policy priorities have consistently been ranked among the top five – digital government, connectivity, skills, cybersecurity and technology development. In 2025, the most recent year for which data were collected, cybersecurity reached its highest position (second place) in the past decade, and technology development also rose to its highest position (a three-way tie for third with connectivity and skills).

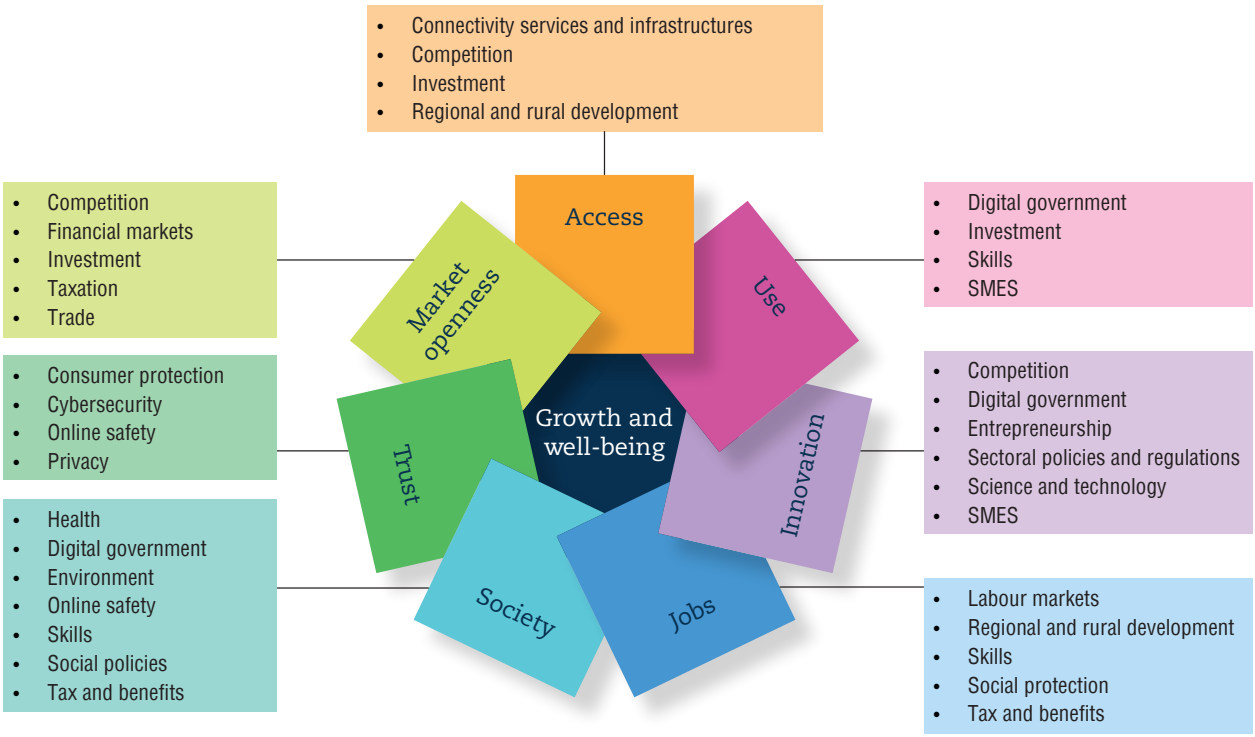
Since 2016, governance of digital policies has moved increasingly towards development of national digital strategies as a cornerstone of the digital policy landscape of many countries. The development of such strategies is increasingly led by dedicated digital ministries rather than at the centre of government. In 2025, most digital policies aimed at increasing effective use, unleashing digital innovation, and societal issues. Among the policy domains included in the Framework, skills is the most prominent domain in the digital policy landscape, with initiatives concentrated on improving ICT skills across demographic groups.

Annex 1.A. The Going Digital Integrated Policy Framework 2026

Digital transformation affects almost all aspects of the economy and society, and designing effective digital policies requires a whole-of-government effort. While the effects of digital technologies and data differ depending on national context and culture, it is a global challenge to navigate the digital transition effectively and ensure it both protects and enhances well-being and growth. In this respect, the OECD developed the Going Digital Integrated Policy Framework in 2019 and revised it in 2026 (OECD, 2026[1]). The Framework aims to help countries build a more inclusive and prosperous digital future with effective, impactful and evidence-based digital policies.

The Framework consists of seven interrelated policy dimensions (Access, Use, Innovation, Jobs, Society, Trust and Market openness), each of which contain several policy domains (Figure 1.A.1). Growth and well-being are at its heart, and several transversal domains (investment, digital government, skills, small and medium-sized enterprises, tax and benefits, regional development, privacy and security) cut across multiple dimensions. Some domains, such as data and data governance, are relevant for all dimensions.

Figure 1.A.1. The Going Digital Integrated Policy Framework 2026



Source: OECD (2026[1]), *The OECD Going Digital Integrated Policy Framework 2026*, *https://doi.org/10.1787/0254ae07-en*.

Recognising the evolving nature of technology, the Framework has remained relatively flexible to accommodate changes in the digital technology landscape. It further provides guidance on the governance of digital policies to ensure coherence and co-ordination of policies across all domains and sectors that shape digital transformation, and how to involve all relevant stakeholders in the development and implementation of digital policies.

Annex 1.B. National digital strategies

Table 1.B.1. National digital strategies in force, 2025

Country	National digital strategy
Argentina	Agenda Digital Argentina (2018) *https://servicios.infoleg.gob.ar/infolegInternet/anexos/315000-319999/318677/res138.pdf*
Austria	Digital Austria (2021) *https://www.digitalaustria.gv.at*
Brazil	Estratégia Brasileira para a Transformação Digital (E-Digital) (2022) *https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/transformacaodigital/arquivosestrategiadigital/e-digital_ciclo_2022-2026.pdf*
Bulgaria	Digital transformation of Bulgaria for the period 2020-2030, (2020) *https://www.mtc.government.bg/sites/default/files/digital_transformation_of_bulgaria_for_the_period_2020-2030_f.pdf*
Canada	Canada's Digital Charter (2019) *https://ised-isde.canada.ca/site/innovation-better-canada/en/canadas-digital-charter-trust-digital-world*
Chile	Chile Digital 2035 Strategy (2025) *https://wikiguias.digital.gob.cl/Estrategias/Estrategia-2030*
Colombia	National Digital Strategy of Colombia 2023-2026 (2023) *https://colaboracion.dnp.gov.co/CDT/Desarrollo%20Digital/EVENTOS/END_Colombia_2023_2026.pdf*
Costa Rica	Digital Transformation Strategy 2023-2027 (2023) *https://www.micitt.go.cr/sites/default/files/GobernanzaDigital/ETD%202023-2027%20V%20FINAL%2030-08-2023_v2.pdf*
Croatia	Digital Croatia Strategy for the period until 2032 (2022) *https://rdd.gov.hr/UserDocsImages//SDURDD-dokumenti//Strategija_Digitalne_Hrvatske_final_v1_EN.pdf*
Czechia	Digital Czech Republic v. 2.0 (2013) *https://www.czechia.eu/wp-content/uploads/2021/12/Digital-Czech-Republic-v.-2.0.pdf*
Denmark	Denmark's Digitalisation Strategy (2024) *https://digmin.dk/Media/638357207253210400/SVM%20regeringen_Danmarks%20digitaliseringsstrategi_2023_V9_Online_Final%20(1)-a.pdf*
Estonia	Estonia's Digital Agenda 2030 (2021) *https://mkm.ee/media/6970/download*
Finland	Finland's Digital Compass (2022) *https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/164472/VN_2022_72.pdf?sequence=1&isAllowed=y*
Hungary	National Digitalisation Strategy 2022-2030 (2022) *https://kormany.hu/dokumentumtar/nemzeti-digitalizacios-strategia-2022-2030*
Indonesia	Visi Indonesia Digital (VID) 2045 (2023) *https://digital2045.id/bukuvid2045/*
Ireland	Harnessing Digital – The Digital Ireland Framework (2021) *https://www.gov.ie/pdf/?file='https://assets.gov.ie/214584/fa3161da-aa9d-4b11-b160-9cac3a6f6148.pdf#page=null*
Israel	Israel Updated National Digital Strategy 2025-2029 (2025) *https://harhayeda.gov.il/en/national-digital-strategy/*
Italy	Italia digitale 2026 (2022) *https://assets.innovazione.gov.it/1665677773-italia-digitale-2026.pdf*
Japan	Priority Policy Program for Realizing Digital Society (2025) *https://www.digital.go.jp/assets/contents/node/basic_page/field_ref_resources/5ecac8cc-50f1-4168-b989-2bcaabffe870/173b3039/20250613_policies_priority_outline_08.pdf*
Korea	The Digital Strategy of Korea (2022) *https://www.msit.go.kr/eng/bbs/view.do?sCode=eng&mId=4&mPid=2&bbsSeqNo=42&nttSeqNo=742*
Latvia	Digital Transformation Guidelines for 2021-2027 (2021) *https://likumi.lv/ta/id/324715-par-digitalas-transformacijas-pamatnostadnem-20212027-gadam*
Luxembourg	Accelerating digital sovereignty 2030 with 3 pillars: AI, Data, Quantum (2025) *https://gouvernement.lu/en/dossiers.gouv2024_smc+en+dossiers+strategy-ads2030+strategy-ads2030.html*
Mexico	2025-2030 Digital Transformation and Telecommunications Sectoral Program (2025) *https://dof.gob.mx/nota_detalle.php?codigo=5755162&fecha=15/04/2025#gsc.tab=0*
Netherlands	Digital Economy Strategy (2022) *https://www.nederlanddigitaal.nl/documenten/2023/07/11/digital-economy-strategy*
New Zealand	The Digital Strategy for Aotearoa (2022) *www.digital.govt.nz/assets/Digital-government/Strategy/Digital-Strategy-for-Aotearoa-English-PDF.pdf*
Norway	The Digital Norway of the future (2024) *https://www.regjeringen.no/contentassets/c499c3b6c93740bd989c43d886f65924/en-gb/pdfs/digitaliseringsstrategi_eng.pdf*

Table 1.B.1. National digital strategies in force, 2025 *(cont.)*

Country	National digital strategy
Peru	National Digital Transformation Policy to 2030 (2023) *https://www.gob.pe/institucion/pcm/normas-legales/4471543-085-2023-pcm*
Portugal	The National Digital Strategy – The key to simplification (2024) *https://bo.digital.gov.pt/api/assets/etic/84a2d288-a508-4992-8e0c-ae9d3baa7050/* and Action Plan *https://bo.digital.gov.pt/api/assets/etic/82a2ef4e-bbfa-447f-bfa7-3ade154dab13*
Slovak Republic	Slovakia 2030 Digital Transformation Strategy (2019) *https://mirri.gov.sk/wp-content/uploads/2019/10/SDT-English-Version-FINAL.pdf*
Slovenia	Digital Slovenia 2030 (2023) *https://nio.gov.si/nio/asset/strategija+digitalna+slovenija+2030?lang=en*
Spain	Digital Spain 2026 (2022) *https://espanadigital.gob.es/sites/espanadigital/files/2022-08/Digital%20Spain%202026.pdf*
Sweden	Sveriges digitaliseringsstrategi 2025-2030 (2025) *https://www.regeringen.se/regeringens-politik/digitaliseringsstrategin-2025-2030*
Switzerland	Digital Switzerland Strategy (2025) *https://digital.swiss*
Thailand	National Digital Economy and Society Development Policy and Plan (2018) *https://ndec.onde.go.th/?page_id=2607*
United Kingdom	UK Digital Strategy (2022) *https://www.gov.uk/government/publications/uks-digital-strategy/uk-digital-strategy*

Annex 1.C. Digital policy priorities

Table 1.C.1. Digital policy priorities as defined in the DESO 2026 data collection

Priorities	Explanatory note
Communication infrastructure and services	Improving connectivity by promoting the deployment of relevant infrastructure and services. This includes direct government-funded deployment of communications infrastructure and initiatives to incentivise and aid the deployment of private-sector fixed and wireless networks. Example policy initiatives include national broadband plans, spectrum licensing and auctions, and reforms to planning and highway access regulations with the aim of facilitating the deployment of networks.
Consumer protection	Protecting consumers in online environments and e-commerce and implementing measures to increase the safety of electronic products. This includes actions to protect the online consumer information ecosystem such as by tackling fake reviews and unethical advertising practices. Example policy initiatives include consumer protection policies, minimum standards for connected devices (e.g. safety and security by design initiatives), and information and awareness campaigns designed to protect consumers from dark commercial patterns.
Cybersecurity	Improving cybersecurity for all by increasing cyber capabilities, capacities and awareness and management of risks online. This includes efforts to detect and counter threats, measures to disseminate and promote effective cyber hygiene among individuals and businesses, and cyber threat warning systems. Example policy initiatives include cybersecurity strategies, skills and training programmes specialising in security skills, and efforts to establish dedicated cybersecurity advisory bodies and awareness programmes.
Data flows and governance	Enhancing access to and sharing of data across the economy, and across borders, by creating environments that reinforce trust, stimulate investment in and sharing of data, and foster the effective and responsible use of data across society. This includes both cross-border and domestic measures, as well as initiatives designed to facilitate increased innovation with data and data-based technologies while reducing the risk of harm. Example policy initiatives include those to foster data free flow with trust, national data strategies, and regulatory sandboxes related to the use of data and digital technologies.
Digital government	Enhancing public services through increased digitalisation. This includes efforts to migrate and harmonise services online in central and local governments and to increase the knowledge and use of advanced technologies such as artificial intelligence within the public sector. Example policy initiatives include public sector digital transformation strategies, policies to promote the availability and use of open government data and digital identities, and digital public infrastructure initiatives.
Digital inclusion	Seeking to reduce divides in the access and use of digital technologies and the Internet across a range of characteristics, such as age, education level, firm size, geography, income level or sex. Just as divides in access and use are multi-faceted, so too are the policy responses to them. Example policy initiatives include targeted training programmes, vouchers or subsidy schemes, and sectoral or SME strategies.
Environment	Reducing the environmental impact of digital transformation and using digital technologies to mitigate the effects of and adapt to climate change. This includes issues such as e-waste and the power supply to data centres, as well as efforts to boost the cleantech ecosystem. Example policy initiatives include e-waste recycling schemes, data centre strategies and energy strategies.
Online safety	Protecting people and firms from societal and economic harms online. This includes action to eliminate the spread of terrorist and violent extremism content and child sexual exploitation and abuse, as well as combatting mis- and dis-information content. Example policy initiatives include online safety legislation and the expansion of regulatory purviews to consider the issue of online safety.
Privacy and data protection	Empowering citizens and businesses to have more control over their own data and greater accountability for the data they store and process. This includes facilitating and promoting the adoption of privacy enhancing technologies. Example policy initiatives include national data strategies, the establishment and expansion of regulatory bodies dedicated to data privacy and protection, and awareness campaigns designed to improve data protection practices among people and businesses.
Skills	Providing the right mix of skills so that people and businesses can thrive in a digital world. This includes foundational skills (such as science, reading and maths), basic and specialist ICT skills (from basic software use to coding), and complementary skills (such as critical thinking, empathy and teamwork). Example policy initiatives include skills strategies at the national and local level, revised curricula, and initiatives designed to promote training and retraining by firms.
Technology development and diffusion	Targeted focus on the development and diffusion of one or several particular technologies, such as AI or quantum computing. This includes directed research and development (R&D) and the provision of the required resources (data, capital, skills) to significantly increase national capabilities in a particular technology and usage of this technology by people and businesses. Example policy initiatives include AI strategies, quantum computing strategies or R&D strategies.

Annex 1.D. Country coverage

1. OECD Member countries at the time that responded to the *DEO 2017* questionnaire comprise: Austria, Belgium, Canada, Chile, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland, Türkiye, the United Kingdom and the United States. Partner economies that responded comprise: Brazil, the People's Republic of China, Costa Rica, Lithuania, the Russian Federation and Singapore.
2. OECD Member countries at the time that responded to the *DEO 2020* questionnaire on national digital strategies and policies comprise: Australia, Austria, Belgium, Canada, Chile, Colombia, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom and the United States. Partner economies that responded comprise: Brazil, Costa Rica, the Russian Federation, Singapore and Thailand.
3. OECD Member countries that responded to Part I of the *DEO 2024* questionnaire on digital policy priorities comprise: Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom. Partner economies that responded comprise: Brazil, Bulgaria, Croatia, Jordan, Peru, Romania, Singapore and Thailand.

   OECD Member countries that responded to Part I of the *DEO 2024* questionnaire on national digital strategies and their governance comprise: Austria, Belgium, Canada, Costa Rica, Czechia, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland, Türkiye and the United Kingdom. Partner economies that responded comprise: Brazil, Bulgaria, Croatia, Jordan, Peru, Romania, Singapore and Thailand.

   OECD Member countries that responded to Part II of the *DEO 2024* questionnaire on the digital policy landscape comprise: Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom and the United States. Partner economies that responded comprise: Argentina, Brazil, Bulgaria, Croatia, Jordan, Peru, Romania, Singapore and Thailand.

   OECD Member countries that responded to Part III of the *DEO 2024* questionnaire on targeted policy initiatives comprise: Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Finland, Germany, Hungary, Ireland, Iceland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Switzerland, Sweden, Türkiye and the United Kingdom. Partner economies that responded comprise: Bulgaria, Croatia, Jordan, Peru, Romania, Singapore and Thailand.
4. OECD Member countries that responded to Part 1 of the *DESO 2026* data collection on national digital strategies and to Part 2 on digital policy priorities comprise: Austria, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom and the United States. Partner economies that responded comprise: Argentina, Brazil, Bulgaria, Croatia, Indonesia, Jordan, Peru, Romania and Thailand.
5. OECD Member countries that responded to Part 3 of the *DESO 2026* data collection on major digital policies and special topics comprise: Austria, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Finland, France, Greece, Germany, Hungary, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom and the United States. Partner economies that responded comprise: Argentina, Brazil, Bulgaria, Croatia, Indonesia, Jordan, Peru, Romania and Thailand.

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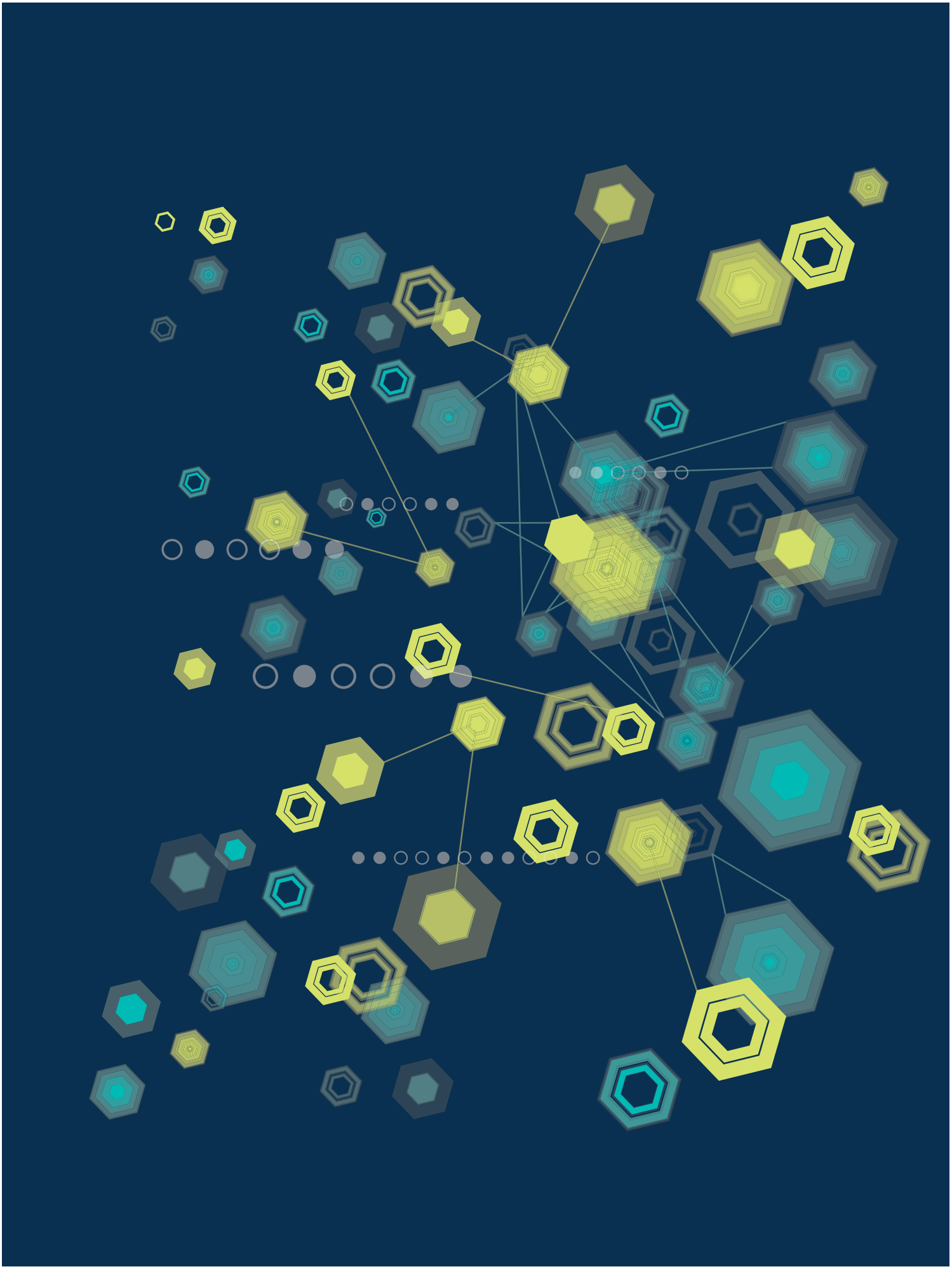
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OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, *https://doi.org/10.1787/9789264276284-en*. [3]

Notes

1. Unlike the *DEO 2024* data collection, which included open questions for countries to submit their digital policy priorities, the *DESO 2026* data collection had a list of pre-determined priorities for countries to choose from. While this approach facilitates comparability across countries, it also limits and pre-determines the responses available to policymakers.



Chapter 2

Trends in access and connectivity

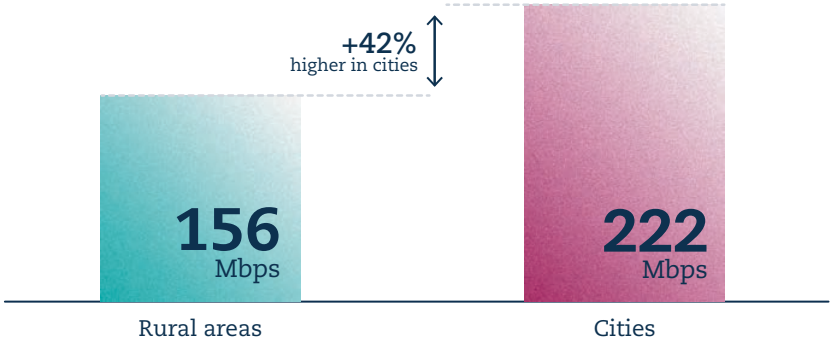
Connectivity services and infrastructures, also known as "digital infrastructure", underpin the use of digital technologies and are the key to connecting people, places and things, today and in the future. This chapter considers digital infrastructure and connectivity across the OECD, including trends in broadband availability, quality and affordability. It focuses on submarine cable infrastructure – a critical component of the Internet's backbone – to assess recent developments in deployment, highlight operational and regulatory challenges – and identifies recent policy actions around the OECD. It concludes with trends in communication policy and regulation, demonstrating how OECD Member countries and partner economies are adapting to the evolving connectivity ecosystem in pursuit of a future in which all have access to high-quality, reliable and affordable communication services.

Digital infrastructure powers our economies and societies

Cities experience the fastest broadband speeds.

Gap in fixed broadband speeds between rural and urban areas across the OECD, Q2 2026

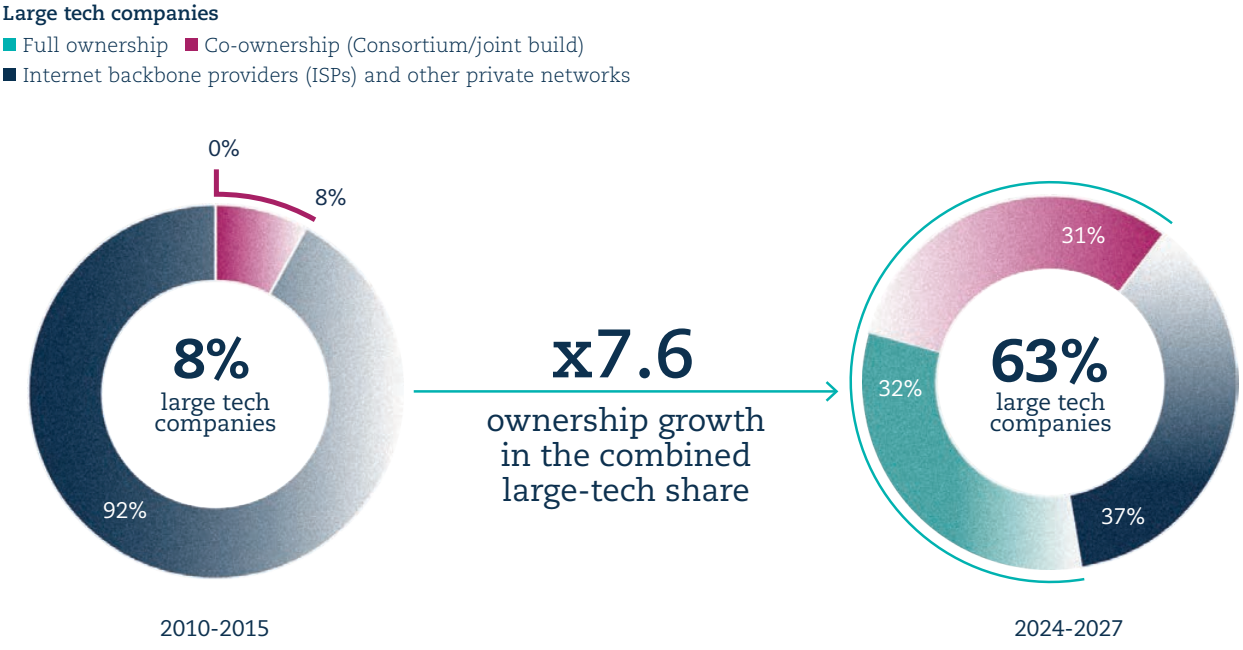
Median download speed, Mbps



Source: Ookla Speedtest Intelligence.

Large tech companies are taking a majority stake in global submarine cable ownership.

Share of global submarine cable kilometres, by ownership category and period, observed and projected



Source: TeleGeography.



In the past 3 years,

2/3 of OECD Member countries have broadened their communications regulator's mandate to cover issues like **AI, cloud, and online platforms.**

Key findings

Developments in connectivity: Where do we stand?

- Availability of high-speed broadband access is increasing across the OECD. Total fixed broadband subscriptions grew 37% in the past decade, reaching 37 fixed broadband subscriptions per 100 inhabitants in December 2025 across the OECD. Fibre comprised 51% of all fixed broadband subscriptions (Q4 2025), up from 31% in Q4 2020.
- Investments in broadband networks have greatly improved users' quality of experience. Between Q2 2020 and Q2 2026, median fixed broadband speeds across the OECD increased fourfold, from 54.4 Mbps in Q2 2020 to 207.5 Mbps in Q2 2026.
- Download speeds over mobile networks have shown impressive growth, driven by investments in 5G. From Q1 2023 to Q2 2025, average mobile download speeds as experienced by users grew 46% – from 46 Mbps to 67.3 Mbps.
- Nevertheless, spatial connectivity divides persist across and within OECD Member countries: in Q2 2026, users in cities experienced median fixed broadband download speeds that were, on average, 42% higher than in rural areas (far from metropolitan areas).
- Affordability is a key driver of adoption of broadband services. Over the past decade (2015-2025), prices for mobile voice and data services dropped by more than half, while fixed broadband services decreased by 25-37%. Prices of triple-play bundles (i.e. fixed broadband, fixed voice and pay television) also saw declines over the past five years across the OECD (2020-2025), with a 36% decrease in the medium-usage bundle reaching an OECD average of 96.67 USD PPP.

Special focus: Submarine cables to support next-generation networks

- Submarine cables form an integral part of the global Internet backbone, moving most of the world's intercontinental data traffic. To meet future demand for international network capacity, investment in submarine cables is expected to surpass USD 4 billion annually over 2025-2027, double the average annual investment from 2016 to 2022.
- Large technology companies now dominate submarine cable capacity, driving nearly 75% of global bandwidth demand in 2024, and owning or co-owning over 60% of new cables entering service between 2024 and 2027, up from 8% in 2010-2015.
- The submarine ecosystem faces key operational and regulatory challenges. These include the relative scarcity of ships capable of install and repair, as well as the complex and lengthy licensing and permitting processes at various levels of government, for all countries with cable landing points.

Main trends in connectivity policy and regulation

- Digital transformation is reshaping the connectivity ecosystem, including the prevalence of over-the-top communication services, the growing role of technology companies in networks, developments in satellite markets and emerging players in the connectivity ecosystem. In response, some countries are enacting structural changes in overarching communication legislation, as well as in the core mandate of the communication regulator. Around two-thirds of OECD Member countries and accession candidate countries reported changes in the responsibilities of the communication regulator. Several countries are overhauling legislation governing the communication sector. For example, the European Union is discussing broad shifts in legislation under the proposed Digital Networks Act (January 2026). This will affect the 22 OECD Member countries that are also part of the European Union and three accession candidate countries.
- Apart from their traditional mandate, communication regulators increasingly cover a broad range of digital topics, with new ones emerging. For example, around half of regulators have full or partial responsibility for online safety. Some are also responsible for artificial intelligence governance (e.g. Ireland, Lithuania and Portugal).
- Future connectivity policy priorities for OECD Member countries include expanding broadband connectivity to close spatial gaps; adapting regulation to changing market circumstances; promoting secure, resilient and future-proof networks; and supporting and protecting users in a digital environment.

2. TRENDS IN ACCESS AND CONNECTIVITY

Introduction

Digital connectivity is increasingly a necessity for daily life, requiring high-quality and affordable communication services everywhere. Connectivity services and infrastructures, also referred to as "digital infrastructure", span from broadband access networks and submarine cables to data centres and semiconductors. Together, they power today's transformative digital technologies, like artificial intelligence (AI). Expanding high-quality connectivity at affordable prices is key to a digital future in which all can take part and leverage these technologies. While broadband performance has greatly improved, spatial connectivity divides remain. Digital infrastructure now underpins economic growth and security. Therefore, continued efforts are needed to achieve a digital future with ubiquitous, high-quality and reliable connectivity.

This chapter comprises three sections. First, it provides an overview of developments in broadband availability, performance, coverage and the evolution of prices over the last decade. The chapter then considers key challenges related to deployment, operation and maintenance of submarine cables, and highlights recent policy discourse and action around the OECD. Finally, the chapter discusses how communication regulators and policymakers around the OECD are adapting to meet the challenges of a changing connectivity ecosystem.

Developments in connectivity: Where do we stand?

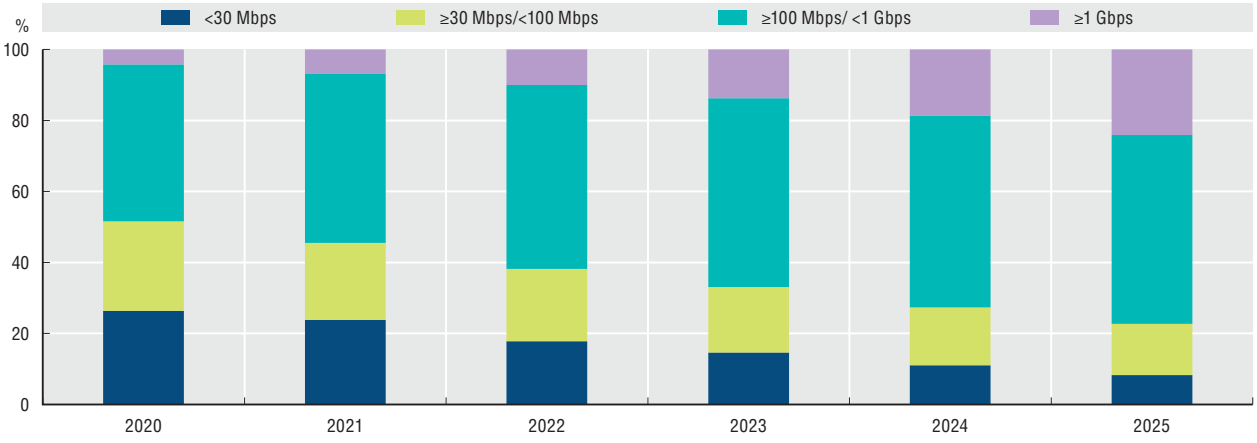
Connectivity has become ingrained in daily life, with disruptions to communication networks provoking shockwaves throughout the economy and society. The past five years have demonstrated the economic and societal reliance on connectivity. The COVID-19 pandemic marked an inflection point, where digital tools provided a lifeline for educational, social and professional activities to continue amid lockdown restrictions in 2020.

This trend towards digital shows no sign of slowing down. AI – especially generative AI tools, the Internet of Things (IoT) and immersive technologies – are increasing demand for networks. This requires more bandwidth, lower latencies, wider coverage and greater network resilience. Since 2020, users across the OECD have increasingly upgraded their fixed broadband subscriptions to higher speeds. In the past five years, Gigabit subscriptions showed the largest growth, growing six-fold over 2020-2025 (Figure 2.1).[1]

The increase in demand for bandwidth can also be seen in mobile data usage trends. Monthly data volume per subscription has more than doubled across the OECD, on average, over the last five years, rising from 7 GB in December 2020 to 17 GB in December 2025. In some OECD Member countries, monthly data usage exceeded 35 GB per month (i.e. Austria, Estonia, Finland, Latvia and Lithuania) (OECD, 2026[1]). Commercial offers are shifting to meet users' growing demands for data: 25 of 38 OECD Member countries[2] have mobile plans featuring unlimited data usage (OECD, 2025[2]).

Figure 2.1. Gigabit subscriptions are on the rise across the OECD

Fixed broadband subscriptions, by speed tier (theoretical maximum download speed advertised by providers) in OECD Member countries



Note: See endnote 1.

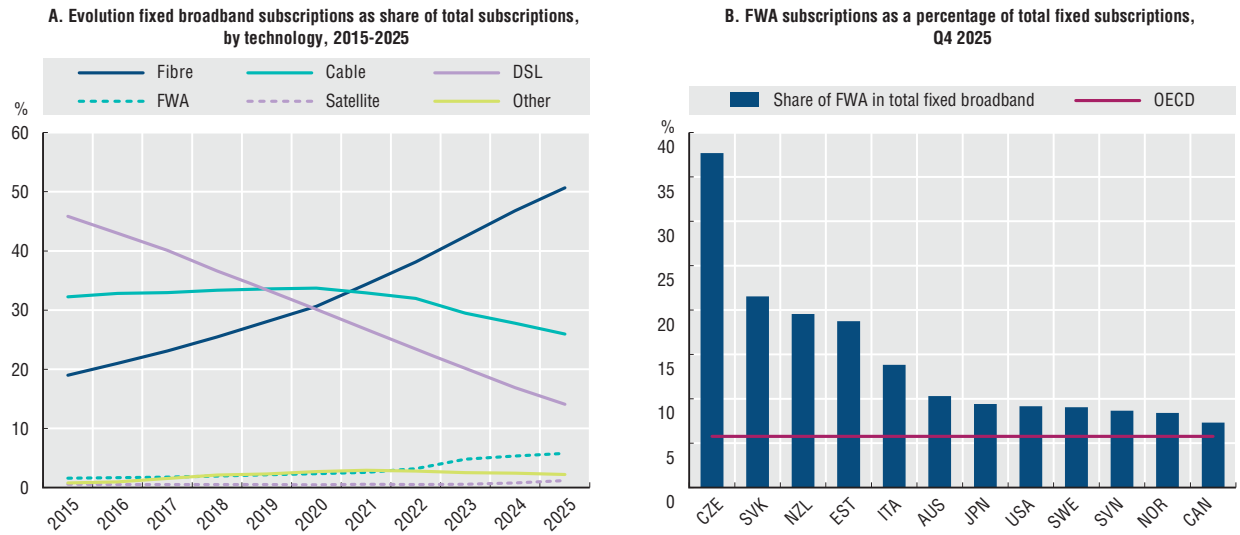
Sources: OECD (2026[3]), *OECD Data Kitchen* (database), *https://oe.cd/broadband-statistics*; OECD (2026[1]), *OECD Broadband Statistics* (database), *https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html*.

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Coupled with this move towards higher speed fixed broadband subscriptions, fibre has been the most dominant access technology in the OECD since 2021. As of December 2025, fibre accounted for 50.7% of all fixed broadband subscriptions across the OECD (OECD, 2026[1]). This made fibre the most common access technology across the OECD, followed by cable and DSL. Despite developments in non-terrestrial networks (NTNs), satellite represented a little more than 1% of total fixed broadband subscriptions in the OECD in Q4 2025 (Figure 2.2, panel A).

While fixed wireless access (FWA) accounted for 5.8% of total fixed broadband subscriptions in Q4 2025, subscriptions increased 5-fold over the last decade (Q4 2015-Q4 2025) (Figure 2.2, panel A). The United States, Japan, Italy and Czechia reported the highest number of FWA subscriptions in Q4 2025 (OECD, 2026[1]). However, FWA represents over a third of total fixed broadband subscriptions in Czechia (37.7%) and an important percentage in the Slovak Republic (21.6%), New Zealand (19.6%) and Estonia (18.7%) (Figure 2.2, panel B). Geography likely plays a role in the importance of FWA, as well as the level of mobile versus fixed coverage in the country (OECD, 2025[4]).

Figure 2.2. Fibre and FWA show growth in fixed broadband subscriptions



Notes: Fibre subscriptions data include fibre-to-the-home (FTTH) also known as fibre-to-the-premise and fibre-to-the-building; they exclude fibre-to-the-curb and fibre-to-the-node. FWA: In 2024, the definition was revised to account for evolution in the technologies enabling FWA broadband access.

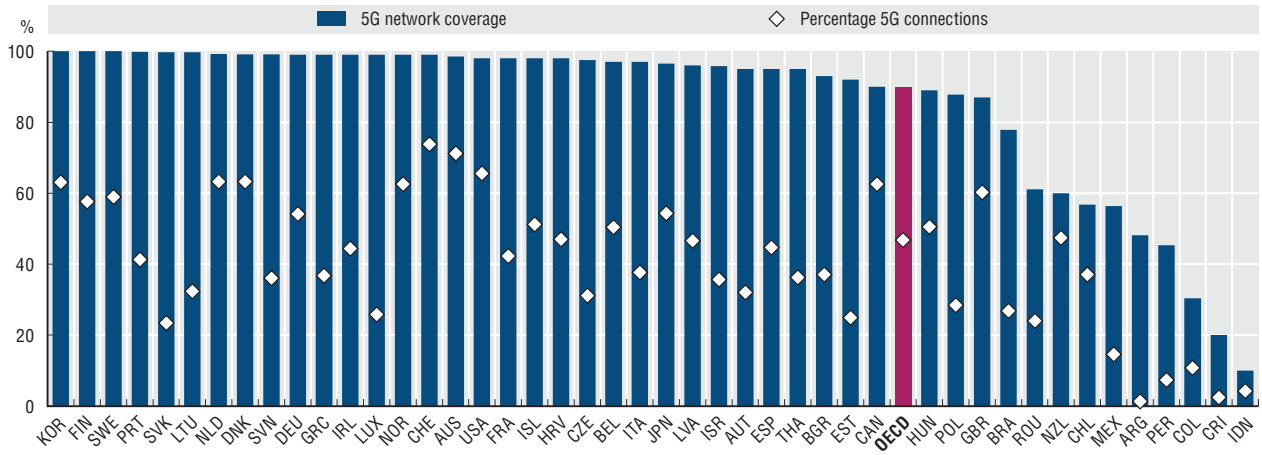
Sources: OECD (2026[3]), *OECD Data Kitchen* (database), *https://oe.cd/broadband-statistics*; OECD (2026[1]), *OECD Broadband Statistics* (database), *https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html*.

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To meet the demands for high-quality and resilient connectivity, 5G deployments are on the rise across the OECD. All OECD Member countries have deployed 5G, with full coverage across the OECD expected in the coming years. However, most current 5G deployments are non-standalone (NSA) networks, which still rely on 4G core network infrastructure. Total 5G connections across the OECD have grown 26% in just one year (Q4 2024-Q4 2025), with 5G connections in the OECD accounting for 47% of total connections in Q4 2025 (GSMA Intelligence, 2026[5]). Australia, Denmark, the Netherlands, Korea, Switzerland and the United States reported the highest proportions of 5G connections across the OECD, with over half of total connections in Q4 2025 (Figure 2.3).

Figure 2.3. 5G coverage reaches 90% of population on average across the OECD

5G network coverage as a percentage total population and 5G connections as a percentage of all connections, Q4 2025



Notes: For "5G connections", a mobile connection is "a unique SIM card (or phone number, where SIM cards are not used) that has been registered on a mobile network. Connections differ from subscribers in that a unique subscriber can have multiple connections" (GSMA, 2025[6]). Data displayed for countries where 5G networks have been deployed. Data for Türkiye is not displayed as 5G was launched in April 2026.

Source: OECD based on GSMA Intelligence (2026[5]), *GSMA Intelligence database*, *https://www.gsmaintelligence.com/data* (accessed on 30 June 2026).

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5G network population coverage reached an average of 90% in Q4 2025 across the OECD, compared to 36% at the end of 2020. However, this is only representative of countries where 5G had been deployed[3] (GSMA Intelligence, 2026[5]). In approximately half of OECD Member countries, 5G population coverage is at least 98% as of Q4 2025 (GSMA Intelligence, 2026[5]). Meanwhile, three of eight accession candidate countries report 5G coverage of the population at or above the OECD average (Bulgaria, Croatia and Thailand) (Figure 2.3).

To date, most 5G networks rely on 4G core network infrastructure and use NSA-5G standards in the radio interface (OECD, 2024[7]). As NSA-5G networks are built on top of existing 4G core networks, comparatively, SA-5G networks require more investment to deploy 5G infrastructure end-to-end. SA-5G networks promise several performance enhancements, such as increased speed and reduced latency. The deployment of SA-5G networks has continued at pace. As of April 2025, 73 operators[4] across 39 countries have launched SA-5G networks commercially, compared to 49 operators in 29 countries as of April 2024 (GSA, 2024[8]; 2025[9]).

SA-5G networks serve as a critical stepping stone for 5G-Advanced and later, 6G. Among other goals, 5G-Advanced aims to integrate AI and machine learning into the network and improve energy efficiency (OECD, 2024[10]; GSA, 2025[11]).[5] As of May 2025, 26 operators in 15 countries worldwide are investing in 5G-Advanced, mostly through trials and testing, and 6 have launched 5G-Advanced networks, including Telstra in Australia (GSA, 2025[11]). In parallel with the evolution of 5G-Advanced, the technical standards to support NTNs are enabling integration into the terrestrial network architecture.[6] While NTNs were initially an add-on to 5G, they are expected to be a native feature of 6G, enabling seamless connectivity across land, sea and air, in alignment with IMT-2030 design (OECD, forthcoming[12]).

To meet the demands of digital transformation, OECD Member countries continue to invest in and deploy high-quality broadband networks

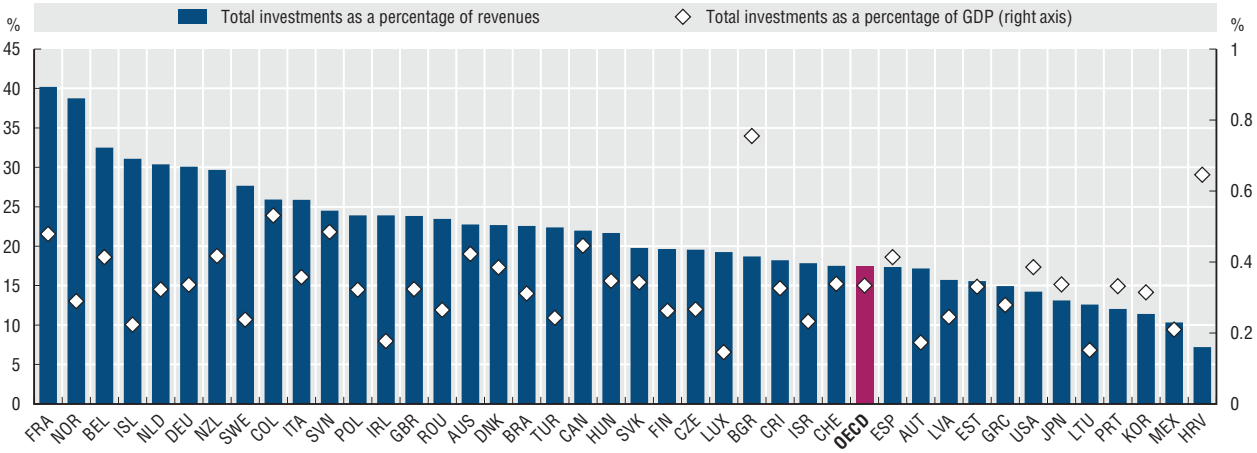
Networks are working to keep pace as customers demand higher quality broadband. Investment to expand and upgrade network infrastructure is critical to ensure networks are ready to meet current and future demands of customers. Total investment in communication networks (fixed and mobile) across the OECD grew 4.4% over the past five years – from 239 billion USD PPP in Q4 2020 to 250 billion USD PPP in Q4 2025. This represents a compound annual growth rate (CAGR) of 1% (OECD, 2026[1]). On the fixed broadband side, operators focussed on upgrading their networks to fibre to meet increasing demands to support teleworking, and other online applications during the pandemic. On the mobile side, operators began to deploy 5G networks to support demands for higher speeds and more capacity.

Meanwhile, revenues over 2020-2025 rose 9%, from 1.4 trillion USD PPP in 2020 to 1.6 trillion USD PPP in 2025, representing a CAGR of 2% (OECD, 2026[1]).

In several OECD Member countries, communication network operators have invested a substantial proportion of revenues over the past five years, considering the average over 2020-2025. Leaders such as France, Norway, Belgium, Iceland, the Netherlands and Germany report investment to revenue ratios of over 30% (40.2%, 38.8%, 32.5%, 31.1%, 30.4% and 30.1% respectively) (Figure 2.4). As a measure of the size of the respective economy, investment in the communication sector in all OECD Member countries averaged 0.3% of total gross domestic product. This was an average over 2020-2025, accounting for the cyclical nature of investments in communication networks (Figure 2.4).

Figure 2.4. Operators are investing a substantial proportion of revenues to expand and upgrade networks in some OECD Member countries and partner economies

Total investments as a percentage of revenues in the telecom sector and as a percentage of GDP (right axis), USD PPP, 2020-2025 average



Notes: Total GDP, total investments and total revenues are averages over the 2020-2025 period in USD PPP. Where 2025 data - or any previous years - were not available, the prior available years (i.e. 2019-2024) were used instead.

Sources: OECD (2026[3]), *OECD Data Kitchen* (database), *https://oe.cd/broadband-statistics*; OECD (2026[1]), *OECD Broadband Statistics* (database), *https://www.oecd.org/en/topics/sub-issues/broadband-statistics.html*; OECD (2026[13]), *Productivity Database*, *https://data-explorer.oecd.org/s/2l2*.

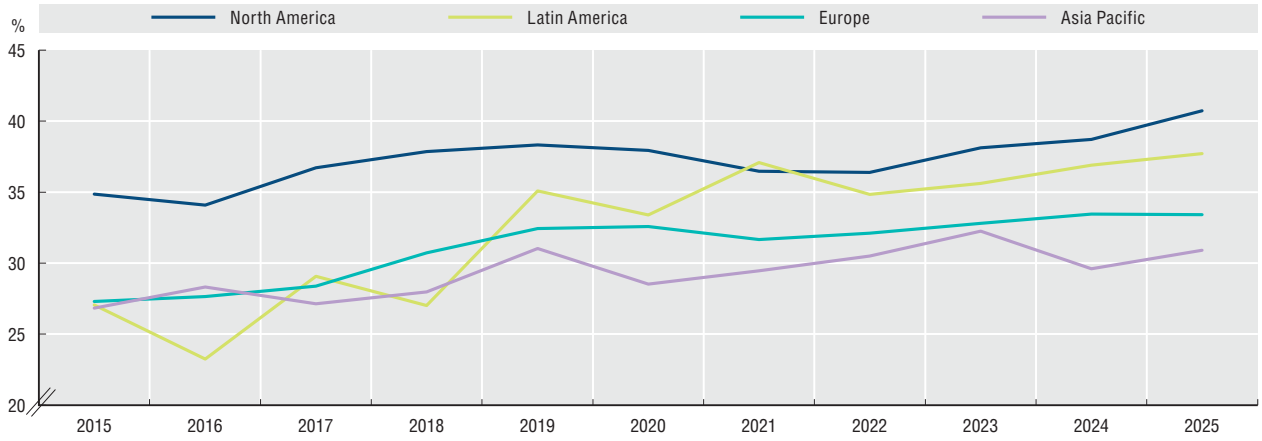
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While revenues in the sector have grown moderately over the past five years, profit margins for the overall sector – or operational performance measured by the share of earnings before interest, taxes, depreciation and amortisation (EBITDA) over revenues – have been relatively stable. For example, during the 2008-2022 period, the sector EBITDA margin across the OECD exceeded 30% and the earnings before interest and taxes margin exceeded 14% (OECD, 2024[14]). This trend likely shifted after 2022 with higher interest rates rendering "low-cost" capital rare.

Additionally, EBITDA margin trends for mobile operators across the OECD provide insight into the operating conditions underpinning investment (OECD, 2026[15]).[7] Between 2015 and 2025, margins increased in most "OECD regions", albeit from different starting points and at uneven rates, reflecting structural differences in market dynamics (Figure 2.5). "OECD-North America", including the United States and Canada, maintained the highest margins, rising from 35% in 2015 to nearly 41% by 2025. OECD Member countries in Europe (22 countries) recorded steady improvements, from just above 27% to over 33% in 2025. In contrast, OECD Member countries in the Asia-Pacific region had more volatile EBITDA margins, fluctuating between 27% and 32%, consistent with heterogeneous market conditions and staggered investment cycles. OECD Member countries in Latin America followed a distinct trajectory, with margins declining mid-decade before rebounding strongly after 2018 – from around 23% in 2016 to nearly 38% by 2025. Overall, while operating profitability has been relatively stable and improved in some cases, the capacity to generate internal cash flows, and thereby support sustained investment, continues to vary significantly across regions (OECD, 2024[14]).

Figure 2.5. EBITDA margins in OECD Member countries

Earnings before interest, taxes, depreciation and amortisation (EBITDA) margins for mobile communication operators in OECD Member countries, by region, 2015-2025



Notes: Aggregation per continental regions is a calculated simple average. For the analysis, GSMA data include only OECD Member countries. These are divided regionally as follows: North America (Canada, the United States); Latin America (Chile, Colombia, Costa Rica, Mexico); Europe (Austria, Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom); Asia Pacific (Australia, Japan, Korea, New Zealand).

Source: OECD based on GSMA Intelligence (2026[5]), *GSMA Intelligence database*, *https://www.gsmaintelligence.com/data*.

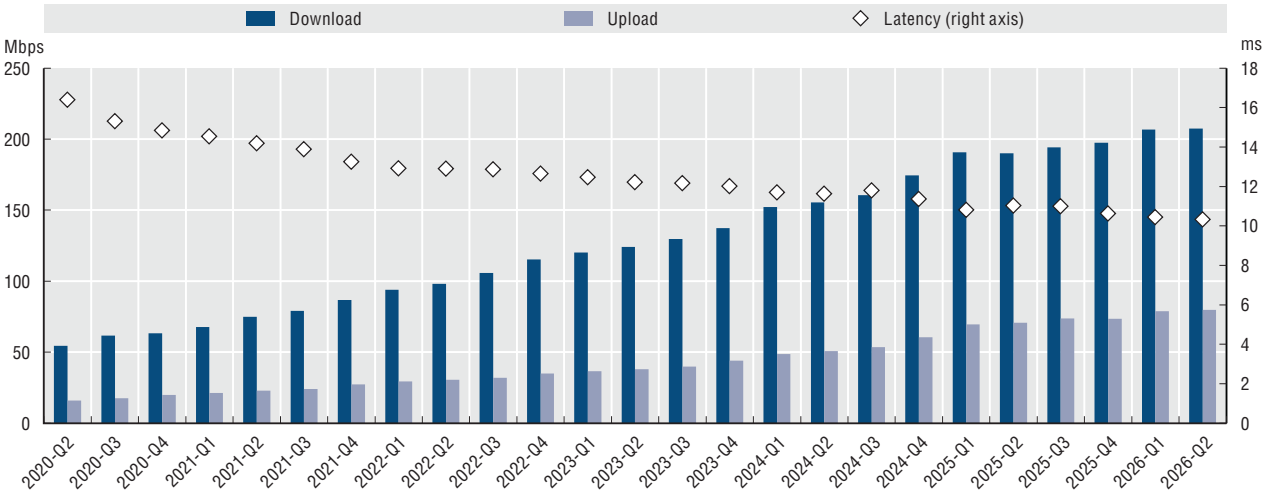
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The reliability and performance of broadband networks continue to improve

As operators have invested in and deployed networks, users' quality of experience over both mobile and fixed broadband networks has increased in step. From Q2 2020 to Q2 2026, median fixed download speeds experienced across the OECD rose fourfold (281% growth rate), from 54.4 Mbps in Q2 2020 to 207.5 Mbps in Q2 2026, according to Ookla data.[8] Median fixed upload speeds exhibited a five-fold increase (397%) over the same period, albeit beginning at a lower level – from 16.1 Mbps in Q2 2020 to 79.8 Mbps in Q2 2026. Latency, measuring a network's response time (i.e. "ping" or delay rate), greatly determines a user's quality of experience. From Q2 2020 to Q2 2026, median latency over fixed broadband markets improved by 37%, decreasing from 16.4 milliseconds (ms) to 10.3 ms, according to the same source (Figure 2.6).

Figure 2.6. Fixed broadband performance has steadily improved across speed and latency

Evolution of fixed broadband median speeds and latency experienced (right axis) in OECD Member countries



Notes: Average of median download speeds experienced, weighted by the number of tests across data for 38 OECD Member countries.

Source: OECD based on Ookla (2025[95]), *Speedtest by Ookla Global Fixed and Mobile Network Performance Maps* (database), *https://registry.opendata.aws/speedtest-global-performance*.

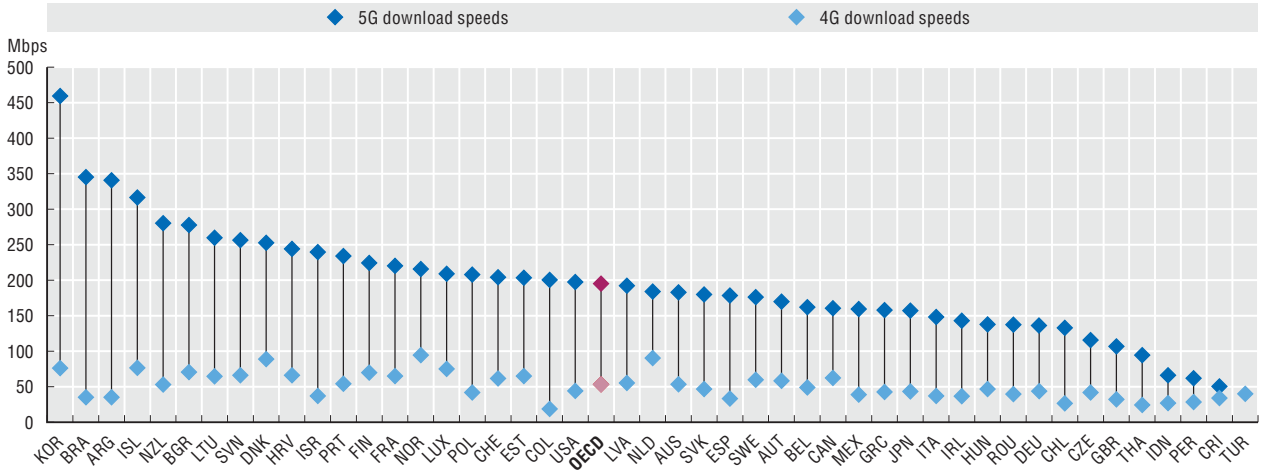
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In mobile networks, speeds have also steadily risen on average across the OECD. From Q1 2023 to Q2 2025, average mobile download speeds as experienced by users grew 46% – from 46 Mbps to 67.3 Mbps according to Opensignal data.[9]

Much of these improvements are likely driven by investments in next-generation technology, such as 5G. Across the OECD, 5G mobile download speeds were 3.7 times as high (266%) as 4G speeds in Q2 2025, according to Opensignal data. This shows 5G's true progress to improve performance. Korea leads in terms of experienced 5G speeds with 459.5 Mbps followed by Brazil, Argentina, Iceland and New Zealand (Figure 2.7).

Figure 2.7. 5G download speeds are almost four times higher than 4G speeds, on average, across the OECD

5G and 4G mobile download speeds, Q2 2025



Note: Data refer to simple averages. Figures for download speeds for 5G in Türkiye are not displayed as 5G services were launched in April 2026.

Source: OECD based on Opensignal (2026[16]), *Insights*, *https://www.opensignal.com*.

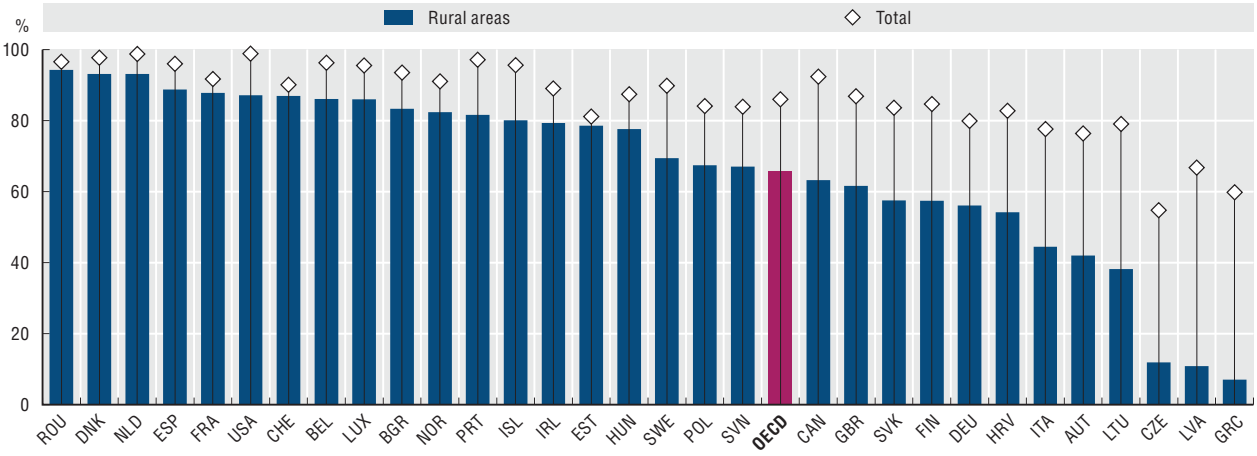
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Status of geographic connectivity divides

Despite expanded and upgraded connectivity, disparities between rural and urban areas across the OECD persist with respect to availability and performance of mobile and fixed broadband networks (OECD, 2025[17]). In terms of availability, for the 28 OECD Member countries for which data exist, 85.9% of total households on average reported having access to fixed broadband networks that can deliver 100 Mbps download speeds, compared to 65.8% of rural households in 2025 (Figure 2.8).[10] This equates to a spatial gap of 20 percentage points. In leading countries such as Romania, Denmark, the Netherlands, Spain, France, the United States, Switzerland, Belgium and Luxembourg, rural households have a higher percentage than the OECD average for total households (i.e. above 85.9%) (Figure 2.8).

Figure 2.8. Gaps remain in access to high-quality fixed networks (capable of speeds >100 Mbps)

Percentage of total and rural households where fixed broadband capable of delivering speeds of 100 Mbps or more is available, 2025



Note: See endnote 10.

Source: OECD calculations based on CRTC (2026[18]), *Communications Market Reports*, *https://crtc.gc.ca/eng/publications/reports/PolicyMonitoring/ban.htm*; European Commission (2026[19]), *Digital Decade 2026: Broadband Coverage in Europe 2025*, *https://digital-strategy.ec.europa.eu/en/library/digital-decade-2026-connectivity-coverage-europe-2025-report*; and FCC (2026[20]), "Area Summary", *FCC National Broadband Map* (dataset), *https://broadbandmap.fcc.gov/area-summary*.

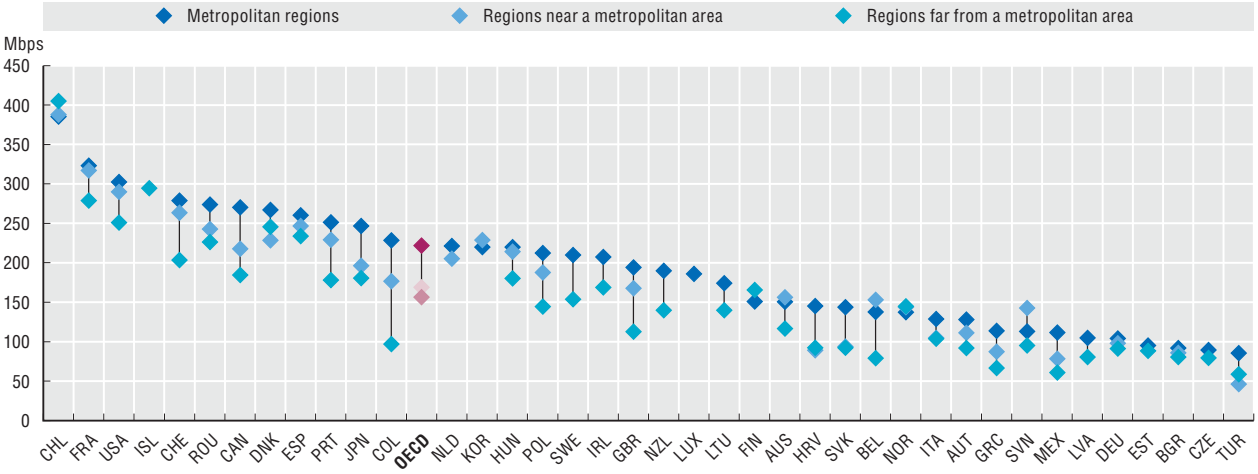
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Since 2019, median fixed broadband download speeds across the OECD have increased across all regions, a testament to the substantial efforts made to expand and improve networks (OECD, 2025[17]). However, the gaps in speeds (in absolute terms) for users in rural areas versus their urban counterparts also increased (OECD, 2025[17]). In Q2 2026, users in metropolitan areas experienced median fixed broadband download speeds that were, on average, 42.0% higher than in areas far from metropolitan areas, according to Ookla data (Figure 2.9).[11]

The urban-rural gap in terms of median fixed broadband download speeds varies significantly between OECD Member countries. In Chile, Finland and Norway, regions far from a metropolitan area show higher speeds than metropolitan regions[12]. Besides, these countries, along with Estonia and Czechia also have the narrowest absolute gap in median fixed download speeds between metropolitan regions and regions far from a metropolitan area. Colombia and Canada reported the highest differences between the two regions in Q2 2026 (Figure 2.9).

Figure 2.9. Urban users experience 42% higher fixed speeds than people living in regions far from metropolitan areas

Median fixed download speeds, small regions (TL3) classification, Q2 2026



Notes: Measurements are based on tests performed by users around the globe via the Speedtest platform. See also endnotes 11 and 12.

Source: OECD based on Ookla's Speedtest Intelligence data (Q2 2026).

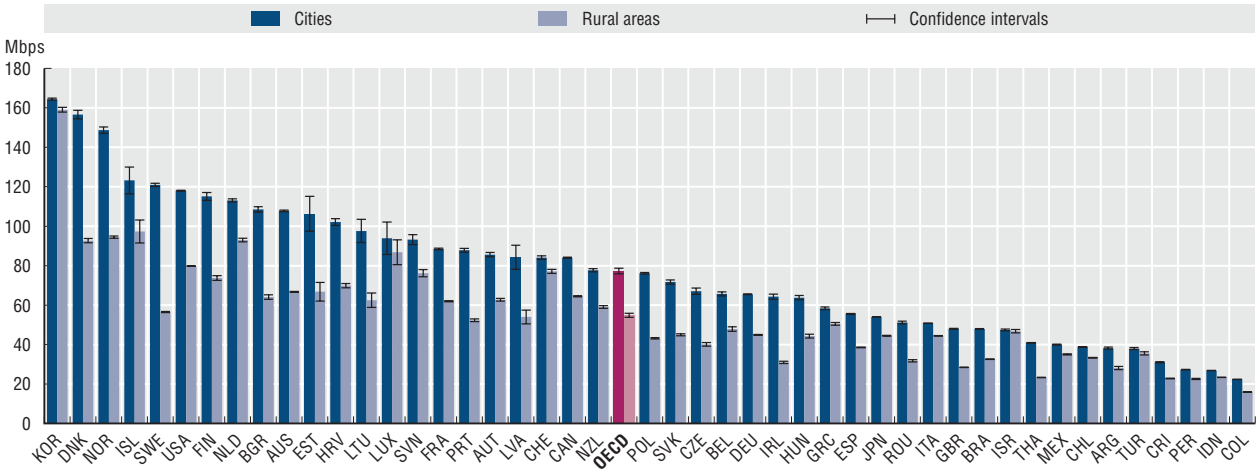
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Nevertheless, the gap should not be the only factor considered, as some countries with smaller gaps may also have much lower speeds across all regions. Indeed, gaps in absolute terms tend to be greater as absolute speeds increase (OECD, 2025[17]). Likewise, some countries have made great strides to improve and upgrade their networks, as evidenced by their high speeds (e.g. Chile, France, the United States, Switzerland, Denmark). These investments, which likely first took place in urban areas to enable the quickest recoup of costs, are a welcome development. The role of policy, therefore, is to provide incentives and support to decrease barriers to deployment, ensuring such expansion and upgrades continue beyond urban areas (OECD, 2025[17]).

Mobile networks similarly show a spatial connectivity gap between regions, with urban users experiencing mobile download speeds 40.7% higher than rural users in Q2 2025, according to Opensignal. Korea, Denmark and Norway reported the highest mobile download speeds in Q2 2025 across all regions (Opensignal, 2026[16]). Among accession candidate countries, Bulgaria and Croatia reported speeds higher than OECD averages across all regions (Figure 2.10).[13]

Figure 2.10. Users in cities across the OECD experience mobile download speeds 41% higher than those in rural areas

Overall mobile download speeds experienced in cities and rural areas, degree of urbanisation classification, Q2 2025



Note: See endnote 13.

Source: OECD based on Opensignal (2026[16]), *Insights*, *https://www.opensignal.com*.

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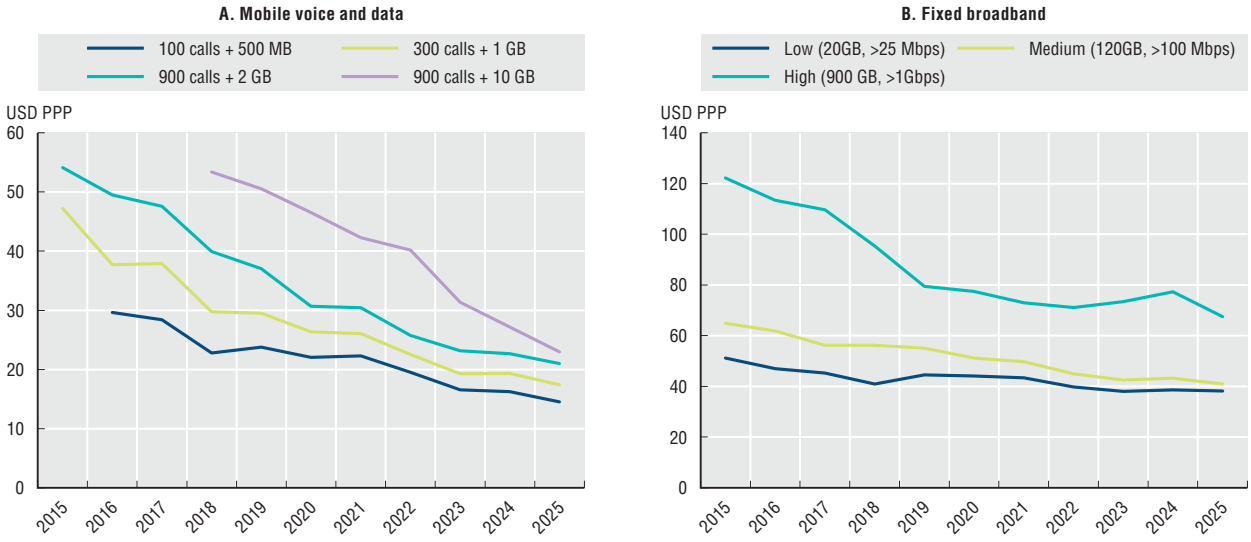
Affordability of communication services

High costs of communication services, and relatedly communication devices, can be an important barrier to their uptake and adoption. Demand-side hurdles can pose particularly difficult challenges to truly closing connectivity divides. Several factors influence the price of communication services, including competition levels in communication markets. The OECD's communication baskets provide detailed information on price trends for fixed, mobile and bundled communication services (OECD, 2017[21]; OECD, 2020[22]). Prices for fixed and mobile communication services are based on the cheapest offers in a given OECD market that meet criteria for a given user profile (e.g. low, medium and high usage). Assumptions are made regarding monthly data usage, advertised speed tiers and other plan characteristics based on the OECD "standalone" methodology (OECD, 2017[21]). Similarly, prices for bundled communication services (e.g. dual-play, triple-play and quadruple-play bundles) show the cheapest offers available on the market that meet all criteria for low-, medium- or high-usage profiles, based on the OECD "bundle" methodology (OECD, 2020[22]).

Over the past decade, the price of mobile voice and data plans has shown an impressive decrease across the OECD. On average, the OECD average price of low-usage basket (i.e. plans with 100 calls and 500 Megabytes [MB] of data allowance) decreased by 51% from Q2 2016 to Q2 2025, while medium-usage baskets for mobile voice and data (300 calls and 1 Gigabyte [GB]) fell by 63.1% from Q2 2015 to Q2 2025. The high-usage basket (900 calls and 2 GB) showed a similar drop of 61.2% over the same period. The average price of the highest-usage basket (900 calls and 10 GB), for which the time series is shorter, similarly decreased by over half (56.9%) from Q2 2018 to Q2 2025 (Figure 2.11, panel A).[14]

For fixed broadband baskets in the OECD, medium-usage profiles (i.e. 120 GB of data allowance and speeds of more than 100 Mbps) showed the largest decline, with a decrease of 36.8% between Q2 2015 and Q2 2025. Fixed broadband plans showed similar price declines for the low (20 GB, >25 Mbps) and high (900 GB, >1 Gbps) usage offers. These prices decreased by 25.5% and 29.3%, respectively, over the past decade (Figure 2.11, panel B).

Figure 2.11. Mobile voice and data, and fixed broadband prices have decreased across the OECD over the past decade



Notes: Price figures have been deflated per country per year, using the OECD annual Consumer Price Index (based on 2024) and then converted to USD PPP with 2024 exchange rates. See also endnote 14.

Sources: OECD (2025[2]), *OECD Communication Price Basket Benchmarking systems*, "Mobile Voice and Data price benchmarking tool Q2 2013-Q2 2025" (dataset); OECD (2025[23]), *OECD Communication Price Basket Benchmarking systems*, "Fixed broadband price benchmarking tool Q2 2013-2025" (dataset).

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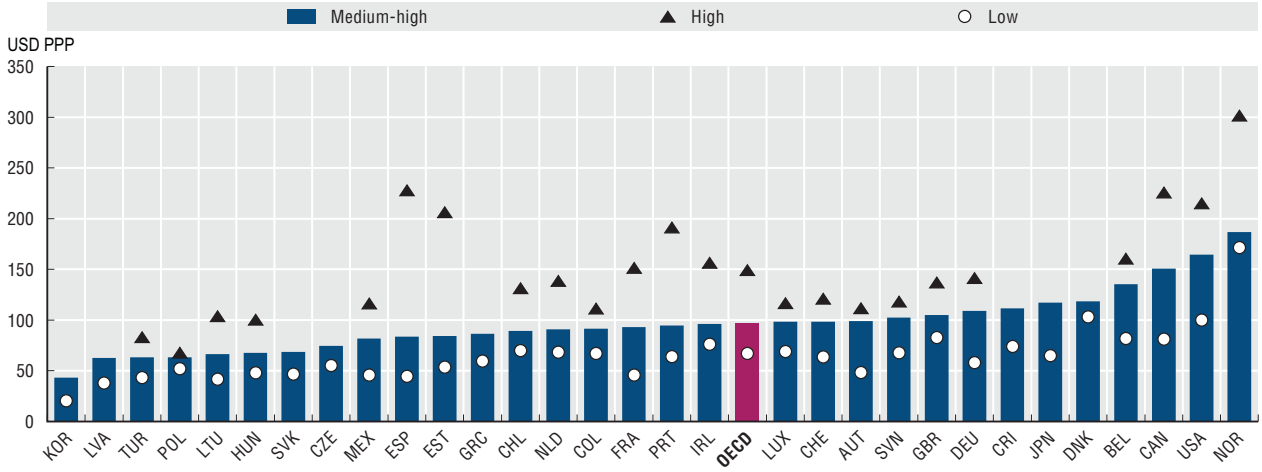
Bundled services (i.e. different services in one offer) have become increasingly common in the OECD. Around 70% of fixed broadband services were sold as part of a bundle across the OECD in 2025.[15] The most common type of bundled service around the OECD is dual play (i.e. fixed broadband, fixed voice or television), representing around 44% of subscriptions, followed by triple play (i.e. fixed broadband, fixed voice and pay television) with 35% and quadruple play (i.e. fixed broadband, fixed voice, television, and mobile voice and data) with 21%, as of 2025.[16]

Prices of triple-play bundles decreased over the past five years.[17] The medium usage bundle saw a 36% decrease, while the low- and high-usage bundle decreased by 12% and 24%, respectively, over H2 2020-H1 2025 (OECD, 2025[24]). For quad-play bundles, the medium-usage bundle reported the largest decrease, falling 27% over H2 2020-H1 2025 (OECD, 2025[24]). Over the same period, quad-play bundles decreased by 16% for low usage and 9% for high-usage bundles (OECD, 2025[24]).

In the first half of 2025, there is a wide range of prices of triple-play bundles across the OECD. The average price for a low-usage profile across the OECD was USD PPP 66.98, USD PPP 96.67 for medium-usage profile and USD PPP 149.54 for a high-usage profile in H1 2025 (Figure 2.12).[18]

Figure 2.12. Prices for triple-play bundles vary substantially across the OECD

Prices across OECD Member countries of triple-play bundled communication baskets (fixed broadband, fixed voice and pay television), low, medium-high and high usage profile, January 2025



Notes: Price calculations are for the average of the three cheapest offers meeting all criteria for a given user profile. See also endnote 18.

Source: OECD (2025[24]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2020-H1 2025]" (dataset).

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Special focus: Submarine cables to support next-generation networks

Importance of submarine cables for international connectivity

Submarine fibre cables form the backbone of broadband connectivity, carrying the vast majority of intercontinental Internet Protocol traffic, often quoted as 99% of intercontinental data traffic (Mauldin, 2023[25]).[19] For instance, anytime that Internet users (via a fixed or mobile connection) in Asia view content from a website hosted on another continent, such as Europe or North America, the content has almost certainly been carried over a submarine cable. As a critical piece of international Internet backbone, submarine fibre cables are a key aspect to consider for resilient communication networks (OECD, 2025[26]).

Given its indispensable role in providing international connectivity, submarine cables are a critical support for future-proof networks. As backbone infrastructure, submarine cables carry data over large distances – generally in and between countries – across oceans or large bodies of water. While some risks remain (Box 2.1), they are usually less prone to failure than terrestrial cables and have high network capacity (OECD, 2014[27]). These cables can also play a role to carry domestic traffic as well. Examples include countries with large waterways, such as the sub-fluvial cables in the Amazon in northern Brazil, or with an island geography, such as Indonesia. Given their importance, ensuring diversity in the number of submarine cables and their routes is key to network resilience. When they occur, submarine cable faults can be disruptive (Box 2.1).

Box 2.1. Submarine cable disruptions can interrupt or degrade international traffic

Submarine cables are generally reliable. Although the total kilometres (km) of submarine cables have increased from approximately 1 million km in 2014 to around 1.7 million km in 2025, faults have remained relatively constant at around 150-200 per year (International Cable Protection Committee, 2025[28]). Accidental human activities, such as damages from fishing and ship anchors, are the most common causes, with others including natural disasters and technical failures (International Cable Protection Committee, 2025[28]). In many cases, such cuts do not affect user experience, thanks to operators' efforts to increase network resilience and thereby reroute traffic from the affected cable.

However, in some cases, these failures can be impactful. For example, the submarine cable fault in the Red Sea in 2024 affected communications in various countries, such as the United Kingdom, South Africa and the People's Republic of China (OECD, 2025[26]). In September 2025, four cables in the Red Sea were reported to be affected, with Microsoft announcing possible increased latency for its cloud services for traffic passing through the Middle East (Madory, 2025[29]). These cuts demonstrate the area's proneness to failure, driven by factors such as its relatively shallow bed and the ship traffic to pass through the nearby Suez Canal, which often leaves ships waiting in the Red Sea (and thereby dropping anchors) (Madory, 2025[29]).

Sources: International Cable Protection Committee (2025[28]), *Media enquiries & frequently asked questions*, *https://www.iscpc.org/news/media-enquiries*; Madory (2025[29]), *Subsea cables parted in Red Sea again*, *https://www.kentik.com/blog/subsea-cables-parted-in-red-sea-again*.

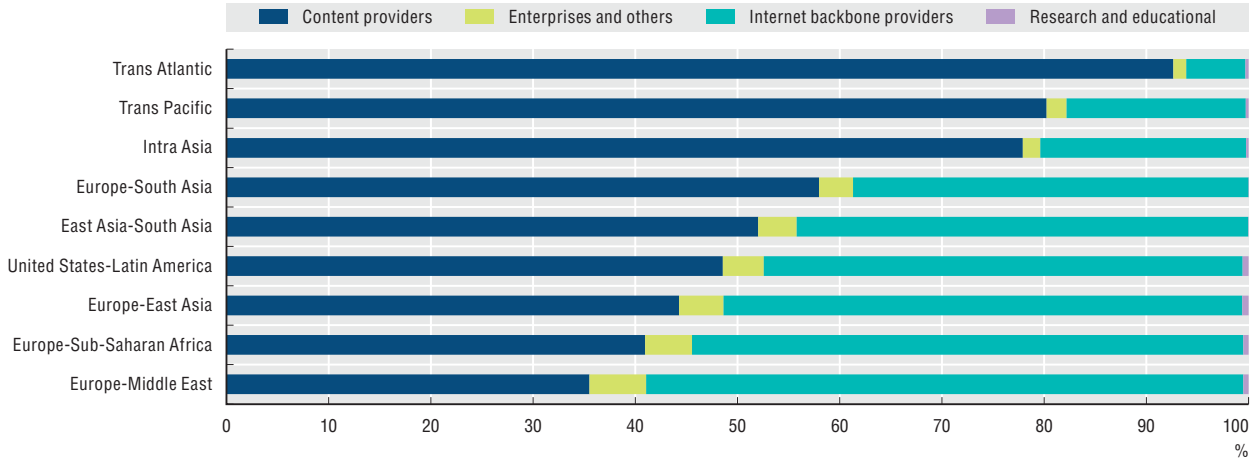
To meet bandwidth demands for next-generation networks, there has been substantial investment to deploy new submarine cables. According to TeleGeography, construction costs of submarine cables since 2016 averaged around USD 2 billion per year. Estimated costs of announced cables are predicted to double investment, reaching around USD 4 billion or above annually from 2025 to 2027 (Brodsky, 2025[30]). Over the three years, the construction cost of all submarine cables announced to come into service between 2025 and 2027 is estimated at over USD 13 billion (Brodsky, 2025[30]). By 2040, new cable deployments (1.6 million cable km) are predicted to drive a 48% net increase in total cable kilometres globally, including the expected retirement of legacy cables (TeleGeography and Infra-Analytics, 2025[31]).

These substantial investments are driven by bandwidth demands, largely from a few large international tech companies (e.g. cloud and content providers). Over the past few years, the investment by such players in submarine cables, as well as in fibre backbone and access networks, has increased (OECD, 2024[14]). Tech companies' investments include new submarine cable systems, as well as backbone infrastructure connecting their global data centres (OECD, 2024[14]). Content providers either solely own, or are part of a consortium that operates, over 60% of global cable kilometres that entered or are expected to enter into service from 2024 to 2027, up from 8% in 2010-2015 (TeleGeography and Infra-Analytics, 2025[31]).

Tech companies also use the most bandwidth of international submarine cable network capacity. From 2016 to 2024, they have replaced Internet backbone providers as the largest users of bandwidth to account for almost 75% of all bandwidth demand in 2024 (Mauldin, 2025[32]). Content providers made up more than half of all used international bandwidth along five of the nine major intercontinental routes in 2024, followed by Internet backbone providers (Mauldin, 2025[32]). In particular, content providers dominated the bandwidth usage along the trans-Atlantic (92.6%), trans-Pacific (80.2%) and intra-Asian routes (77.9%) (Figure 2.13).

Figure 2.13. Content providers account for over half of used bandwidth in five of nine major routes

Bandwidth usage by category for major submarine cable routes, 2024



Notes: Data refer to the used bandwidth as of end 2024. All categories of usage are only counted once. "Content providers" are the largest technology firms including cloud providers and online platforms. "Internet backbone providers" are traditional telecom operators, including Tier-1 Internet service providers (ISPs), that own or lease bandwidth capacity as transit services. "Enterprises and others" include dedicated corporate links, media networks, and government capacity. "Research and educational" refers to research and university backbone networks.

Source: Mauldin (2025[32]), *International bandwidth demand surpasses 6.4 Pbps*, TeleGeography blog, *https://blog.telegeography.com/used-international-bandwidth-reaches-new-heights*.

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Operational and regulatory challenges

Several challenges face the operation (including deployment, maintenance, repair and retirement) and regulation governing submarine cable systems. A few of these are highlighted below.[20]

Operationally, the installation, maintenance and repairs of submarine cables depend on a relatively small fleet of ships globally. By 2040, total cable kilometres are expected to increase by almost half net (48%), even considering replacement of retiring cables, which represents a substantial amount of investment (TeleGeography and Infra-Analytics, 2025[31]). However, as total kilometres of submarine cable systems globally increase, repairs to maintain them in good working order are also expected to increase by 36% from 2025 to 2040 (TeleGeography and Infra-Analytics, 2025[31]). Some operational bottlenecks include the scarcity of specialised ships that deploy and repair submarine cables in the seabed compared to global demand. While investment in submarine cable systems is expected to be strong until 2040, as noted above, investment in new cable maintenance ships has been sporadic due to various market factors such as high capital costs and market uncertainty (TeleGeography and Infra-Analytics, 2025[31]). This scarcity may only grow more acute as maintenance and repair needs increase with the laying of new cable systems.

Additionally, while new submarine cables are being deployed, legacy cables are reaching retirement. Around 850 000 km of cable are expected to be retired by 2040 – approximately half of the new cable kilometres expected to be laid (i.e. 1.6 million km) (TeleGeography and Infra-Analytics, 2025[31]). The underlying shifts in ownership and investment of submarine cable systems (from traditional Internet backbone providers to content providers) raises some questions. The services provided by each differs and requires different needs that submarine cables fulfil. While backbone providers have more of an interest to maintain secondary links to support the broad provision of communication services, content providers may be more focussed on their own networks (e.g. content delivery networks). This may mean that as legacy systems are retired, not all routes may be replaced, if current investment patterns hold.

From a regulatory perspective, a key challenge is complex and, at times unpredictable, licensing and permitting processes. These can involve multiple levels of government within a country (e.g. local, regional, national) and possibly various agencies (e.g. communication, defence, environment, fisheries). Necessary permits and licences are also required from the different countries where the cable plans to land, further complicating the process. This can also raise further operational uncertainties. For example, delays to receive permits may prevent projects from being able to use a cable-laying ship when it becomes available. In other challenges, designated cable landing zones often share the seabed with other users (e.g. wind farms, fishing), which can cause congestion at entry points.

Possible regulatory actions could address some of these challenges. Establishing clear voluntary licensing on mutually agreed terms and permitting processes could reduce administration burden (especially for ship mobilisation to deploy and repair cables). Fees could also be set at a reasonable level. In addition, harmonised regulations can greatly facilitate the permitting process across regions. More co-ordinated spatial planning may also help decrease seabed congestion. Overarching regulatory principles such as fostering competition can also be applied to submarine infrastructure, which could consider the principle of open access and the importance of maintaining network security and resilience.

Several countries across the OECD have recently enacted policy or launched some initiatives related to submarine cables (e.g. France, Greece, Japan, Spain, Portugal and the United States). Spain and Portugal have assessed certain competition aspects of submarine cables, and France and Spain are actively monitoring the evolution of this market (BEREC, 2025[33]). Spain's communication regulator, the National Commission on Markets and Competition (CNMC), reported on the state of submarine connectivity, including the competitive situation, in various Spanish isles (Box 2.2). In July 2024, following a market analysis, CNMC deregulated all submarine routes, given that alternative submarine cables were deployed or being deployed for most of them (BEREC, 2025[33]).

The National Communications Authority (ANACOM) in Portugal, imposed *ex ante* obligations of access, non-discrimination, transparency, price control, accounting separation and financial reporting regarding capacity in its national submarine cable systems on Fibroglobal.[21] In Greece, the Hellenic Telecommunications and Post Commission is still regulating submarine cables through market 14 of the 2003 European Recommendation on Relevant Markets (European Commission, 2003[34]).

In 2025, the United States, the Federal Communications Commission (FCC) undertook the first review of its submarine cable rules since 2001. Broadly, the review aimed to streamline the licensing process to support quicker cable deployment, while ensuring the security and resilience of the cable systems. The FCC recently adopted new rules that introduce measures that protect submarine cables against "foreign adversaries". The FCC also sought public comment on additional security measures to protect cables against foreign adversary equipment and services, and encourage use of trusted submarine cable repair and maintenance ships and trusted technology abroad (FCC, 2025[35]).

In Japan, the Ministry of Internal Affairs and Communications has designated submarine cables as a priority area in its *Comprehensive Strategy for Overseas Digital Deployment by 2030* (Ministry of Internal Affairs and Communication (Japan), 2025[36]). As concrete measures, the strategy includes plans to strengthen Japanese companies' capabilities in manufacturing, installation and maintenance through development of a fleet system that enables agile cable laying and maintenance, as well as the enhancement of production facilities (Ministry of Internal Affairs and Communication (Japan), 2025[36]).

Box 2.2. Case study: Domestic submarine cables in Spain

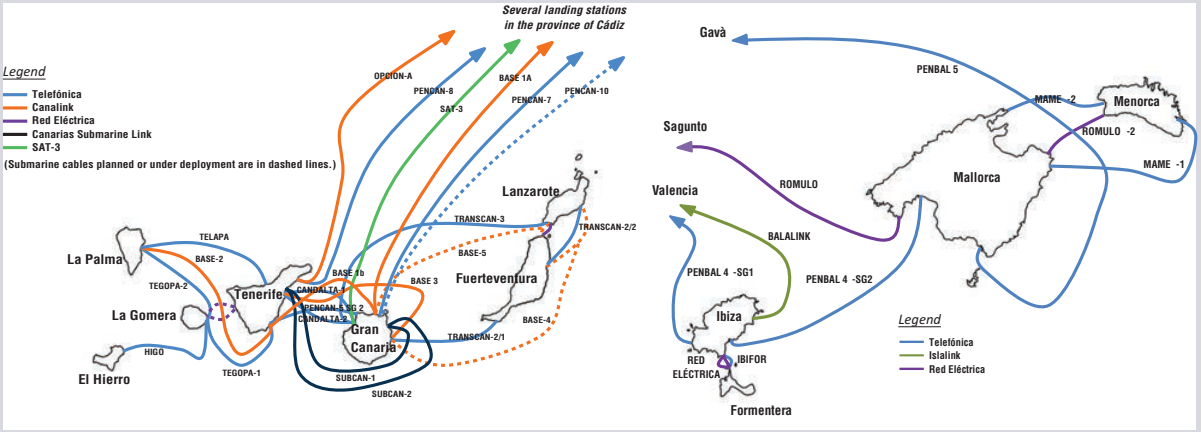
In Spain, domestic submarine cables are essential for connecting non-peninsular territories without terrestrial links to the mainland. They support all communications services, including fixed and mobile broadband and business connectivity. This makes their reliability a key concern for public authorities seeking to ensure access to digital services comparable to the rest of the country.

In July 2025, the Spanish communication regulator, CNMC, published a report on connectivity and competition in the Balearic and Canary Islands, as well as in Ceuta and Melilla, which together account for around 7.5% of the country's population. It analyses submarine cable network topology, stakeholders, competition among operators, network resilience and infrastructure age, alongside fibre-to-the-home availability, 5G deployment and market shares in fixed and mobile markets.

Overall, the largest islands, as well as Ceuta and Melilla, exhibit high levels of connectivity and service availability. Conversely, smaller islands show more limited coverage, broadly comparable to rural mainland areas. A previous CNMC report had identified a resilience gap in El Hierro, which relied on a single submarine cable. This gap is now being addressed through planned deployments that will provide additional redundancy (Figure 2.14).

Box 2.2. Case study: Domestic submarine cables in Spain *(cont.)*

Figure 2.14. Submarine connectivity in the Balearic and Canarian archipelagos



Source: CNMC (2025[37]), *Informe sobre la conectividad nacional y situación competitiva de redes y servicios de comunicaciones electrónicas en territorios extra-peninsulares [Report on national connectivity and competitive situation of network and services in non-peninsular territories]*, *https://www.cnmc.es/prensa/conectividad-cables-submarinos-20250811*.

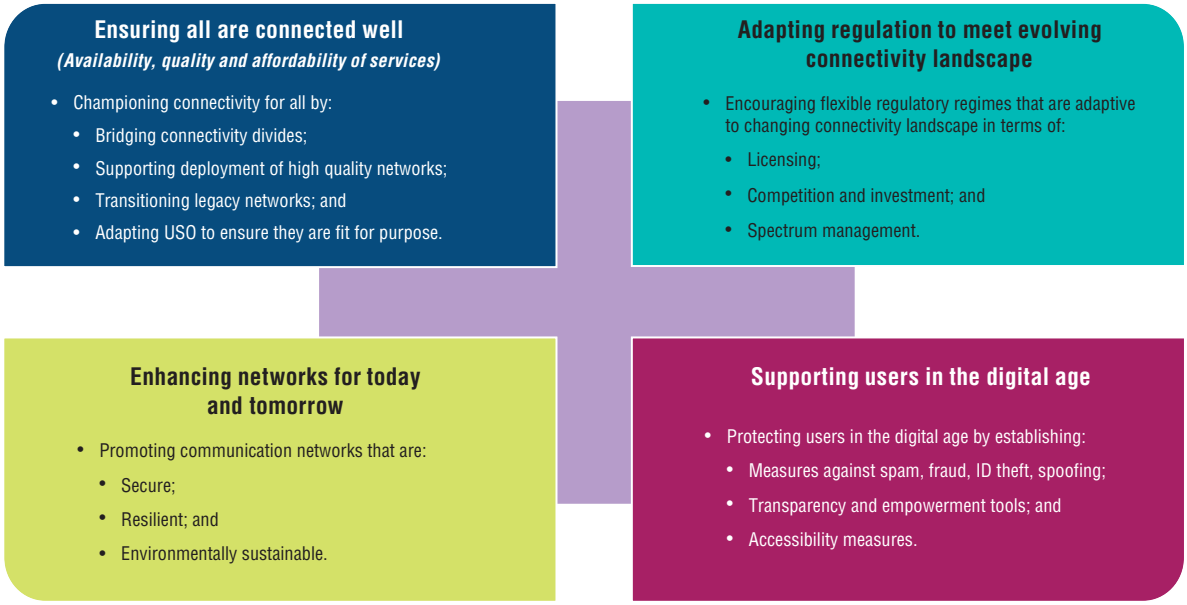
Regional and international bodies are considering operational and regulatory challenges beyond national borders. On a regional level, the European Commission issued both a recommendation and the "European Union (EU) Action Plan on Cable Security", which aim to improve the security and resilience of submarine cable systems (European Commission, 2024[38]; European Commission, 2025[39]). The Body of European Regulators for Electronic Communications (BEREC) issued reports taking stock at the European level in 2024 and 2025 (BEREC, 2024[40]; BEREC, 2025[33]). For its part, the Francophone Network of Telecommunications Regulators held a technical seminar with regulators from 15 jurisdictions to exchange experiences on the regulatory challenges of international connectivity, including submarine cables. The discussions highlighted the need for greater international co-ordination on governance, operational resilience and harmonised frameworks to support secure, competitive and sustainable cross-border infrastructure deployment (FRATEL, 2025[41]).

Internationally, the International Telecommunication Union, together with the International Cable Protection Committee, established the "International advisory body for submarine cable resilience" to improve resilience and facilitate international dialogue and collaboration (ITU, 2024[42]). On the occasion of the 79th annual United Nations General Assembly, several countries including Australia, Canada, Finland, France, Japan, Korea, New Zealand, the Netherlands, the United Kingdom and the United States, issued a Joint Statement on the Security and Resilience of Undersea Cables in a Globally Digitalized World. They endorsed several principles that recognise the importance of advancing co-operation to promote the reliability, integrity, security and availability of infrastructure that supports the global community (Department of State, 2024[43]).

Main trends in connectivity policy and regulation

The demands on networks stemming from the challenges of digital transformation underline the importance of communication policy and regulation. Communication regulators continue to report key aims such as closing connectivity divides, easing network deployment, promoting competition, protecting and empowering consumers, and enhancing the security and resilience of communication networks. These priorities also acknowledge the need for policy and regulation to respond to changes in the communication ecosystem (Figure 2.15). Some of these priorities, such as competition concerns and the need for regulation to adapt to technological advancements from terrestrial and non-terrestrial networks, will be addressed more fully in future reports (OECD, forthcoming[12]; OECD, forthcoming[44]).

Figure 2.15. Top challenges facing communication regulation and policy in the next three to five years



Note: USO = Universal Service Obligation. This diagram is for illustrative purposes only. It is not intended to be exhaustive, nor fully comprehensive, of all regulatory priorities in the area of connectivity as reported by OECD Member countries.

Source: OECD elaboration based on the CSI 2025 Regulatory Questionnaire responses.

Communication policy and regulation are shifting to face a new connectivity landscape

Several elements of the connectivity landscape are changing, in terms of players, business models, services and technologies. Apart from communication operators, emerging players – such as large technology companies, financial assets managers and tower companies – are taking a prominent role. They have become important investors in communication infrastructure, along with the public sector (OECD, 2024[14]). Shifts in user behaviour towards greater use of over-the-top (OTT) voice and messaging services have, in turn, tailored service offers and shaped how operators monetise value. Satellite technology has evolved to enable new capacities and services, such as direct-to-device communications and greater interoperability between terrestrial and non-terrestrial networks (OECD, forthcoming[12]). Communication networks are building on technological advances in cloud, virtualisation and AI, changing how networks are managed and operated. Meanwhile, technical standards are developing towards 5G-Advanced and 6G.

Regulatory regimes are adapting to meet the demands of the evolving connectivity landscape. Some OECD Member countries are reforming regulatory frameworks and legislation governing the communication sector. Others have enacted structural changes in agencies responsible for communication topics. These changes are discussed in detail below.

Some OECD Members have enacted structural changes in communication legislation

Broad shifts in legislation governing the communication sector are under discussion in the European Union. These include the review of the EU Electronic Communications Code (EECC) and the proposed legislative initiative, the Digital Networks Act (DNA) published by the European Commission in January 2026 (European Commission, 2026[45]). In June 2025, the European Commission launched a "Call for Evidence" to inform the design and drafting of the DNA (European Commission, 2026[45]). The proposal outlines five core topics for the DNA: regulatory simplification, spectrum, a "level playing field", access regulation and governance (European Commission, 2026[45]). Under the objective of simplification, one policy option is to merge related legal instruments, such as the EECC, into the DNA (European Commission, 2026[45]). While the DNA still needs approval by Parliament and the European Union Council, it will undoubtedly spark changes in communication legislation for the 22 OECD Member countries that are also members of the European Union. Indeed, the topics within the proposal, like regulatory simplification, competition and spectrum, resonate around the OECD as communication regulators grapple with changes in technology and the market.

Other OECD Member countries are similarly enacting changes to ensure broader communication legislation is better suited to market realities. For example, Chile is discussing modernisation of its National Telecommunication Law to provide a regulatory framework that can adapt quickly to the fast-changing communication sector. In the United States, the FCC's "Delete, Delete, Delete" proceeding aims to reduce or repeal outdated or obsolete regulation (FCC, 2025[46]). Indeed, the FCC has already taken swift action in this regard (FCC, 2025[47]; FCC, 2025[48]).

Market structure changes have motivated some countries to discuss revisions related to digital platforms and OTT regulation, in response to their prevalence in the connectivity ecosystem. The widespread adoption of OTT services places them among the most used digital services and applications by end users around the OECD. The OTT ecosystem encompasses a wide range of services: instant messaging applications, video-on-demand platforms, live and on-demand streaming services, social networks and audio, such as voice-over-Internet Protocol (VoIP) and music streaming offerings. Importantly, popular OTT services drive demand for high-quality connectivity capable of supporting them.

Approximately half of respondent countries have regulations for OTT services, with some countries focusing only on VoIP or audio-visual content/services, and others having regulations covering both. Brazil is considering revisions to both OTT services and the competition framework, which may lead to changes in network interconnection, wholesale access and OTT regulation. Türkiye has amended its Electronic Communications Law No. 5 809 to authorise "OTT-1 type providers" and is defining the criteria for which providers would fall into the category. In Italy, AGCOM recently completed a market analysis of existing *ex ante* regulation on mobile termination services. The authority had concluded that OTT-VoIP services have been significantly increased and exert increasing competitive pressure on traditional voice calls (without declaring full substitutability). This analysis contributed to the withdrawal of *ex ante* regulation on mobile voice termination services in Italy.

Some countries are changing their licensing frameworks to make them more flexible and adaptive to the market. For example, Israel is transitioning to a more flexible notification and general authorisation regime. For its part, Chile is considering a general authorisation framework for telecommunication services in its Telecommunication Law.

Other OECD Member countries have restructured how communication topics are handled within the government. In Denmark, communication policy is now hosted at the Agency for Digital Government, while Hungary has transferred these topics to the Ministry of Energy. Germany established a new Federal Ministry for Digital Transformation and Government Modernisation which, among other responsibilities, manages digital policy and digital infrastructures. The Swedish government is seeking to merge two bodies into one by the end of 2027: the Swedish Post and Telecom Authority and the Swedish Agency for Digital Government (Government of Sweden, 2024[49]).

Perhaps the greatest change in regulatory structure among OECD Member countries since 2023 occurred in Mexico. A Constitutional amendment dissolved the independent communication regulator, the Federal Telecommunications Institute. Its functions were transferred to the Telecommunications Regulatory Commission (CRT), under the federal executive branch. The Mexican President will appoint members to the CRT, upon Senate confirmation by simple majority. This move rolls back the creation of an independent regulator in 2013 as part of reforms that implemented 28 of 31 OECD recommendations to enhance competition in Mexico's communication market (OECD, 2012[50]; OECD, 2017[51]). The independence of the regulatory authority with an arm's length from policy formulation is part of the best practices outlined in the *Recommendation of the Council on Broadband Connectivity* (OECD, 2021[52]).

The mandate of communication regulators is evolving

Around two-thirds of OECD Member countries and accession countries reported changes in the responsibilities of the national communication regulatory authority since 2023. Many reported changes due to the transposition of EU regulation and directives into national legislation, which affects 22 OECD Member countries. In many cases, the communication regulator in EU countries was designated (or is expected) to enforce European legislation. These may include the Digital Services Act [Regulation (EU) 2022/2065], the Digital Markets Act [Regulation (EU) 2022/1925], the P2B Regulation [Regulation (EU) 2019/1150], the Data Governance Act [Regulation (EU) 2022/868], the Data Act [Regulation (EU) 2023/2854], the Terrorist Content Online Act [Regulation (EU) 2021/784], the AI Act [Regulation (EU) 2024/1689], the Accessibility Act [Directive (EU) 2019/882], the NIS2 Directive [Directive (EU) 2022/2555] and the Directive on the resilience of critical entities (CER Directive) [Directive (EU) 2022/2557].

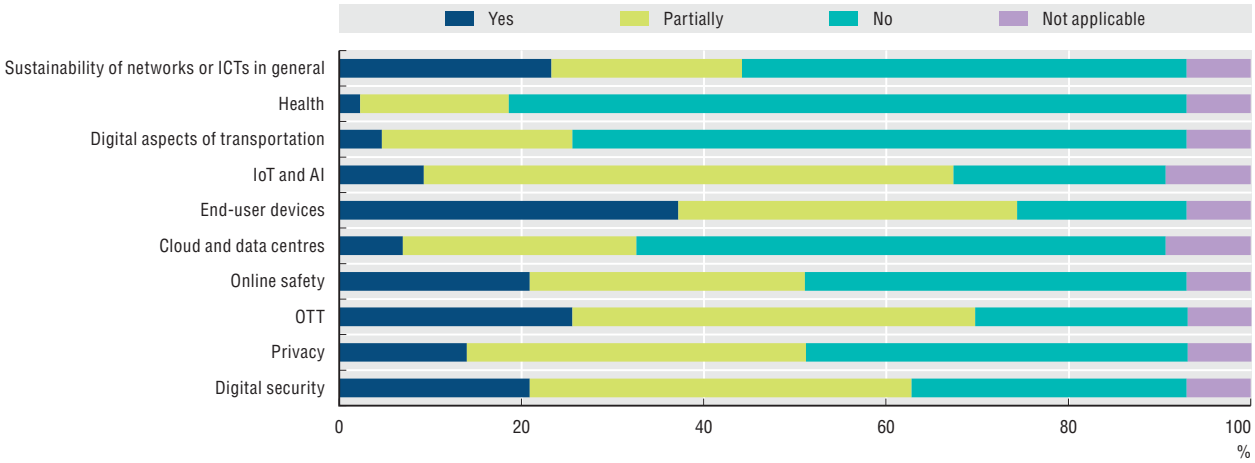
Eighteen countries reported changes, or expected forthcoming changes, in the role of the communication regulator, stemming from implementation of EU regulation:

- Belgium, Bulgaria, Croatia, Czechia, Finland, Germany, Greece, Hungary, Italy, Lithuania, the Netherlands, Norway, Portugal, Romania and Sweden under the Digital Services Act;
- Ireland, Lithuania, Norway, Portugal and the Slovak Republic from implementation of the AI Act;
- France, Finland, Ireland, the Netherlands, Portugal and Sweden from the Data Governance Act and/or the Data Act;
- Czechia, Germany, Hungary, Italy, the Netherlands and Portugal under the P2B Regulation;
- Ireland and Croatia under the NIS2 Directive and/or CER Directive; and
- Ireland, Hungary and Sweden for the Accessibility Act.

Overall, communication regulators around the OECD and select accession candidate countries[22] often have a mandate that extends to broader digital issues. The most common mandate reported was on end-user devices (74.4%), followed closely by OTT services (69.8%), IoT and AI (67.4%) and digital security (62.8%) (Figure 2.16).[23]

Figure 2.16. More than half of regulators have at least a partial mandate on six of ten digital issues

Mandate of communication regulators by topic in OECD Member countries and selected partner economies, 2025



Notes: Data refer to 38 OECD Member countries, Brazil, Bulgaria, Croatia, Peru and Romania. See also endnote 23.

Source: OECD based on CSI 2025 Regulatory Questionnaire responses.

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Over half of respondents reported having at least a partial mandate on online safety. Among these, many competences were linked to new responsibilities to enforce the EU Digital Services Act (DSA) as a digital service co-ordinator (as noted above), while some noted certain responsibilities under the Terrorist Content Online Act. Several communication regulators outside of Europe are also considering online safety, including Brazil, Chile, Japan, Korea, Israel, Türkiye and the United Kingdom. This shows the growing importance of the topic for communication regulation.

Other changes since 2023 include a widening of responsibilities on digital security for Costa Rica and Croatia. However, Türkiye and the Slovak Republic reported these activities were transferred from the communication regulator's responsibility to other bodies. In Canada and the United Kingdom, communication regulators gained new competences on online streaming services. In Italy, the communication regulator's scope expanded to include powers to counter online piracy during live events.[24] France gained certain competences related to cloud services, through a national law implementing the DSA, the Digital Markets Act and the Data Governance Act (Government of France, 2024[53]).

Some of these new mandates have spurred organisational changes within the regulator. For example, in Germany, the European regulation (e.g. Digital Markets Act, DSA, the Data Act, the AI Act) have spurred the creation of a new department within the communication regulator, *Bundesnetzagentur* (BNetzA). The department has several units for technological developments such as AI, and new digital business models and services, and their supervision, as well as digitalisation from the perspective of small and medium-sized enterprises and sustainability. In Portugal, the Secretary of State for Digitalisation announced on 19 September 2025 that the country's communication regulator, ANACOM, will supervise the European AI regulation (i.e. the "AI Act"). In Austria, the Regulatory Authority for Broadcasting and

Telecommunications set up a Service Desk for AI, which serves as an information hub for the public and supports implementation of the AI Act. In Switzerland, the communications regulator, OFCOM, has created two new organisational units related to digital security. The first unit deals with the security of communication networks and services, while the second one considers the security of terminal devices.

Some OECD Member countries have rolled back wholesale access and network interconnection regulation

With the fast-paced changes in the connectivity ecosystem affecting market structures in the communication sector, regulators are facing new questions on how best to approach *ex ante* regulation, including the possible deregulation of certain markets. This has provoked several changes related to competition, with implications on wholesale access regulation and network interconnection. Current regulatory frameworks across the OECD aim to progressively shift from *ex ante* regulatory obligations to *ex post* competition law. This can be seen in some recent decisions from OECD Member countries and accession candidate countries that are also EU members. Of the respondent countries, 21 reported changes since 2023, or ongoing market analyses in wholesale access regulation, with 13 reporting updates related to network interconnection.

In recent years, several OECD Member countries have deregulated wholesale access in certain markets or in certain geographical areas or have adopted a lighter approach. Examples include Czechia, France, Italy, Korea, Latvia, Slovenia, Spain, Sweden, Bulgaria and Croatia. This is primarily in wholesale access provided at a fixed location, which includes deregulation of wholesale broadband access for copper and FTTN local loops.[25]

Updates on network interconnection similarly reported cases of deregulation of certain markets, such as wholesale call termination on mobile networks, or at fixed locations, affecting countries such as Czechia, Germany, Italy, Spain and Croatia. More broadly, through a 2023 revision of Korea's Telecommunications Business Act, the regulation on wholesale access fees has shifted from an *ex ante* to an *ex post* regulatory regime, intervening only in cases where wholesale agreements are deemed unfair or unreasonable.

As competition progresses – a main objective for communication regulators – *ex ante* asymmetric regulation applied to players with significant market power (SMP) tends to relax, shifting to *ex post* supervision and enforcement. Improved competitive dynamics in the communication sector in some countries leads to deregulation. Decades ago in the European Union, for example, 18 communication markets were regulated *ex ante* under the SMP regime. Today, only two wholesale markets remain: i) wholesale local access provided at a fixed location (e.g. copper, cable or fibre loops in the last mile) and ii) wholesale dedicated capacity (e.g. leased lines, dark fibre, etc.) (European Commission, 2020[54]).

The European Commission, alongside development of the DNA, launched a consultation in June 2025 to review the Recommendation on relevant markets [Recommendation (EU) 2020/2245] in the electronic communications sector (European Commission, 2025[55]).[26] BEREC has also provided input in September 2025 to inform the European Commission's review (BEREC, 2025[56]). As *ex ante* asymmetric regulation applied to SMP players tends to relax in certain cases as detailed above, the DNA proposal preserves the ability of national regulators to impose wholesale access obligations, which is key in some countries (European Commission, 2026[57]).

However, OECD communication markets are at different stages of development with varying levels of competitions. As such, other OECD Member countries have maintained or applied wholesale access regulation. For example, Portugal imposed several wholesale access obligations on the companies of Altice Portugal to promote competition, specifically to its fibre network (ANACOM, 2024[58]). In Canada, the largest telephone companies must provide competitors with workable wholesale access to their fibre networks. Israel applied wholesale obligations over very high-speed networks. Even in mature markets with high deployment rates of future-proof networks (e.g. France and Spain), while the *ex ante* asymmetric regulation applied to incumbent operators is shifting, wholesale access regulation applied in a symmetric way (e.g. access to passive infrastructure, in-building wiring regulation) may continue to be necessary to ensure effective competition (Arcep, 2025[59]; Plum Consulting, 2025[60]).

Communication regulators are supporting users in the digital age

As users spend more time online, a continuing priority for communication regulators is consumer protection. Indeed, several countries indicated protecting consumers as a key challenge in the coming three to five years. For example, preventing digital fraud is highlighted as a key tenet of Denmark's June 2025 political agreement on communication topics (DIGST, 2025[61]). Strengthening consumer protection is also highlighted under one of the key pillars of Colombia's Regulatory Agenda for 2025-26 (CRC, 2024[62]). To this end, many OECD Member countries have taken action against fraudulent calls and text messages, identity theft, and other scams, spoofing and telemarketing calls (Austria, Italy, Japan, Lithuania, the Netherlands, Spain, the United Kingdom and the United States).

Some countries are seeking to empower users when contracting broadband services through more transparent information, such as in Canada, Luxembourg, the Slovak Republic, Türkiye and the United Kingdom. Further, Türkiye and the United Kingdom established measures to protect consumers during periods of high or uncertain inflation. BTK, Türkiye's communication regulator, investigated contracts with defined commitment periods and found some to be unfair with respect to the terms for inflation-linked price increases. Further, BTK required any future price increases to be explicitly stated in the contract. Similarly, Ofcom in the United Kingdom established rules requiring communication service providers to clearly state when any increase in price will occur, and the exact amount, at the point of sale (Ofcom, 2025[63]). Portugal put in place measures to avoid automatic activation of additional communication services without prior consent of the end user (ANACOM, 2024[64]).

Other countries are aiming to improve accessibility. Hungary, Ireland, Portugal, the Slovak Republic and Sweden have put in place or have planned measures to ensure the accessibility of digital services. Colombia issued regulation modifying provisions for hearing-impaired individuals to content transmitted through public television service (e.g. closed captioning, Colombian Sign Language interpretation and subtitling) (Comisión de Regulación de Comunicaciones (CRC), 2023[65]). For OECD Member countries also part of the European Union, some of these examples relate to national transposition of requirements laid out in the EU Accessibility Directive (EU) 2019/882 (European Union, 2019[66]). Broadly, protecting users may fall under online safety mandates; Poland enacted the Act on Combatting Abuse in Electronic Communications, which obliges electronic communication companies to protect end users against abuse (Government of Poland, 2023[67]).

Some countries have also pointed to emerging issues related to the evolution of mobile networks, notably the introduction of 5G network slicing. To date, slicing has generally been considered a form of specialised service and therefore compatible with existing net-neutrality frameworks. However, concerns may arise if such slices, particularly those serving industrial applications, come to account for a significant share of overall traffic (OECD, 2019[68]). In this context, countries such as Italy have highlighted the need to monitor potential implications for competition and net neutrality. For its part, BEREC recently launched a consultation on the issue to provide further guidance to European communication regulators (BEREC, 2026[69]).

Policies to bridge connectivity divides and transition to future-proof networks

For policy action to bridge connectivity divides, a sound institutional and regulatory framework that promotes competition and investment is a critical foundation (OECD, 2025[17]). Other important overarching policies include reducing entry barriers, facilitating infrastructure deployment and managing spectrum efficiently (OECD, 2025[17]). Public-private partnerships, community-led approaches and direct public funding programmes can also help bridge connectivity divides (OECD, 2025[17]). For example, public funding, or "state aid" granted to support fixed broadband deployment in rural and remote areas where it is commercially challenging to expand infrastructure, has gained prominence across OECD Member countries, especially after the COVID-19 pandemic.[27]

Ensuring that all in society are connected "well" remains a central goal for communication regulators around the OECD, as well as for accession candidate countries, that are included in the questionnaire. Of these, 90% of respondent OECD Member countries and partner economies have national goals to improve the quality and coverage of fixed and mobile broadband.

Common mobile broadband targets include 100% 5G network coverage of the population. Brazil has further specified a target to increase population coverage of SA-5G networks to 57.67% by 2027 (Anatel, 2022[70]). On the fixed side, targets are more likely to include speed (e.g. full household coverage with 1 Gbps download speeds by 2030 or interim goals of 100 Mbps by 2027).

Several plans include fibre-specific goals. Japan has a goal of 99.9% households having access to fibre by 2027, while countries like Iceland are focusing on fibre deployment to underserved areas. Other plans align with the high-level targets of the EU Digital Decade to cover all populated areas with 5G and ensure full household coverage of a Gigabit network by 2030 (European Commission, 2024[71]). The EU Gigabit Infrastructure Act seeks to support these goals by addressing hurdles for network deployment for quicker rollout of Gigabit networks, at a lower cost (European Union, 2024[72]).

The United States is considering changes to its broadband goals. The FCC launched its annual Notice of Inquiry that seeks public comment on the state of broadband deployment and availability in the country. The Notice of Inquiry also sought comment on whether the FCC should continue using 100/20 Mbps as its benchmark in defining advanced telecommunications capability for fixed broadband and "abolish the long-term goal of 1 000/500 Mbps" with the aim of promoting technological neutrality (FCC, 2025[73]).

Universal service to promote network coverage and deployment

To support overarching broadband goals, roughly 80% of OECD Member countries and accession candidate countries have policies to promote high-capacity broadband deployment or programmes to reduce spatial connectivity divides, or usage or skills gaps. Around half consider Internet as a basic right, with most (35 of 41) including broadband as part of the universal service framework. Of those 35, 29 respondent countries have set a minimum speed for "basic" broadband services. However, these basic services vary widely – from under 5 Mbps to 50 Mbps download speeds as the speed set in Canada for a basic service objective.

Within the context of the universal service framework, 15 respondent countries reported having a Universal Service Fund (USF) to help extend communication services throughout the country. Over two-thirds of USFs are funded through an industry levy. Some USFs, such as in Canada, New Zealand and Spain, set a revenue threshold over which operators must contribute to the fund. Other funds are financed through a combination of industry levies and government funds (e.g. Australia and Colombia).

Some countries have considered changes to their universal service frameworks to ensure they are fit for purpose. Chile recently passed a law classifying Internet services as a "public telecommunication service", thereby increasing coverage and quality-of-service obligations of ISPs (Government of Chile, 2024[74]). It also amends the Telecommunication Development Fund to allow provision of both demand-side and supply-side subsidies (Government of Chile, 2024[74]). For its part, Japan, is considering amendments to the Telecommunications Business Act. These include possible revisions to oblige operators to co-operate to ensure telephone and broadband services are available throughout the country and to introduce certain privileges to telecommunication infrastructure-sharing companies.

Given changes in industry structure, customer demand and technology, some OECD Member countries are debating the modernisation of their universal service frameworks. Australia's Ministry of Communications has consulted on options for delivery and funding of the USF and will consider possible regulatory and policy changes in the next few years (Australian Government, 2024[75]). Members of the United States' Congress recently reinstated a working group, originally formed in 2023, to evaluate possible reforms to the USF (Fischer, 2025[76]). This coincided with recent Supreme Court rulings that preserved the universal service contribution programme (Supreme Court of the United States, 2025[77]). This upheld the FCC's authority to set the fees that fund USF and delegate authority to the Universal Service Administrative Company to administer the USF. Canada is reviewing its Broadband Fund in three phases with the first phase focussed on streamlining the process to fund capital projects. Future phases will consider projects that improve network resiliency and evaluate funding gaps, including for operational costs (Canadian Radio-television and Telecommunications Commission (CRTC), 2024[78]).

Transitioning from legacy communication networks

Retiring legacy networks such as 2G and 3G (mobile) and copper-based (fixed) infrastructures can help the transition to high-capacity technologies like fibre and 5G. This transition can benefit users by improving the quality and experience of services. It can also benefit operators by improving profitability and reducing operational costs. While the operators undertake the main initiatives themselves, regulators play a critical role in ensuring this transition is widespread, competitive and user friendly (OECD, 2024[7]).

Most respondent countries (37 of 41) reported plans to close legacy networks, with some noting milestones for 2025 or 2030 and others mentioning completed shutdowns. In 30 of 37 countries with reported plans, the plans concerned the closing down of mobile networks (e.g. 2G or 3G networks). In 19 countries, the plans related to the transition from copper fixed networks to future-proof technologies, such as fibre, or the switch-off of public switched telephone networks. In many countries, operators lead and determine the timeline based on business and technical considerations, with no specific regulatory timeline mandated to switch off legacy networks.

Approaches vary across countries, but the objectives can be categorised into safeguarding service continuation, keeping users well informed and maintaining competition during the transition. Some countries require operators to notify customers of plans to shut down legacy networks (e.g. Costa Rica, France, Japan and Spain). Others only allow migration in areas where alternative technologies exist (e.g. New Zealand and Slovenia). Still others put in place certain migration timelines to ensure a smooth transition (e.g. Czechia, Finland, France and Norway).

With respect to the shutdown of legacy mobile networks, many respondent countries noted the full or partial shutdown of 3G networks, which often occurs before 2G. In many countries, 2G serves as a fall-back network for voice if 4G/5G is unavailable and provides connectivity for some IoT devices. However, some countries noted plans to close 2G networks

in the coming years, with a few noting completed switch-offs (Belgium, Chile, Colombia, Costa Rica, France, Germany, Hungary, Iceland, Korea, Norway, the Slovak Republic, Sweden and Switzerland). Given 2G networks' importance for service continuity, Czechia, Finland and Norway put in place timelines for the transition. For its part, Italy requires 2G phase-out plans to be authorised to comply with consumer protection regulation. To encourage the move towards 4G and 5G, Brazil requires that only devices supporting 4G or higher standards can be certified for use in mobile networks.

Around half of respondent countries noted plans to close legacy fixed networks, including fixed copper networks and public switched telephone networks. For example, Spain's copper network was completely phased out in May 2025. As legacy networks have been fundamental in providing communication services, some OECD Member countries and partner economies have put in place regulatory measures to plan the transition. For instance, New Zealand's Copper Withdrawal Code and Slovenia's framework require that copper only be withdrawn where fibre is already available. France imposed measures on the incumbent to uphold competition, including transparency measures regarding its copper network shutoff plans. Ireland requires that the incumbent network's switch-off plan receive regulatory approval, whereas Luxembourg oversees the phase-out process and works with operators on their plans to close fixed copper networks.

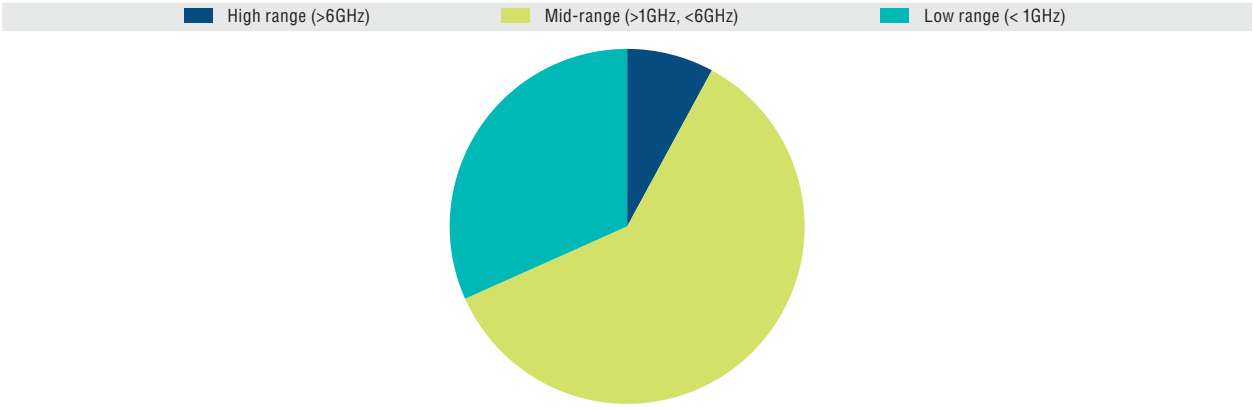
Spectrum management

Spectrum is a scarce resource that expands overall economic and social welfare. Its efficient use is therefore essential, and its management is crucial to balance the demands of a wide variety of actors to support various wireless use cases. Spectrum management is a key policy tool for promoting investment and fair market competition, and bridging connectivity gaps (OECD, 2022[79]).

Since 2023, 31 spectrum assignments were concluded for mobile services across multiple bands, of which over 77% were conducted via auctions in 18 OECD Member countries and accession candidate countries. Mid-band spectrum (i.e. above 1 GHz and below the 6 GHz band) was the most commonly assigned frequency range, representing 60.5% of assignments. Eight countries assigned spectrum in low bands (below 1 GHz), mostly by auction. Another three countries assigned high-band spectrum (i.e. millimetre wave spectrum), two out of the three by auction (Figure 2.17).

Figure 2.17. Mid-band spectrum has been the most commonly assigned spectrum since 2023

Spectrum assignments for mobile services assigned since 2023 in OECD Member countries and partner economies



Note: A total of 31 spectrum assignments for mobile services were assigned during 2023-2025, in some cases in a multi-band setting.

Source: OECD elaboration based on CSI 2025 Regulatory Questionnaire responses.

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To foster competition and address connectivity gaps, some regulatory authorities design auctions to reserve spectrum for new entrants, apply spectrum caps or impose coverage obligations on winning bidders (OECD, 2022[79]). Of the 24 assignments auctioned since 2023, none had blocks reserved for entrants, and both spectrum caps and coverage obligations were commonly used in 87.5% of auctions. Coverage obligations were included in all auctions of low-band spectrum. These obligations may focus on rural areas, schools or main transport ways, such as in Colombia (Ministry of Information Technologies and Communications (Colombia), 2023[80]). Conversely, they may establish broad coverage targets of the territory, along with targeted requirements for transport links, such as in Poland (Office of Electronic Communications, 2023[81]).

Such obligations can greatly stimulate deployment. Brazil's 5G auction, held in 2021, included several coverage obligations, which have contributed to increase 5G deployment and coverage (Anatel, 2021[82]). Since the auction, Brazil has reported impressive 5G mobile speeds. In Q2 2025, Brazil's 5G download speeds were second only to Korea at 345.0 Mbps, according to Opensignal data (see Figure 2.7). And at the end of 2025, its 5G coverage of the population was 77.9% (below the OECD average of 89.8%) according to GSMA Intelligence data (see Figure 2.3).

Some countries have amended their licensing regimes to make spectrum management frameworks more flexible and promote more efficient use of spectrum. For example, Spain's General Telecommunications Act, approved in 2022, allows for the extension of spectrum licences granted by up to 10 years, if the total licence duration does not exceed 40 years. To promote spectrum trading, Chile is drafting a bill to establish a regulated secondary spectrum market under planned revisions to the National Telecommunication Law.

Looking forward, roughly two-thirds of respondent countries reported plans to assign spectrum in the next few years, often in a multi-band process, with mid-band spectrum being the most common spectrum range. In October 2025, Türkiye completed the auction for 400 MHz in the 700 MHz and 3.5 GHz bands (Government of Türkiye, 2025[83]; Ministry of Transport and Infrastructure (Türkiye), 2025[84]). The auction in Türkiye marks an important milestone for the country to support 5G deployment, with expected commercial launch in Q2 2026. Nine countries reported possible mmWave band assignments, including Japan, which is considering an auction of mmWave spectrum for high-density areas in 2026, marking a shift from its historical practice assigning spectrum through administrative selection procedures (i.e. "beauty contests"). Some planned assignments for mid- and high-band spectrum are intended to support local and regional licences (Australia, Canada, Slovenia and the United Kingdom).

Other countries are adapting spectrum management frameworks to meet the changing circumstances of the market, especially spectrum for satellite services. More details on spectrum management for satellite services can be found in OECD (forthcoming[12]). Canada published a framework for supplemental mobile coverage by satellite providers in February 2025, which considered direct-to-device supplemental coverage to terrestrial networks (Government of Canada, 2025[85]). Australia launched a consultation in July 2025 to replan the 2 GHz band for mobile satellite service (MSS). This aimed to support supplemental mobile satellite coverage and narrowband MSS, such as to support messaging and low-data services (e.g. satellite IoT) (ACMA, 2025[86]).

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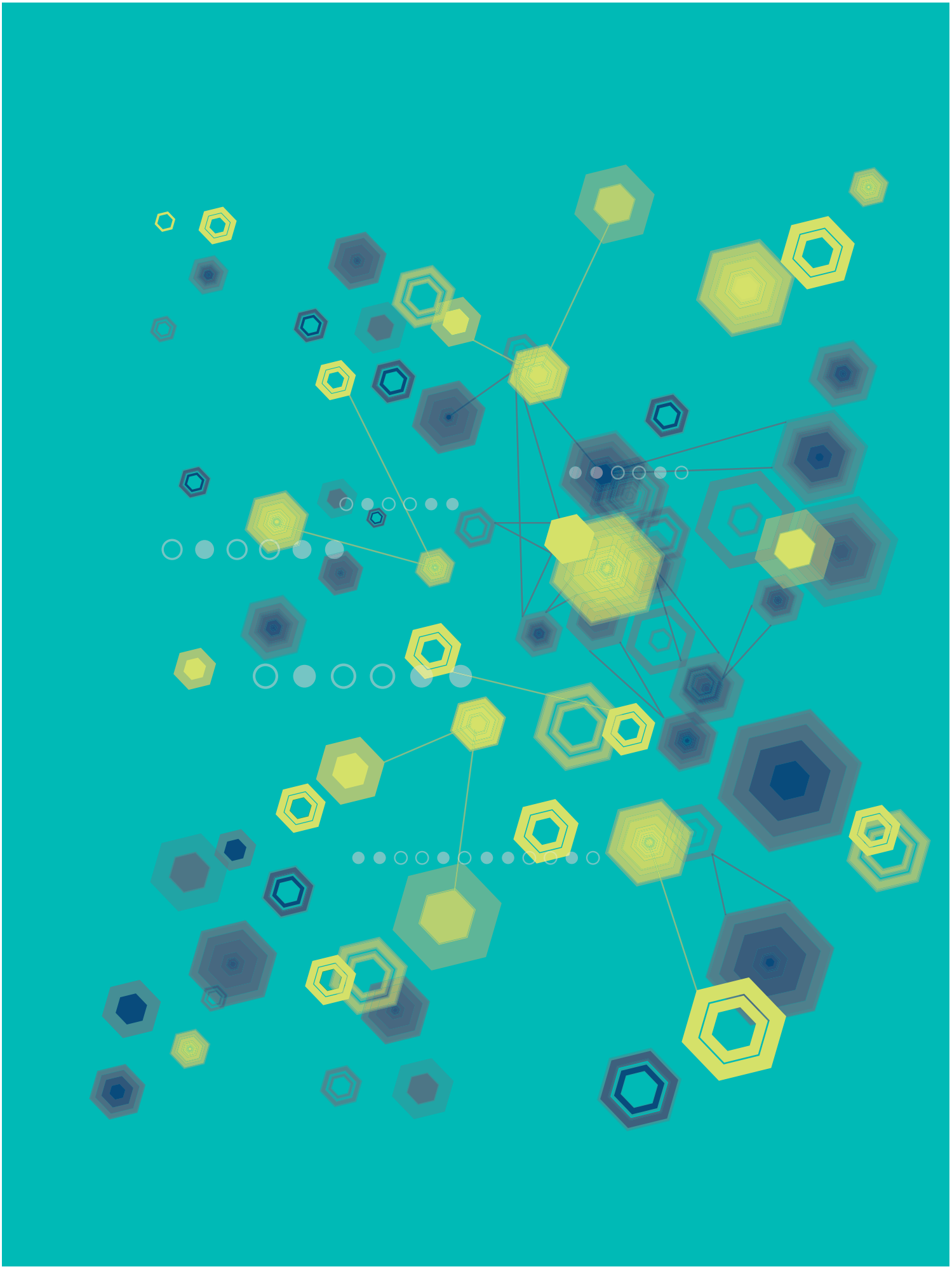
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Notes

1. Data are not available for the following countries: Australia and Israel (for years before 2024), New Zealand, Türkiye and the United Kingdom.
2. This comprises mobile voice and data plans that include unlimited data from Q2 2025. The OECD Member countries with such plans are Austria, Colombia, Costa Rica, Czechia, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Korea, Latvia, Lithuania, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States (OECD, 2025[2]).
3. In Q4 2019, 14 OECD Member countries reported 5G coverage on GSMA Intelligence database.
4. Of the 73 operators, two have only "soft-launched" their 5G SA networks as of Q1 2025 (GSA, 2025[9]).
5. 5G-Advanced is based on 3rd Generation Partnership Project (3GPP) Releases 18, 19 and 20 (3GPP, 2025[92]; 3GPP, 2025[93]; 3GPP, 2025[94]).
6. 3GPP Release 17 was the first to introduce normative specifications for Non-Terrestrial Networks (3GPP, 2024[91]).
7. Earnings before interest, taxes, depreciation and amortisation (EBITDA) is an indicator of a company's financial performance in operations. However, it does not consider the cost of debt and depreciation, which are substantial for capital-intensive operators. EBITDA as a proportion of revenues or sales is referred to as the EBITDA margin. This measure can give a sense of how a business's operations are performing.
8. Ookla leverages data from its consumer-initiated Speedtest quality of service (QoS) tests and its consumer quality of experience (QoE) data, based on samples from a range of applications. As described in OECD (2025[17]): "The consumer-initiated tests are directed to Ookla's 'dedicated test servers', which are distributed all over the world and hosted in numerous different Internet points. This is a multi-server QoS test designed to run in the foreground (via applications of websites), maximising the full bandwidth of four test servers. As such, it is a QoS test measuring the sustained peak throughput achievable on the access network by users. The consumer QoE datasets are focussed on coverage, video capabilities and file transfer to content delivery networks and cloud hosting servers. These are more representative of a user's day-to-day network experience." See Box 2.1 of OECD (2025[17]) for more information.
9. Opensignal data measure the consumer's complete experience on the network, as explained in OECD (2025[17]): "Opensignal tests are conducted from the device to common Internet endpoints, such as CDNs like Google, Akamai and Amazon. This mimics the way connections are made each day to typical websites and content, providing a view on end-to-end network experience. Opensignal's measurements provide insights on how consumers are using their digital devices (e.g. time using applications like video and games) to support network improvements. The measurements are designed to prevent operators from optimising test traffic; they are not allowed to treat the tested traffic differently, which would affect results without improving their networks (Opensignal, 2025[90]). See Box 2.1 of OECD (2025[17]) for more information.
10. For Canada, data refer to 2024. Fixed broadband coverage: For EU countries, Iceland, Norway, Switzerland and the United Kingdom, coverage of Very-High-Bit-Rate Digital Subscriber Line, fibre to the premises and DOCSIS 3.0 capable of delivering at least 100 Mbps was used. For the United States, coverage of fixed terrestrial broadband capable of delivering 100 Mbps download and 20 Mbps upload speeds was used (i.e. to match the fixed broadband definition used in the European Union, satellite offers are excluded). The United States uses the population coverage approach rather than percentage of households covered. Rural areas: For EU countries, Iceland, Norway, Switzerland and the United Kingdom, rural areas are those with a population density of less than 100 inhabitants per square kilometre. For Canada, rural areas are those with a population density of less than 400 per square kilometre. For the United States, rural areas are those with a population density of less than 1 000 per square mile or 386 people per square kilometre (United States Census Bureau).
11. This figure uses OECD territorial classifications based on administrative units (e.g. small region [TL3]). Within small regions (TL3 classification), the OECD has three main classifications: "Metropolitan regions", "Regions near a metropolitan area", and "Regions far from a metropolitan area" (see *https://doi.org/10.1787/20737009*). See Box 2.2 of OECD (2025[17]) for more information.

12. The analysis is based on a snapshot for the second quarter of 2026. While higher median fixed broadband download speeds in regions far from metropolitan areas compared to metropolitan areas are possible, they do not represent the overall trend observed throughout the OECD. For more information, see OECD (2025[17]).
13. This figure uses a territorial classification based on grids, or unit of the same size and shape, called the "degree of urbanisation" or DEGURBA classification. The grid size is uniform across countries and is 1 km^2, which includes population density thresholds (OECD, 2025[17]). See Box 2.2 of OECD (2025[17]) for more information.
14. The basket methodology consists of selecting, for every OECD Member country, the cheapest offer in the market meeting all criteria for a given user profile (i.e. low, medium, high and highest usage profiles) (OECD, 2017[21]).
15. 24 of 38 OECD Member countries provided complete answers to this question.
16. 27 of 38 OECD Member countries provided complete answers to this question.
17. There is a shorter time series available for prices of bundled communication services, compared to standalone prices, as the bundled methodology was agreed in 2020 (OECD, 2020[22]).
18. The basket methodology consists of selecting, for every OECD Member country, the cheapest offer in the market meeting all criteria for a given usage profile (i.e. low, medium, high and highest usage) (OECD, 2020[22]).
19. Definitive metrics on intercontinental satellite traffic (which is an alternative to submarine cables) are not readily available, making it difficult to fully confirm the accuracy of the figure.
20. This section draws from the outcomes of an OECD workshop held in November 2024.
21. Regarding Portugal, the imposition of regulatory obligations represents an extension of the remedies previously applied to MEO, now covering its group-affiliated firm Fibroglobal. Moreover, regulation is not limited to Fibroglobal's branches; other domestic submarine cables owned by the MEO group are also subject to these obligations.
22. Of the eight accession candidate countries to the OECD (Argentina, Brazil, Bulgaria, Croatia, Indonesia, Peru, Romania and Thailand), five were sent the CSI regulatory questionnaire, to which all responded (Brazil, Bulgaria, Croatia, Peru and Romania). Argentina, Indonesia and Thailand were not sent the questionnaire, due to their advanced position in the accession roadmap and to avoid additional burden on national administrations.
23. Some countries did not reply to this question (or to certain sub-questions) and are marked as N/A. Countries answered the following question (question 10): "Does your national regulatory authority, with responsibility for communication/telecommunication/broadcasting services have the mandate for the following areas?: Digital security, privacy, OTT services, online safety, issues related to cloud computing and data centres, issues related to end-user devices, issues in the area of the IoT and AI, issues related to the digital aspects of transportation, issues related to health, issues related to the sustainability of networks or digital technologies in general, or any other area?"
24. In Italy, an investigation in 2025 found that the general authorisation regime in Italy has to be applied to all Content Distribution Networks (CDN) providers and Content Application Providers that own, operate or control a CDN in the national territory (AGCOM, 2025[89]).
25. The Commission Recommendation (EU) 2020/2245 identified two markets in which *ex ante* regulation may still be justified, including whole local access provided at a fixed location and wholesale dedicated capacity (European Commission, 2020[54]).
26. The DNA proposal removes the requirement for the European Commission to adopt a recommendation on relevant markets.
27. For a full list of public funding to expand broadband deployment, see Annex A of OECD (2025[17]).

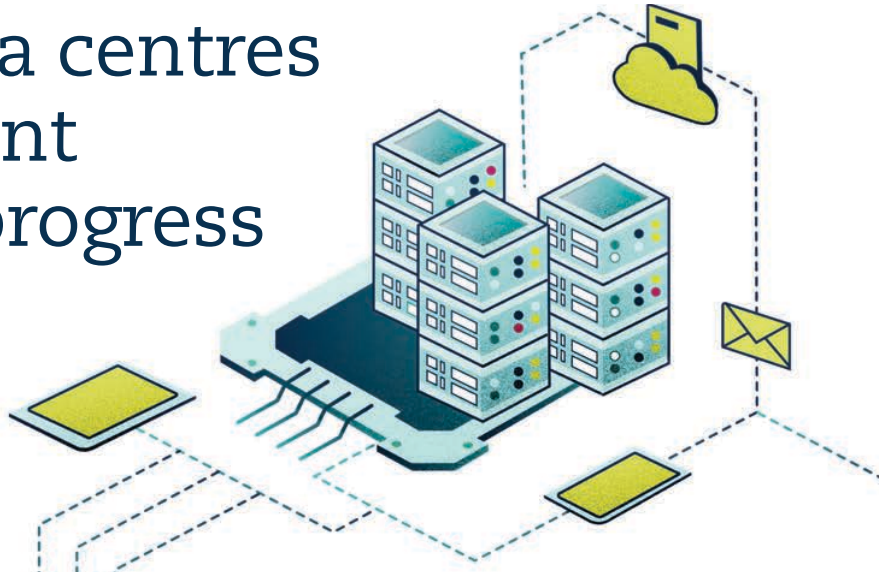


Spotlight

Powering AI progress: The future of compute

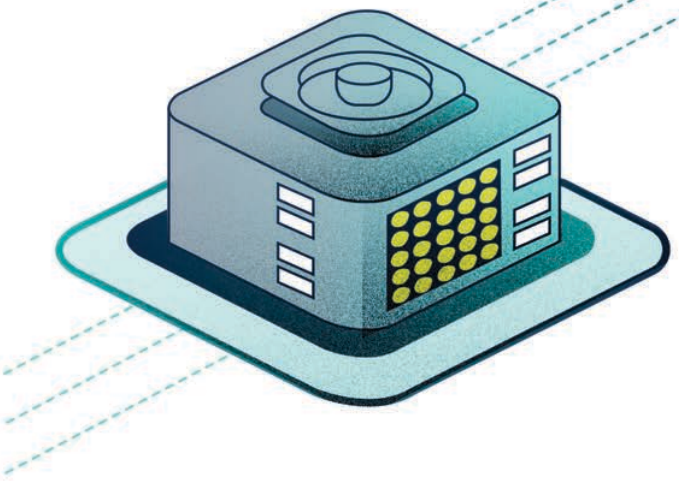
Artificial intelligence (AI) compute is critical to AI progress, influencing where and how advanced AI systems are developed and deployed. Alongside data, algorithms and skills, AI compute has emerged as a strategic asset with profound implications for innovation and competitiveness. This Spotlight examines the evolving dynamics of AI compute across three key dimensions, emphasising its role in advancing AI progress. First, it analyses the compute layers of the AI stack, exploring opportunities and bottlenecks to system-level performance – from the advent of increasingly specialised AI chips to the role of software and model design in efficient scaling. Second, it delves into the economics of AI compute, including surging investment and emerging business models such as neoclouds. Finally, it outlines policy considerations, focusing on key questions to ensure appropriate access to compute as a foundation for shared AI progress.

Compute, data centres and investment underpin AI progress



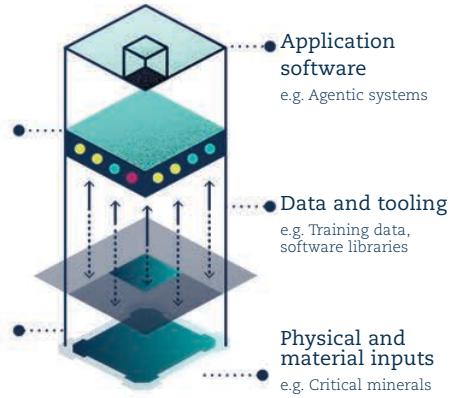
Data centres are adapting to meet the unique demands of AI workloads.

AI-ready data centres require higher power density, advanced cooling, more scalable infrastructure than traditional facilities and benefit from greater energy efficiency.



AI progress goes beyond the chip.

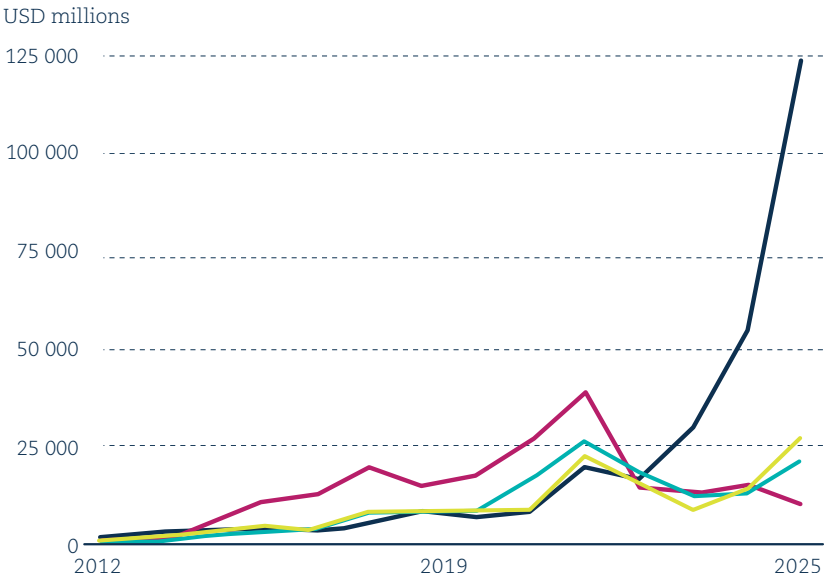
AI progress relies on **system-level** performance across the different layers of the AI stack – not only chips.



AI VC funding has surged since 2024 amid a rush to build AI compute infrastructure.

AI firms in IT infrastructure and hosting received the largest total of venture capital investment from 2012-2025.

VC investments in AI by industries receiving the largest total investment, 2012-2025 (USD millions)



Source: OECD.AI based on Preqin data.

Introduction

The development and use of artificial intelligence (AI) rely on specialised infrastructure known as AI compute. Along with other key enabling inputs such as skills, data and algorithms, AI progress hinges on AI compute as a strategic asset for developing, scaling and appropriately accessing AI systems. Policies that incentivise private sector AI compute investment through light touch regulation and enabling environments will help steer compute capacity. This, in turn, can help achieve both economic security and resilience objectives across the AI stack. Considerations around AI compute increasingly shape national and regional priorities, including the capacity to build and use AI systems adapted to local needs, languages, public policies and other domestic priorities.

This Spotlight discusses various dynamics affecting the future of AI compute and its role in advancing AI progress. It first examines anticipated technological advances and challenges across the compute layers of the AI stack (Figure 1.S.1). Second, it provides an overview of the economics of AI compute highlighting investment, appropriate access and market trends. Lastly, the Spotlight looks at key policy considerations to ensure the future of compute supports shared AI progress.

Compute in the AI stack: Bottlenecks and opportunities

AI compute comprises a range of technologies, from AI chips (i.e. specialised AI accelerators/semiconductors) to data centres to cloud computing. It includes "one or more stacks of hardware and software used to support specialised AI workloads and applications in an efficient manner" (OECD, 2023[1]). It is distinct from general-purpose compute, such as central processing units (CPUs), in several ways. Although general-purpose compute can technically be used for AI workloads, it is significantly less efficient and effective. Training advanced AI systems requires a high level of parallelised computing, in which many calculations are carried out in parallel. This has led to increasingly specialised compute layers in the AI stack as AI applications, the number of parameters and dataset sizes grow (OECD, 2023[1]). For example, hardware is increasingly purpose-built for AI workloads, such as tensor processing units (TPUs) or increasingly AI-specialised graphics processing units (GPUs).

AI compute enables the training of AI systems (i.e. the creation or selection of models/algorithms and their calibration) and inference (i.e. using the AI system to produce an output) (OECD, 2024[2]). This results in AI compute requirements that vary according to user needs. AI compute can be owned and appropriately accessed in several ways: "on premise" (e.g. in a private or government-owned data centre), in "the cloud" (e.g. by purchasing compute from public cloud providers) or at "the edge" (e.g. through a mobile device). Such ownership and modalities for appropriate access can raise key policy questions, including around economic security and supply chain resilience. Large-scale AI compute providers include government-funded compute facilities, private compute clusters and public cloud providers that provide compute for public purchase.

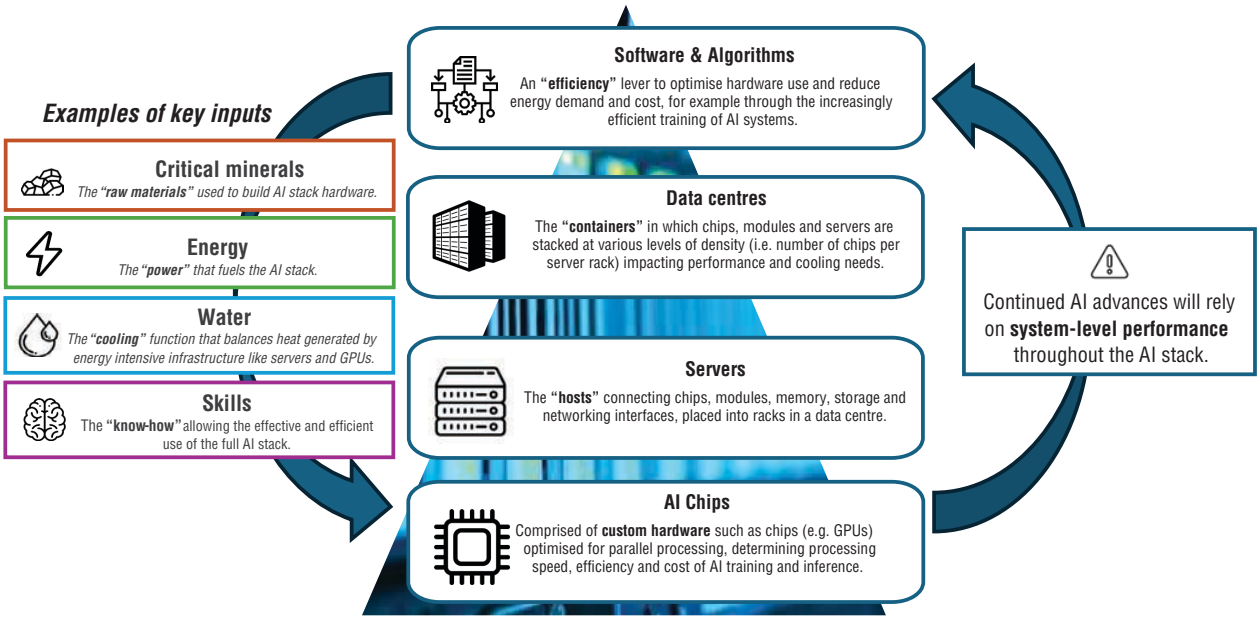
While the performance of individual compute components in the AI stack, such as GPUs, are critical, the future of AI training and inference relies on several other factors. AI compute depends on system-level performance throughout the AI stack and on appropriate access to key enabling inputs such as energy, water and skilled labour (e.g. in computer science, programming, data engineering) (Figure 1.S.1). AI compute also depends on communications networks, which enable access to data, as well as their transmission and distributed processing. In particular, telecommunications networks constitute a fundamental component for enabling architectures such as distributed cloud, edge computing and data-intensive digital services. As such, compute performance also depends on the capacity of networks to support higher data volumes, low latency and high reliability for AI workloads.

Compared to around 2020 when AI compute was not well understood beyond specialised technical and policy communities (OECD, 2023[1]), AI compute is now firmly on the agendas of policymakers worldwide. Many countries view AI compute as strategic infrastructure needed within their borders. Consequently, they have invested significantly – from building data centres to securing AI chip supply chains. Such actions can be driven by various national policy goals, including doubling down on advantages in AI system development, or by national security or data localisation requirements. Policy action can also support national AI compute capacity, such as in economies with little domestic capacity and limited access to regional or international compute providers.

Precise and comparable measures of domestic AI compute capacity are not widely available. According to one estimate of public cloud availability (i.e. cloud compute available for public purchase), the United States and the People's Republic of China (hereafter "China") account for the majority share of regions with AI-capable public cloud compute, while

emerging economies represent just 17% of these availability zones[1] (Lehdonvirta et al., 2025[3]; OECD.AI, 2026[4]). As sizeable AI compute investments come online, the technology and policy questions raised in this Spotlight warrant attention. Actions today should support a future where appropriate access to AI compute lays the foundation for shared AI progress.

Figure 1.S.1. AI progress relies on system-level performance across the compute layers of the AI stack



Notes: This figure is illustrative of the compute elements in the AI stack and not exhaustive (e.g. it does not include communications networks, AI model or data layers as its focus is on AI-specific infrastructure components of the AI stack). Edge computing devices are not pictured.

Source: OECD elaboration based on OECD (2023[1]), "A blueprint for building national compute capacity for artificial intelligence", *OECD Digital Economy Papers*, No. 350, OECD Publishing, Paris, *https://doi.org/10.1787/876367e3-en*.

Memory, interconnection and thermal limitations: Can AI compute keep up?

While experts disagree on how scaling AI inputs – including compute – will yield future advances in AI capabilities (Gundlach et al., 2025[5]; International AI Safety Report, 2026[6]), AI compute today faces several technical limitations. These include limitations in memory, interconnection – the movement of data across the stack – power and heat management (discussed below). Overcoming these limitations depends on continued innovation across the AI stack, and particularly for its compute layers, contributing to advances in system-level performance.

Memory bandwidth and latency currently limit AI compute ("the memory wall"). AI compute faces a bottleneck caused by the widening gap between increasingly performant AI chips and limits in memory bandwidth and latency (Gholami, 2024[7]). While AI chips like GPUs are growing increasingly powerful and fast, memory technologies like Dynamic Random-Access Memory have not kept pace. Evidence demonstrates that accelerator performance[2] has tripled every two years, while Dynamic Random-Access Memory has only scaled at 1.6x for the same period (Gholami, 2024[7]). This gap means that AI models lag in getting data in and out of memory quickly. This means that AI processors (chips) can sit underused, waiting for data to be retrieved from memory, which is especially relevant for deep learning and transformer-based models. The ability to move and access data through memory also directly affects energy consumption. Addressing the "memory wall" calls for technological innovation towards different computing paradigms, such as those leveraging techniques like compute-in-memory[3] (Yu et al., 2021[8]) along with optimisation at the software and algorithmic levels.

Moving data between chips is another bottleneck to AI compute capabilities ("the interconnect wall"). As AI models and systems scale in size and complexity, training and inference increasingly rely on distributed computing across multiple chips, nodes and racks, and the movement of data between them (Costa, 2025[9]). Even with increasingly powerful AI chips, slow interconnects can reduce workload throughput and increase AI model training time. Overcoming

the interconnect wall involves advances in hardware such as through optical interconnects (Priyadarshi, 2025[10]) and software, like in-network computing (Silva et al., 2023[11]) or adaptive routing algorithms (Bonato et al., 2025[12]). Newer AI applications like agentic AI[4] for autonomous network orchestration (Komaragiri and Sheelam, 2025[13]) are emerging as potential additional ways to optimise interconnects and networks more broadly.

Electricity and cooling also limit AI compute ("the power and thermal wall"). This limitation occurs when increasing AI accelerator performance is limited by how much power and heat data centres can reliably handle (SEMIVISION, 2025[14]). This is concerning as some industry analysts project AI chip power demand will increase by a factor of ten within the next two to three years. For example, an NVIDIA A100 chip in 2025 consumed about 400 watts (W), while NVIDIA's R300 – projected to reach the market in 2028 – will demand 3 000 W (SEMIVISION, 2025[15]). Increases in power demands present major challenges for data centres, which must not only supply sufficient energy but also sufficient cooling to prevent overheating and system failure. This challenge is compounded by rising density in server racks, as AI chips are packed more closely together to optimise power density for training advanced AI systems. Innovations like liquid cooling (over traditional air cooling) may help mitigate some of these limitations (Ramakrishnan et al., 2025[16]).

Specialised AI chips and the future of semiconductor manufacturing

The increasing demand for AI chips is driving a new wave of innovation in semiconductor manufacturing, with the creation of powerful "superchips" designed and specialised for AI workloads. For example, there have been innovations in semiconductor advanced packaging, facilitating seamless integration of multiple compute and memory dies (a small piece of semiconducting material containing the integrated circuit built during wafer fabrication) into a single chip. This technique, which improves data transfer speeds and energy efficiency, has already been implemented in the last few generations of AI chips (AMD, 2023[17]; NVIDIA, 2025[18]). The rise in demand for specialised AI chips is also promoting investment and research into cooling solutions integrated into the chip package. Using microfluidic cooling systems, for example, brings liquid coolant directly inside the silicon where heat is most concentrated (Bolgar, 2025[19]; SEMIVISION, 2025[14]). Another advance is silicon photonics, which uses light instead of electricity to move data between chips and servers. This helps AI data centres overcome bandwidth, distance and power limits, as model sizes keep growing (IEEE, 2025[20]).

Cloud hyperscalers[5] and other compute providers are also developing custom AI chips tailored to their specific needs. Hyperscalers like Amazon Web Services (AWS), Google Cloud and Microsoft Azure remain major customers of accelerator companies like NVIDIA and AMD. However, they are also investing significantly to develop their own chips (Morgan, 2023[21]) to optimise performance and reduce dependency on third-party suppliers. These accelerators are often designed for specific internal workloads, such as search, video processing or recommender systems, where customisation can yield significant efficiency gains. Such custom accelerators typically remain complementary rather than completely replacing more traditional GPUs (Moss, 2023[22]; Gartenberg, 2024[23]).

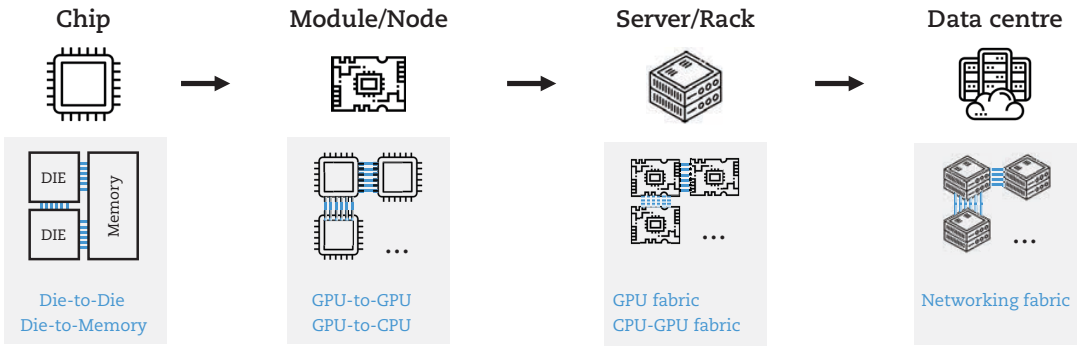
From chips to systems: Why system-level performance is critical

Advanced AI models are trained through the orchestration of an increasingly large number of specialised chips across multiple servers across multiple geographically distributed data centres. This trend underscores that the performance of individual chips, while important, is no longer sufficient to determine overall AI system performance. What increasingly matters is how technology components work together across the compute layers of the AI stack, which is facilitated by its interconnects.[6] Interconnects in AI data centres broadly refer to all physical and logical pathways that enable data to move between compute elements. This ranges from nanometre-scale wiring that links compute and memory units in a chip to the high-speed networks connecting thousands of servers across clusters and data centres (Figure 1.S.2). To exchange information efficiently across every layer of communication (from processing units, to memory, storage and systems), advances in interconnect speed and latency are essential.

Collaboration across the compute layers of the AI stack and between industry players is needed to advance AI progress. The need for system-level optimisation has led to technological innovation across the compute layers of the AI stack. This includes co-design efforts in which chip manufacturers, cloud providers and networking companies collaborate to ensure that system-level performance scales with the demands of AI systems. It is critical that this collaboration between industry players continue to ensure sustained progress in AI (Moss, 2023[22]). Beyond system-level optimisation, at the governance level, it is also essential to link various elements of national compute infrastructure with related policy dimensions. Together, they form an integrated strategic approach – such as enabling policies and laws, skills, research and development, resource efficiency and other considerations (OECD, 2023[1]).

Figure 1.S.2. A high-performance AI chip is only as effective as the system it operates within

Examples of key technology components relying on interconnects across the compute layers of the AI stack



Source: OECD elaboration.

The rise of AI-ready data centres

Data centres are evolving to meet AI workload demands, prompting significant investment to reshape how they are designed, built and operated. Data centres are receiving extremely large private and public sector investments, which is raising concerns. Can data centres continue to outperform other sectors or will today's investors be left holding expensive assets they cannot resell at competitive prices (GRI Institute, 2025[24])? Investments in data centres also raise key questions about resource security, particularly in areas facing energy grid constraints and water scarcity (OECD, 2022[25]).

Data centres are also part of an interconnected ecosystem in which networks play a fundamental role in their operation, interconnection and geographic distribution. This interaction is essential for the development of distributed architectures, such as edge computing and multi-cloud environments, where networks make it possible to bring computing resources closer to the end user and reduce latency. Network operators may play relevant roles as owners, operators or partners in data centre infrastructure.

Box 1.S.1. What makes a data centre AI-ready?

An AI-ready data centre is purpose-built to support the unique demands of AI workloads. Data centres can sometimes be retrofitted to support AI stack needs, such as where facilities are shared for multiple purposes in rented colocation. However, companies are emerging that provide technical specifications tailored to AI – termed "AI-ready data centres" in this report. Compared to traditional IT infrastructure, AI-ready data centres must often embody several characteristics as noted below.

- **High power density**: today's AI racks (e.g. server racks containing AI chips like GPUs) typically require between 100-200 kilowatts (kW) per rack compared to 10-15 kW for standard IT racks. This already requires strong and reliable power distribution and control. Future AI racks are projected to demand even greater power density, such as 1 megawatt (MW). By the end of this decade, such developments may require up to 10 times more power than today's AI racks and up to 100 times more than traditional racks (Blake et al., 2025[26]; Continuum Labs, 2025[27]).
- **Advanced cooling**: the high power density of chips like GPUs generates much more heat than traditional infrastructure. This can make traditional data centre air cooling techniques insufficient for the systems to function properly. AI-ready centres can use "direct-to-chip" or "immersion" liquid cooling, often following the specifications of AI chip vendors (Musipatla, 2024[28]). This can also affect the amount of water required (Li et al., 2025[29]).
- **Energy efficiency**: given the significant power requirements of the AI stack, data centre operators typically aim for high energy efficiency to manage resources and save costs. One measure of energy efficiency is power usage effectiveness (PUE). The generally accepted theoretical minimum for PUE is 1.0 (the ratio of total energy used to the energy delivered to IT equipment). High-efficiency IT equipment strives to get as close to this ideal as possible[7] (OECD, 2022[25]). AI-ready data centres typically aim for ideal PUE ratings at or below 1.2 (as required, for example, by Germany's Energy Efficiency Act) compared to traditional or older data centres typically with higher PUEs (Lawrence, 2024[30]; GRI Institute, 2025[24]).

Box 1.S.1. What makes a data centre AI-ready? *(cont.)*

- **Heavy infrastructure**: compared to traditional IT equipment, the AI stack is significantly denser because hardware is packed tightly to maximise computing power. AI racks can weigh up to 2 tonnes, requiring reinforced flooring and other structural upgrades (Smolaks, 2024[31]; GRI Institute, 2025[24]).
- **Scalable design and modularity**: data centre components age at different rates (e.g. typically a 3-5 year replacement rate for servers and 10-30 years for infrastructure systems like cooling and generators) (Monzavi, 2022[32]). However, there is likely to be some level of disruption from technology innovations and new state-of-the-art demanded by advanced AI systems. As the AI stack evolves, scalable and modular data centre construction is essential to mitigate infrastructure obsolescence and adapt to the latest AI technology state-of-the-art.

Source: OECD estimates with sources indicated in-text.

Promoting efficient AI compute

It will remain critical to ensure AI systems are supported by efficient AI compute to manage costs and key resources like energy, water and raw materials like critical minerals. Despite major increases in the workloads of data centres, their energy use has remained remarkably consistent, until recently. In 2014, data centres used about 194 Terawatt hours (TWh) or 1% of global energy demand (IEA, 2025[33]). By 2020, they still accounted for this same percentage (IEA, 2021[34]; OECD, 2024[35]) but rose to a 1.5% share of global energy demand by 2024 (IEA, 2025[33]). Global data centre electricity demand is projected to more than double by 2030 to around 945 TWh – about the electricity consumed by Japan in 2025 – to account for approximately 3% of global electricity consumption (IEA, 2025[36]; IEA, 2025[33]). AI is expected to be the primary driver of this surge, with energy demand from AI-ready data centres (see Box 1.S.1) projected to more than quadruple over the same period (IEA, 2025[36]).

Data centre operators and their suppliers must also address electricity grid management issues. For example, when an AI training run needs to synchronise results across many parallel tasks, a large number of GPUs may have to power down at the same moment. This sudden drop in electricity use creates sharp fluctuations in power demand, which can place stress on the electricity grid and waste energy. Such challenges underscore the need for increasingly efficient and modular AI compute and data centre design to manage key resources like energy and water. Software-hardware co-design can be essential for promoting efficient AI compute. This approach involves optimally designing both algorithms and chip architectures to enable efficiency in AI-specific applications (Weissberger, 2025[37]). AI itself is also being deployed in promising use-cases to improve efficiency in energy grid management and optimisation. Such applications could yield efficiency gains that help offset the mounting electricity demand driven largely by generative AI (IEA, 2025[33]). However, the International Energy Agency also notes significant barriers to adoption of AI in the energy sector that will need to be overcome to unlock these efficiency gains at scale.

A country's domestic energy resources are also important factors, with jurisdictions able to leverage competitive energy sources reaping potential comparative advantages. Energy sources such as nuclear could play a growing role in the energy mix of countries. Methods to capture and re-use data centre waste-heat are also promising, offering an additional pathway to reduce overall energy demand and enhance compute efficiency. Waste-heat recovery systems can extract thermal energy from liquid-cooled or immersion-cooled environments and supply it to nearby buildings or district heating networks. Integrating such solutions into data centre design could both reduce cooling loads and provide renewable-like thermal energy to local communities (OECD, 2022[25]).

An increasing number of researchers and companies are also advancing potential solutions for orbital-based compute – putting data centres in space – to leverage the abundance of solar energy in space. By leveraging the continuous availability of solar power and free-space optical interconnects (using light to transmit data), such systems hold promise to address energy concerns raised by current terrestrial compute modalities (Beals, 2025[38]; Kübler et al., 2026[39]). However, such an idea is not new and remains unproven at scale given challenges of operating compute hardware in space. These include latency issues; handling space radiation and solar flares that damage hardware; operations and maintenance costs; and challenges in cooling hardware in no-gravity settings.

In addition to energy, compute providers also increasingly contend with challenges securing sufficient water for data centre buildouts and operations, making this input likely an additional bottleneck to expanding AI compute. Data centres use water both directly for cooling and indirectly through water-intensive electricity generation. Semiconductor fabrication also uses large amounts of water (OECD, 2022[25]).

The role of AI model design, software and algorithms in advancing AI progress

Innovation in AI model design, software and algorithms are also key to advancing AI progress. Innovation at these levels can enable deployment of AI models in resource-constrained settings, such as on mobile edge devices, both increasing adoption and reducing costs. They point to a future where advances in AI system capabilities do not necessarily mean increases in the use of compute and key resources like energy and water.

The evolution of AI model design, training and inference techniques will continue to have implications for AI compute needs, affecting the relationship between the amount of compute used and the model's performance. While training compute is often a significant one-time cost to train the model on extensive data, inference compute can compound as an ongoing cost every time the model is used (OECD, 2023[1]). For example, today's advanced large language models deliver more accurate outputs if compute is appropriately increased during inference, i.e. when querying an already trained AI model. Whereas older models answered queries directly, more recent "reasoning systems" can "talk" themselves through answering queries via extended "Chains-of-Thought". In so doing, they generate extensive discourse before producing an answer and thus require more compute to generate an output (International AI Safety Report, 2026[6]). The use of such systems is expected to rise as agentic AI becomes more prominent. While improving model accuracy, transparency and performance, such systems risk further increasing compute needs and costs at the inference stage (Feng et al., 2025[40]; International AI Safety Report, 2026[6]).

Model design can also help increase compute efficiency. Model pruning, quantisation, distillation and top-k routing in "Mixture-of-Experts" models are some techniques to improve compute efficiency. Pruning removes redundant model weights, while quantisation reduces numerical precision to shrink model size and speed up inference. For its part, distillation leverages outputs from more advanced models to less capable ones that can run more efficiently, while retaining most of the original model's performance (Dong et al., 2023[41]). Top-k routing can help increase a model's parameter count without a proportional increase in the compute used (Shazeer et al., 2017[42]). This has led several language models to garner global attention, such as DeepSeek-V2 and related models (DeepSeek-AI, 2024[43]), showcasing how AI capabilities can advance with varying compute resources and costs.

Beyond Moore's Law: New computing paradigms, including quantum computing

New computing paradigms are being explored that go beyond traditional silicon-based computing technology. This is critical to the future of compute as Moore's Law[8] slows in response to the approach of conventional semiconductors to physical limits in miniaturisation.[9] Yet advanced AI systems continue to require significant AI compute and energy to scale. New computing paradigms offer possibilities in alternative architectures and materials. This could sustain or accelerate compute performance when silicon can no longer deliver improvements at scale. To that end, it could leverage novel computing principles, optics or even neuroscience (e.g. brain-inspired architectures like neuromorphic computing) (Shastria et al., 2021[44]).

Of particular relevance, quantum computing is an emerging paradigm for information processing that uses the principles of quantum mechanics to carry out calculations that are difficult for classical computers or entirely beyond their reach. Quantum machine learning has the potential to significantly lift the computational ceiling of AI with more efficient training. Researchers increasingly combine the distinct fields of AI and quantum technologies into "quantum AI", exploring how the two technologies could work together (Coccia, 2024[45]). Such advances are tightly linked to ongoing progress towards fault-tolerant hardware, i.e. theorised large-scale and stable processors that can reliably perform quantum computing, particularly through improvements in qubit[10] quality and quantity (OECD, 2025[46]). As hardware capabilities evolve – from noisy intermediate-scale quantum computing to fully fault-tolerant systems – both algorithmic improvements and hardware manufacturing will have to evolve together to unlock commercial quantum computing applications (Acampora et al., 2025[47]).

Quantum AI applications face an additional challenge: the slow operational speeds of qubits fundamentally restrict the rate at which classical data can be transferred in and out of a quantum computer. This makes it unfeasible to convert large training datasets (classical data) into quantum states (e.g. superposition, entanglement),[11] as well as to convert quantum outputs into bits for classical computers to read and interpret.

In the short term, the technical challenges for quantum AI applications are significant, but potential solutions are emerging. Many experts do not consider quantum machine learning technically viable in the next decade (OECD, 2025[46]). However, in the nearer term, hybrid quantum-classical computing approaches could contribute to AI applications. In these cases, a given problem is decomposed into distinct parts that can be efficiently tackled using quantum algorithms and others that are better suited to classical algorithms. In addition, new quantum-inspired AI algorithms are emerging that apply mathematical principles from quantum computing without needing actual quantum hardware. These approaches can improve the efficiency and performance of existing classical computing systems and pave the way for more powerful AI applications well before fault-tolerant quantum computers are available.

The economics of AI compute: Investment, appropriate access and market dynamics

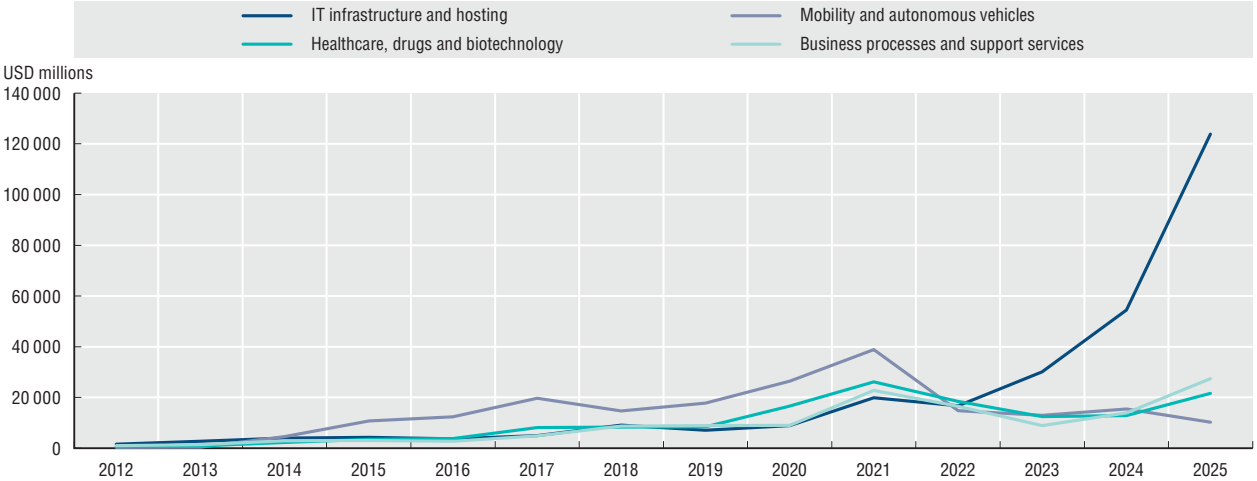
Investment is surging to build AI compute supply; will AI demand keep pace?

Investment in AI compute is booming. Between 2024 and 2025, AI firms working on IT infrastructure and hosting attracted the most venture capital (VC) investment – from USD 54.5 billion to USD 123.9 billion. This was almost half of all VC investment in 2025 (USD 276.5 billion). Between 2012 and 2025, VC investment in IT infrastructure and hosting reached a cumulative USD 291.2 billion, partially reflecting a rush to build AI compute infrastructure for scaling advanced AI systems (Figure 1.S.3) (OECD, 2026[48]).

In addition to VC investments, corporate internal investment in AI compute is significant. The largest cloud providers are making massive investments in AI infrastructure, as reflected in their capital expenditure trends. In addition to the big players, the emergence of AI-specific cloud providers, termed "neoclouds"[12] offering "AI-compute-as-a-service" or "GPU-as-a-service", is also shaping the AI compute market by providing a supply of AI-specific compute. Recent estimates suggest that as of 2023, for the EU27, Canada, the United Kingdom and the United States alone, investment in AI-related computer hardware totalled USD 54 billion. This estimate likely captures only a portion of the total spending on compute infrastructure. However, it suggests that public and private spending on AI-specific compute is significantly higher than that of private equity or venture capital investments, considering that VC investment in IT infrastructure and hosting totalled approximately USD 30 billion in 2023 (OECD.AI, 2026[49]).

Figure 1.S.3. Venture capital funding for AI firms in IT infrastructure and hosting has surged

Venture capital investments in AI by industries receiving the largest total investment, 2012-2025



Notes: Historical revisions and methodological improvements to the Preqin dataset can affect results; caution is advised when comparing different versions of the data. AI firms operating in IT infrastructure and hosting offer an indicative measure of AI infrastructure (AI compute) firms as Preqin's methodology for classifying firms by industry takes a broad definition of IT infrastructure and hosting. See the methodological note for more information (*https://oecd.ai/en/preqin*).

Sources: OECD.AI (2026[49]), "Live Data: Investments in AI and Data", *OECD.AI Policy Observatory*, *https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data* (accessed on 30 July 2026); OECD (2026[48]), *Venture capital investments in artificial intelligence through 2025*, *https://doi.org/10.1787/a13752f5-en*.

StatLink *https://stat.link/g2c16j*

Governments, often together with private sector partners, have also announced unprecedented commitments to expand domestic AI compute capacity. The acceleration of public investment in AI compute since about 2024 reflects growing recognition of compute as a source of domestic competitive advantage. Governments are introducing dedicated AI compute strategies or embedding robust compute components within broader national AI strategies (OECD, 2026[50]). This reflects a policy shift towards viewing AI compute as a critical national asset to be strategically managed.

Three countries provide compelling examples of the shift towards appreciating AI compute as a national asset. In 2024, Canada launched its Sovereign AI Compute Strategy, committing CAD 2 billion to build sovereign compute capacity. This was complemented by funding and policies enabling small and medium-sized enterprises, as well as research institutions, to access AI compute through subsidies and credits (Government of Canada, 2025[51]). In 2025, the United Kingdom launched the UK Compute Roadmap, including up to GBP 2 billion to "deliver a holistic and user-centred compute ecosystem" and GBP 1 billion to expand the AI Research Resource. It also announced a new national supercomputing service (Gov.UK, 2025[52]). In 2025, the United States announced Stargate, a joint venture between OpenAI, SoftBank and Oracle that commits billions to building AI data centres. This move complements efforts to reduce regulatory barriers to building data centres as part of the 2025 United States AI Action Plan (OpenAI, 2025[53]; The White House, 2025[54]).

Cross-border technology partnerships are also becoming strategic tools. The European Union (EU) has co-ordinated a continent-wide approach to AI compute development through multiple interconnected initiatives. Building on the European High Performance Computing Joint Undertaking (EuroHPC JU) and its EUR 7 billion budget for 2021-2027, the EU has launched new programmes focussed on augmenting AI compute capacity. These include the EU AI Factories and AI Gigafactories, typically funded through sharing costs between EuroHPC JU and participating members (European Commission, 2026[55]).

Evolving business models and appropriate access modalities for AI compute

A new generation of cloud providers – neoclouds – has emerged to meet the compute-intensive demands of AI workloads. Unlike traditional hyperscalers, neoclouds are purpose-built for advanced AI, such as machine learning and high-performance computing. Their core business model offering is GPU-as-a-service, providing access to cutting edge AI chips with low-latency interconnects (Craske, 2025[56]). Such companies aim to provide faster access to AI chips at lower costs than traditional cloud providers. Examples of neoclouds include CoreWeave (the United States), Nebius (the Netherlands) and Nscale (the United Kingdom).

How AI compute is appropriately accessed, and whether it is available for public purchase, funded by government or privately owned, will shape innovation trajectories (Table 1.S.1). Evolving business models and modalities for appropriate access for AI compute also raise competition questions. Massive capital investments in AI compute infrastructure, networking and energy access give traditional hyperscalers a considerable advantage in market positioning (OECD, 2025[57]). Combined with deep integration into AI frameworks, extensive developer ecosystems and close partnerships with hardware vendors, these factors may create powerful path dependencies. While newer AI-specific services like those provided by neoclouds may emerge or expand, AI compute users will likely continue to rely at least in part on existing hyperscaler infrastructure available for public purchase.

Table 1.S.1. AI compute business models and appropriate access modalities vary

	Compute available for public purchase (also called "public compute")	Private compute	Government-funded compute
AI compute business models	**AI-compute-as-a-service** • Hyperscalers (e.g. traditional cloud providers) • Neoclouds	**AI compute built for internal workloads** • Private infrastructure (e.g. in large technology companies)	**AI compute mainly for research with limited public access** • HPC/Supercomputers • Sovereign clouds
Appropriate access modalities	• Bare-metal servers • Virtual machines • GPU-as-a-Service	• No external access	• Restricted access (e.g. for public sector, academia, researchers)
Examples	• **Traditional hyperscalers** e.g. AWS, Microsoft Azure, Google Cloud • **Neoclouds** e.g. CoreWeave, Nebius, Nscale	• **Large technology companies** e.g. Meta, Google	• United States National AI Research Resource • European Union's EuroHPC Joint Undertaking, including AI Factories

Note: Information on AI compute business models and appropriate access modalities is illustrative and non-exhaustive. Public compute refers to compute services available for public purchase, and should not be confused with government-funded compute (sometimes referred to as public sector compute).

Source: OECD analysis based on Craske (2025[56]), *Top 10: Neocloud Companies Transforming Global Data Centres*, *https://datacentremagazine.com/top10/top-10-neocloud-companies-transforming-global-data-centres*; and Lehdonvirta et al. (2025[3]), *Measuring domestic public cloud compute availability for artificial intelligence*, *https://doi.org/10.1787/8602a322-en*.

Planning for the future: Compute as a foundation for shared AI progress

AI compute capacity is a key factor shaping who can build and deploy advanced AI systems. Policymakers face several key considerations in planning and managing AI compute as a technically capable strategic asset that can facilitate appropriate access to efficient AI compute in the years to come. They must also consider how to appropriately widen access beyond advanced nations and large technology companies so AI can benefit all people.

Today's compute investments hold promise to lay the foundation for future AI progress. Current global spending on AI compute is enormous. However, figures often reflect announcements and commitments rather than implementation. Executing on such commitments depends on key factors like supply chain resilience, energy/water availability and potential shifts in national priorities. Policymakers should consider measures to track the successful implementation of AI compute commitments, including how they promote prosperity for all. Such measures could help assess the long-term viability of large-scale public investments in compute infrastructure over time as AI compute business models and the technology itself advances. Analysis of competition dynamics in AI compute providers is also essential to ensure a vibrant AI compute supplier market that spurs innovation in compute products and services.

Natural resource efficiency and supply must be appropriately managed. The natural resource demands of training and using advanced AI systems are significant. This could create bottlenecks to AI progress as hyperscale data centre buildouts can take up to three years but securing multi-gigawatt power capacity can take over four years (US Department of Energy, 2024[58]; Data Center Frontier, 2025[59]). To mitigate this timing mismatch, policymakers should consider efficient resource management as part of AI compute planning. This could include leveraging economies of scale and efficiencies through establishment of "Special Compute Zones" that pool and leverage shared resources (Centre for Future Generations, 2025[60]). Planning could also be improved by investing in more precise measurements or estimation techniques for the natural resource needs of AI systems. In addition, policymakers could consider tax incentives, modernising building codes or public-private partnerships that encourage complementarity and efficiency in compute projects, such as where compute infrastructure and district heating networks coexist.

Optimising the AI stack is as important as scaling hardware performance. Training advanced AI models is often a one-time, high-intensity cost, while AI inference involves continuous workloads that grow with user adoption. Efficiency gains will come not only from hardware improvements, but also from optimisation across the AI stack and system-level performance, including at the model and algorithmic levels. Industry collaboration on establishing system-level performance benchmarks can help quantify AI compute so it can be reliably measured and appropriately managed (MLCommons, 2024[61]).

International co-operation and cross-sectoral partnerships are critical to scale AI compute efficiently, including for large data centres. National compute strategies are on the rise, but approaches that lack co-ordination risk inefficiency and fragmentation. Regional projects like the EU EuroHPC Joint Undertaking and proposals for a "CERN-like" global facility illustrate potential advantages to sharing compute strategic assets (Sargent et al., 2025[62]). Policymakers can leverage partnerships, joint investment frameworks and cross-border AI compute agreements facilitating appropriate access to meet national AI compute needs, while maximising efficiency in capital expenditure and natural resource use. Without co-ordinated efforts, policymakers risk facing redundant investments, inefficient infrastructure expansion and deepening imbalances that could cause resource shortages and disrupt supply chains. The key question is: how can countries better align their strategies to avoid these pitfalls? Further analysis is needed into potential co-operation models in practice.

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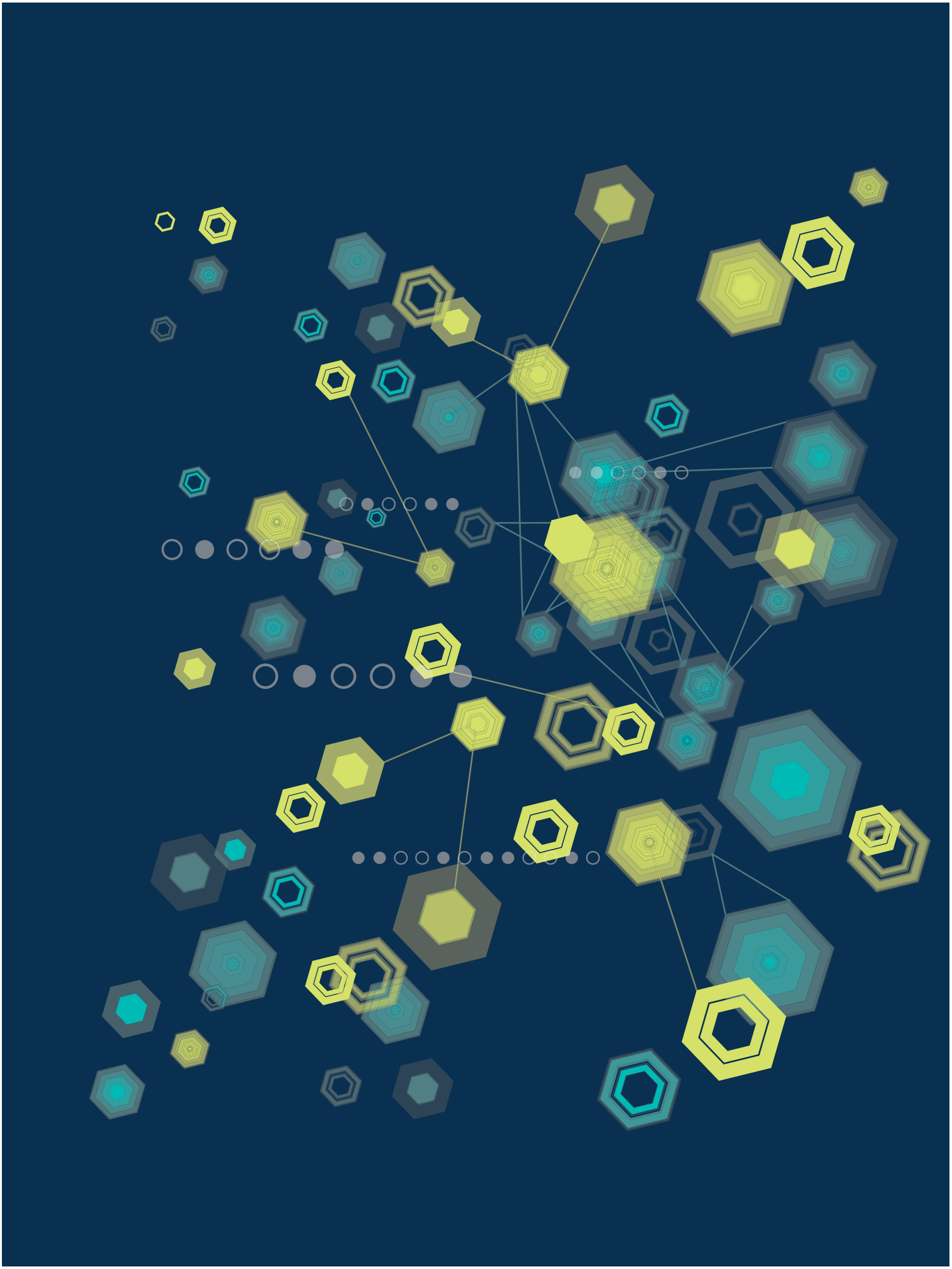
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Notes

1. Research by the OECD in collaboration with Oxford University Innovation identified the availability of public cloud-based compute resources relevant to AI across cloud regions. Data presented on OECD.AI represent an updated approach, automating the extraction of data on GPU availability at a more granular level using availability zones. A cloud region is a geographic area designated by the cloud provider. In practice, each cloud region contains one or multiple cloud availability zones, which in turn may host one or more physical data centres. For further information, please visit: *www.oecd.ai/ai-compute*.
2. Gholami (2024[7]) measures peak server hardware floating-point operations per second i.e. the maximum number of floating-point operations per second that an AI accelerator can theoretically perform in peak conditions.
3. *Compute-in-memory* is an emerging "non-von Neumann" (i.e. classical) computing paradigm that can help achieve performance and energy efficiency. It performs certain computational tasks in place and thus avoids the bottlenecks posed by shifting data between, for example, processing and memory (Hongwu et al., 2023[65]).
4. *Agentic AI* generally refers to "systems composed of multiple co-ordinated AI agents that can break down tasks, collaborate and pursue complex objectives autonomously over extended periods. Agentic AI systems are designed to operate in more open-ended, less predictable physical or virtual environments and to function with minimal human supervision" (OECD, 2026[64]).
5. *Hyperscalers* can be defined as "hyperscale data centres primarily used to deliver and manage mega-sized applications. Hyperscalers are largely cut from the same cloth as traditional data centres – but geared to a much larger scale than typical on-premises data centres" (Powell and Smalley, 2025[67]).
6. At the smallest scale, in the chip itself, compute and memory dies communicate through die-to-die interconnects. These are the densest, most power-efficient connections. Each node consists of several chips, where intra-node interconnects tie CPUs and GPUs together to enable scale-up training. Nodes then communicate via inter-node interconnects (high-speed networking fabric between servers), enabling scale-out training across many machines. Multiple servers (or nodes) fill a rack, connected by a local rack network. Several racks form a pod, joined by a high-performance backend fabric; multiple pods make a cluster, linked by a cluster-level backbone; and clusters together form a data centre, connected by a data-centre fabric split into backend (GPU-to-GPU AI workloads) and frontend (user, storage, and external ingress) networks.
7. PUE is "defined as the ratio of total facilities energy to IT equipment energy", as illustrated by the equation PIE = Total Facility Energy / IT Equipment Energy (The Green Grid, 2012[63]). A PUE of 1.0 is a generally accepted mathematical theoretical limit. It is not achievable in practice as this would mean all energy would be delivered directly to IT equipment, which is not achievable in practice as there is energy required for auxiliary systems like cooling and lighting (The Green Grid, 2012[63]).
8. "Moore's Law refers to the observation made by Gordon Moore in 1965 that the number of transistors on a microchip doubles approximately every two years, leading to an exponential increase in computing power. This trend has been a driving force behind the many innovations in electronic devices and the progress of computing capabilities over the past several decades. However, Moore's Law has begun to slow down primarily due to physical limitations in transistor scaling" (OECD, 2025[46]).
9. *Miniturisation* is the process of shrinking the size of a device, component or system without losing its capabilities and sometimes even improving performance (Fassi and Shipley, 2017[66]).
10. "Unlike classical computers that use bits to represent either a 0 or a 1, quantum computers use quantum bits (qubits), which can represent 0, 1 or any value in between through the use of superposition. Moreover, entanglement allows qubits to become interconnected: when qubits are entangled, the state of one qubit becomes intricately correlated with the state of another. The unique abilities of superposition and entanglement are expected to allow quantum computers to solve certain complex problems that are challenging or even intractable for classical computers" (OECD, 2025[46]).
11. Quantum states include *superposition*, when a "particle can be in an indeterminate, probabilistic combination of multiple places or states at the same time until it is measured" and *entanglement*, when "[p]articles can become so intricately linked that they cannot be measured or described independently of one another, regardless of how far apart they are" (OECD, 2025[46]).
12. *Neoclouds* are emerging compute providers that prioritise the needs of AI workloads, offering specialised AI infrastructure often at a lower cost than traditional providers (e.g. hyperscalers).



Chapter 3

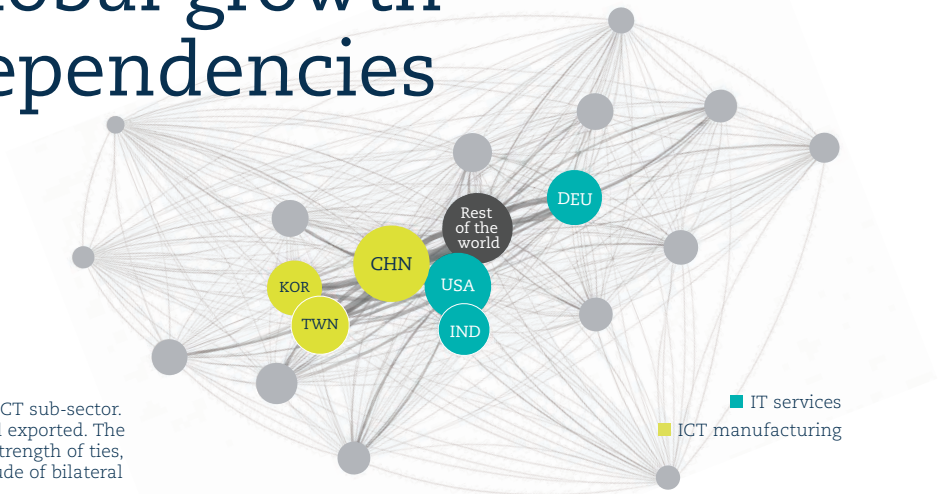
Digital technology diffusion and the economy

Digital technologies and data are reshaping the economy and society, creating opportunities for productivity gains but also new challenges. This chapter maps current diffusion patterns for artificial intelligence (AI), big data analytics and cloud computing across firms, sectors and society. It explores plausible near-term diffusion paths and examines how information and communication technology (ICT) outputs propagate through supply chains and affect economic activity across sectors. Using new data on the access and usage of ICTs, the chapter's forward projections and input-output analysis highlight where adoption is concentrated; where co-adoption of technologies is emerging; and how generative AI is changing business practices, as well as patterns of individual use. The chapter concludes with practical policy levers to expand access, strengthen capabilities and govern responsible uptake so that digitalisation can support resilient productivity growth.

ICTs fuel global growth and interdependencies

The United States and China drove ICT value creation in the global economy.

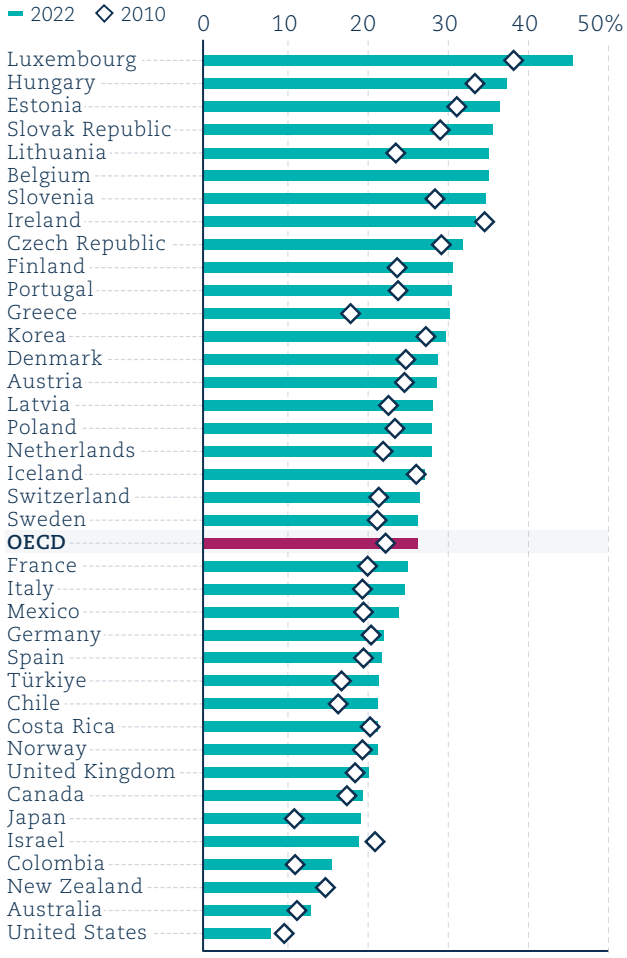
Domestic ICT value added embodied in foreign final demand, top 20 economies, 2022



Note: The node colour indicates the dominant ICT sub-sector. The node size reflects the total ICT value added exported. The distance between nodes indicates the relative strength of ties, while the link thickness represents the magnitude of bilateral value-added flows.

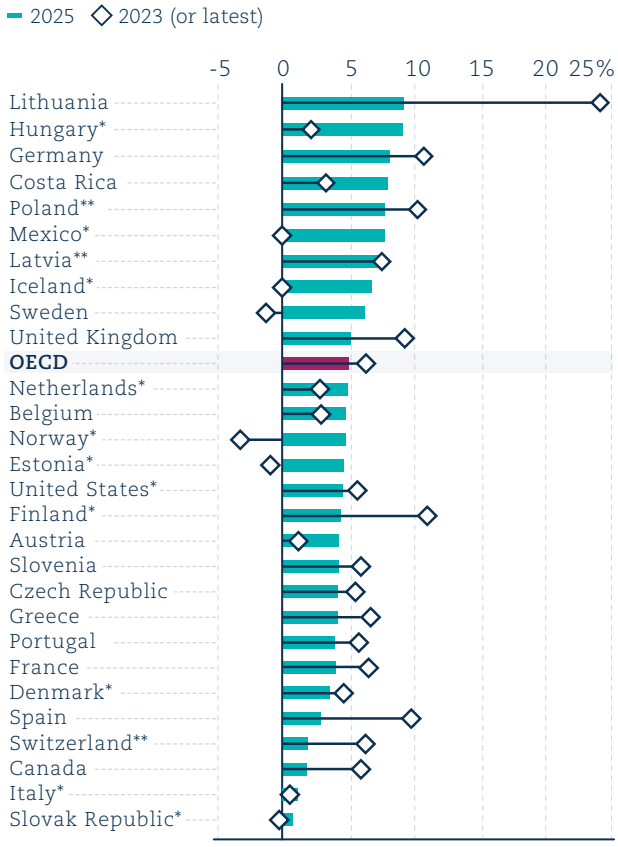
Dependence on imported ICT inputs is growing across the OECD.

Foreign ICT value added as a share of domestic ICT demand, 2010 and 2022



Estimates suggest moderation and convergence in ICT growth across the OECD.

Predicted (full bars) and observed (diamonds) ICT sector growth rates, 2023 (or latest) and 2025



Note: Blue bars represent nowcast estimates for 2025. Overlapping white diamonds represent official statistics from 2023 (unmarked), 2024 (marked with *), or 2022 (marked with **).

Key findings

Firm-size disparities persist in AI adoption, while those in cloud computing are expected to converge

- In 2025, cloud computing was the most widely adopted digital technology, used by more than half of all firms and over 80% of large firms across the OECD.
- Adoption of artificial intelligence (AI) remained more limited in 2025, at 20% for all firms and 52% for large firms, while big data analytics occupied an intermediate position.
- Projections to 2030 suggest cloud uptake will start to converge across firms of all sizes, whereas AI adoption will likely remain skewed towards large firms without increased support for adoption.

AI uptake is maturing, with differences across firms and individuals

- Firms primarily use AI for marketing, business administration, finance, and information and communication technology (ICT) security, with large firms leading across business applications.
- The integration of AI complementary technologies remains limited, with combined use of AI, cloud computing and big data analytics concentrated in large firms and knowledge-intensive sectors.
- Among individuals, generative AI use reached 37% in 2025, with higher uptake among younger, highly educated and higher-income groups.

ICT outputs underpin growth, resilience and global digital integration

- ICT sector growth is estimated at 5% in 2025, reflecting a broad-based and robust expansion across the OECD.
- Wholesale and retail trade, professional and technical activities, and finance show the highest total ICT forward linkages, with ICT intensity often exceeding the OECD average by 20-50%, while construction and some service industries rely more on indirect spillovers.
- ICT value creation and sourcing are highly concentrated internationally, with a small number of countries acting as key production and supply hubs, reinforcing both efficiency gains and cross-border interdependencies.

Introduction

Digital technologies and data-driven tools are reshaping how firms compete and how individuals work, learn and consume. Their adoption reflects differences in resources, skills and access to digital infrastructure, which in turn influences where productivity gains and innovation are most likely to occur. Examining these patterns across businesses, sectors and individuals helps identify where policy action can most effectively support digital transformation for innovation, growth and well-being.

This chapter first examines the adoption of cloud computing, artificial intelligence (AI) and big data analytics across firms, highlighting size, sectoral and country-level disparities. It then explores the surge of generative AI (GenAI) among firms and individuals, considering technological choices, applications and socio-economic divides. Finally, the chapter analyses growth dynamics of the information and communication technology (ICT) sector; domestic and cross-border spillovers; and countries' integration into global digital value chains. It concludes with implications for policy measures that can support uptake for all, workforce readiness and the more efficient use of frontier digital technologies.

Diffusion of data-driven technologies: Current and future trends

The diffusion of frontier digital technologies is increasing, but firm size drives uptake

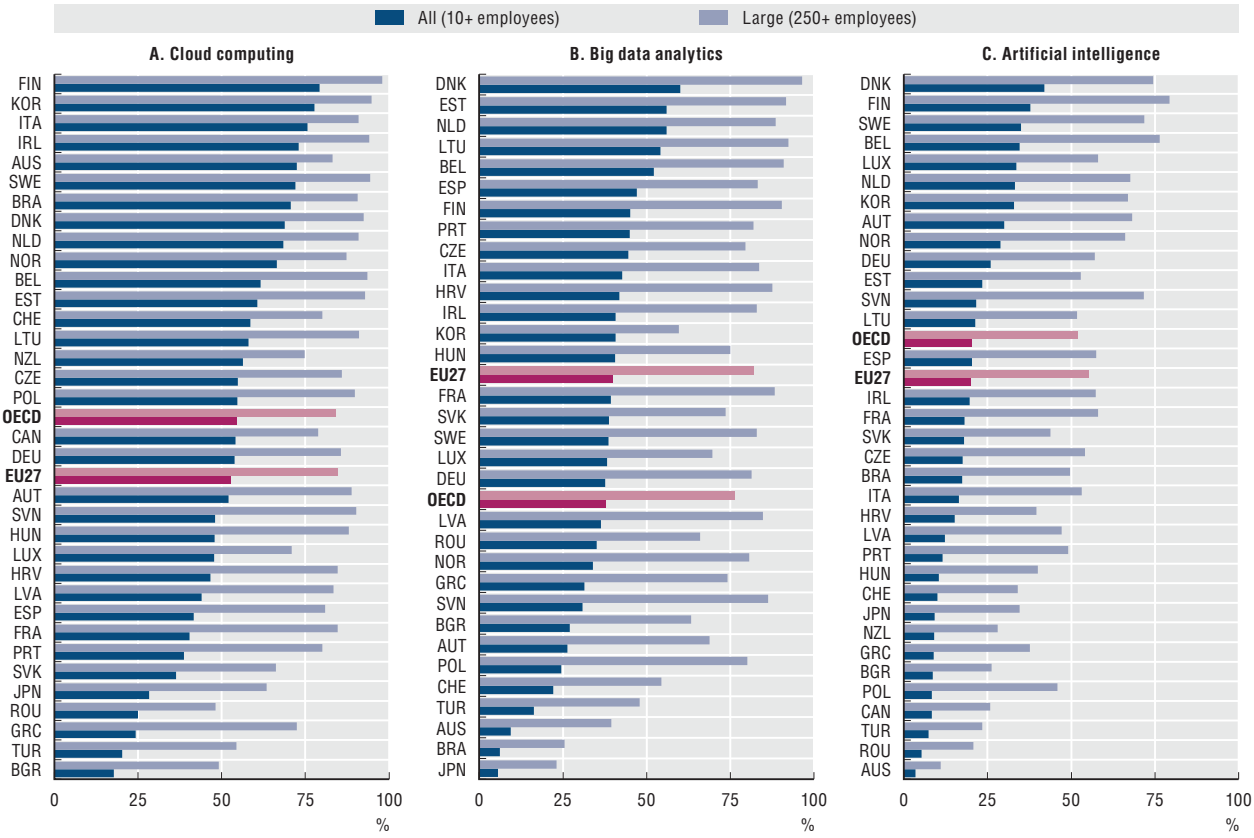
The diffusion of frontier digital technologies continues across businesses, with differences between large and smaller firms. This section focuses on three key technologies driving business transformation: cloud computing, AI and big data analytics. Cloud computing provides scalable infrastructure and data storage, enabling firms to process large datasets without substantial upfront investment. AI and big data analytics leverage these data to automate processes, generate insights and support decision making.

In 2025, cloud computing was the most widely adopted of the three technologies. More than half of all firms reported using it, with adoption among large firms exceeding 80% across the OECD. AI adoption remained more limited, averaging 20% among all firms and 52% among large firms, while big data analytics occupied an intermediate position. Firm size strongly shapes adoption: larger firms consistently led across all technologies, reflecting greater resources, technical capacity and access to skilled personnel. Smaller firms, while lagging, have embraced cloud computing more readily, highlighting its accessibility and scalability (Figure 3.1).

Country-level patterns reveal substantial variation. Front-runners like the Nordic countries combine high overall adoption, particularly for AI. In contrast, countries such as Türkiye, exhibit more limited uptake across all technologies, with large firms maintaining a clear lead. These differences underscore persistent barriers for smaller firms, including constrained access to finance, digital infrastructure and ICT skills.

Figure 3.1. Cloud adoption remains over twice as high as AI adoption among firms

Adoption rates of cloud computing, big data analytics and AI by firm size, 2025 (or most recent)



Note: See endnote 1 for country-specific notes and methodological information.

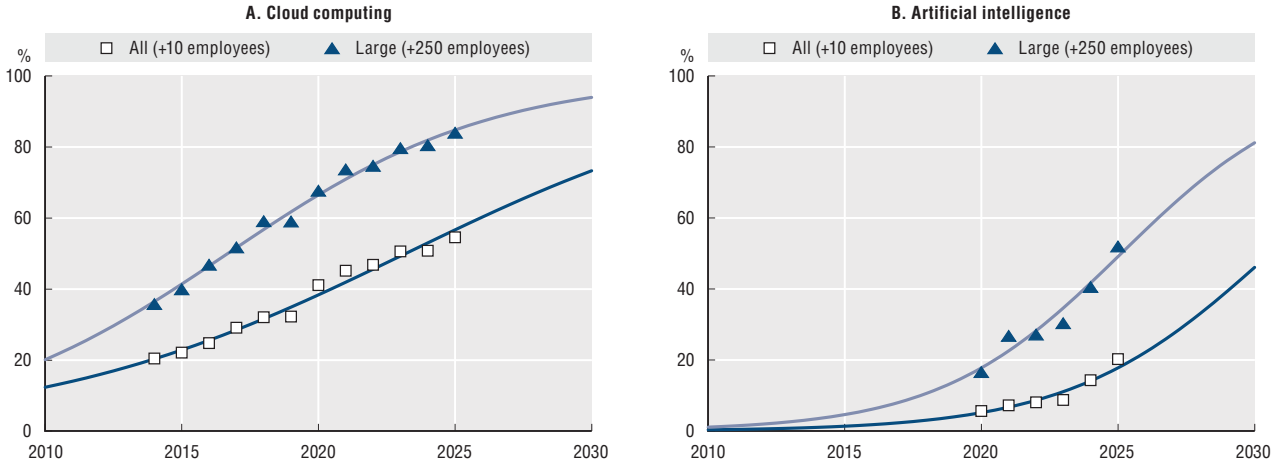
Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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To anticipate the evolution of technology adoption, forward-looking diffusion paths have been constructed using historical data and projections up to 2030 for cloud computing and AI. These trajectories illustrate both the pace of uptake and the development of firm-size disparities. Cloud computing adoption is projected to remain widespread, with smaller firms gradually closing the gap with large firms: while adoption among large firms was already above 80% in 2025, smaller firms are expected to reach near comparable levels by the end of the decade. In contrast, AI adoption is set to accelerate more rapidly among large firms than smaller ones. Historical data show that large firms have consistently led in AI uptake since 2020, and projections indicate that by 2030, adoption among large firms could be nearly 80% higher than the average across all firms (Figure 3.2).

Figure 3.2. Firm-size gaps in adoption are projected to increase for AI but narrow for cloud computing

Projected diffusion paths for cloud computing and AI in the OECD, by firm size, 2010-2030



Notes: Forward-looking diffusion paths are not presented for big data analytics due to changes in survey questions over time. See Annex 3.A for methodology and results.

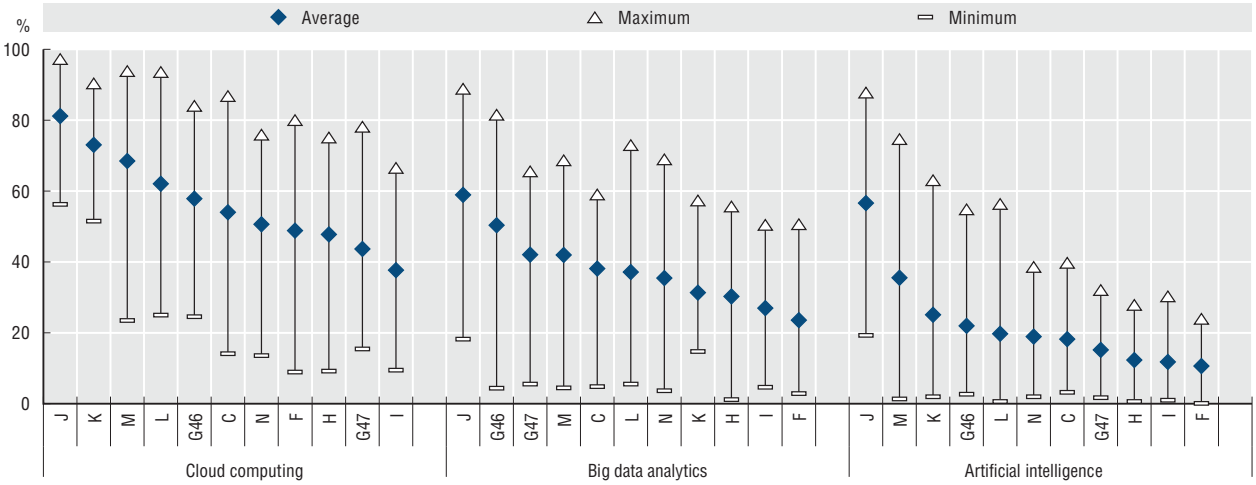
Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Adoption also varies across economic sectors (Figure 3.3). Cloud computing has achieved broad penetration, particularly in information and communication (Section J), financial and insurance activities (Section K), professional, scientific and technical activities (Section M) and real estate activities (Section L). AI remains concentrated in knowledge-intensive and technology-driven sectors, whereas construction (Section F), transportation and storage (Section H) and accommodation and food service activities (Section I) exhibit comparatively low uptake. Big data analytics occupies an intermediate position, with moderate-to-high adoption in most sectors; it is strongest in industries reliant on data and information processing. These patterns highlight how sectoral characteristics, alongside firm size and digital infrastructure, shape both the pace and scope of technology diffusion.

Figure 3.3. Adoption of frontier digital technologies is strongest in knowledge- and data-intensive sectors

Adoption of digital technologies, by economic sector, enterprises with ten employees or more, 2025 (or most recent)



Notes: ISIC Rev. 4 sector codes are as follows: C: Manufacturing; F: Construction; G46: Wholesale trade (except repair of motor vehicles and motorcycles); G47: Retail trade (except repair of motor vehicles and motorcycles); H: Transportation and storage; I: Accommodation and food service activities; J: Information and communication; K: Financial and insurance activities; L: Real estate activities; M: Professional, scientific and technical activities; N: Administrative and support service activities. Data for financial and insurance activities should be interpreted with caution due to the limited country coverage. Averages are based on data from OECD Member countries only.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Firms are progressively combining frontier digital technologies

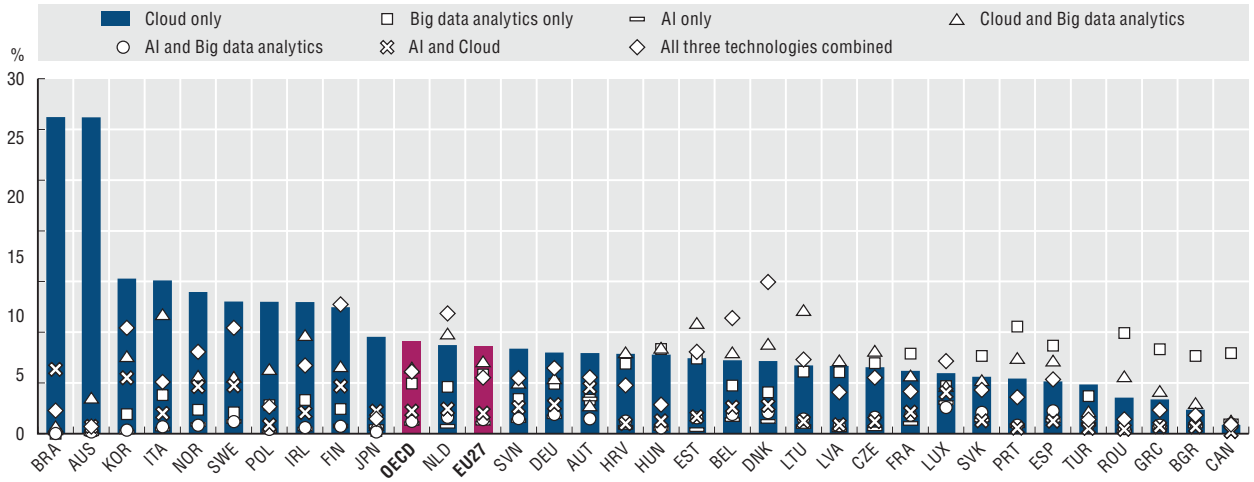
Cloud computing, AI and big data analytics are increasingly complementary, with their combined use enabling more sophisticated data processing, advanced analytics and automated decision making. Cloud platforms provide scalable computing and storage capacity, while big data analytics and AI transform raw data into actionable insights and predictions (Sunyaev, 2020[2]). Previous research suggests that more than half of firms adopting frontier digital technologies deploy multiple technologies simultaneously. This highlights complementarities between AI, cloud computing, big data analytics and other data-intensive tools (Cho et al., 2023[3]). Examining how firms deploy these technologies in combination, rather than individually, provides valuable insight into the integration of digital technologies and the potential for increased productivity and innovation, particularly among larger firms with the resources to implement bundled solutions (Calvino, Criscuolo and Ughi, 2024[4]).

Across the OECD, cloud computing acts as a key enabler of digital transformation in firms. Around 18% of firms rely on cloud services without adopting either big data analytics or AI, while a further 13% combine cloud computing with big data analytics but not AI. Adoption of big data analytics alone, without cloud or AI, is less common (around 10% of firms). At the same time, approximately 12% of firms deploy all three technologies simultaneously, indicating that while multi-technology integration is far from universal, it is no longer marginal. By contrast, firms are not yet leveraging the advantages of combining cloud-based data analytics with AI uptake. That number remains limited (2%), underscoring the importance of technological complementarities (Figure 3.4).

Country-level patterns reveal substantial heterogeneity in the degree of technology integration. The highest shares of firms adopting all three technologies in combination, reaching more than 20%, are observed in Belgium, Denmark, Finland, Korea, the Netherlands and Sweden, pointing to comparatively advanced digital integration strategies. By contrast, in several Central, Eastern and Southern European countries – such as Italy, Poland, Portugal and Spain – firms are more likely to rely on a single technology, particularly cloud computing or big data analytics, rather than integrated combinations. Overall, the data suggest a clear divide between countries where digital tools are increasingly deployed as complementary technologies and those where adoption remains more siloed. These differences point to persistent technological and organisational barriers: combining frontier digital technologies effectively requires not only access to digital infrastructure, but also data readiness, specialised skills and complementary investments in organisational change.

Figure 3.4. Most firms adopt cloud computing alone or with data analytics, while full integration with AI remains limited

Mutually exclusive adoption rates of different combinations of frontier digital technologies, enterprises with ten employees or more, 2025 (or most recent)



Note: See endnote 2 for country-specific notes and methodological information.

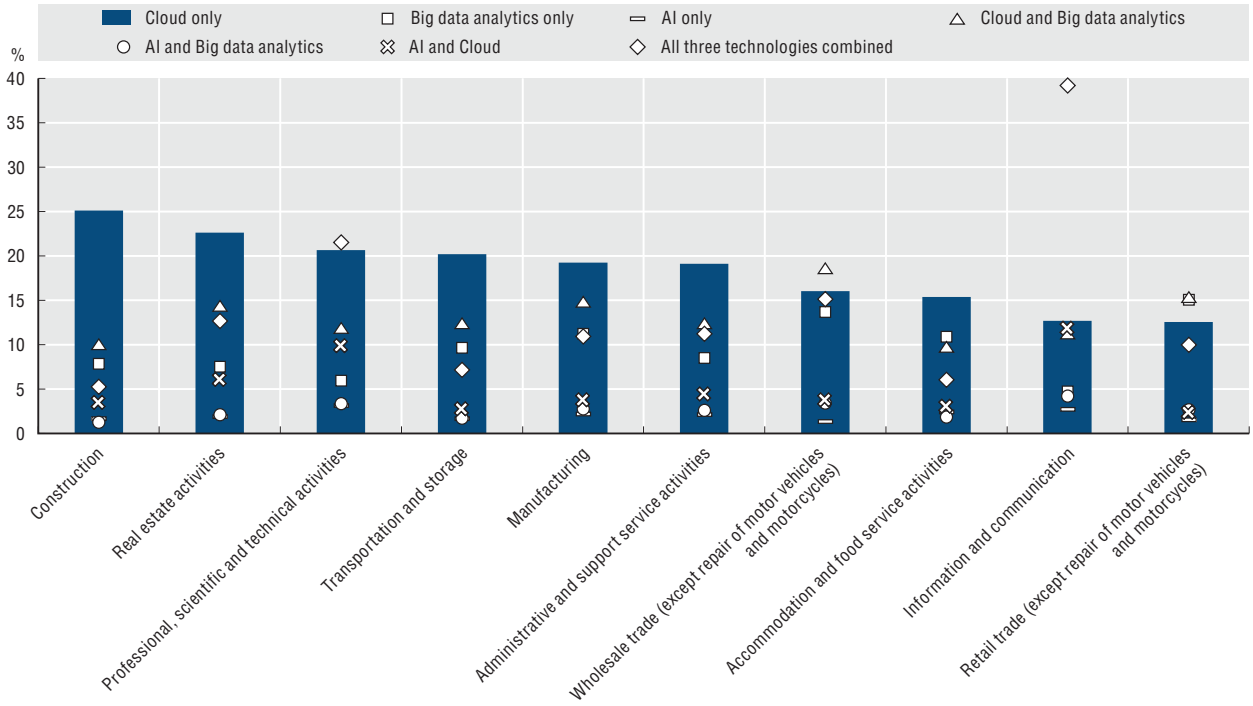
Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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The distribution across sectors echoes the patterns observed at the country level (Figure 3.5). The information and communication sector (Section J) stands out as the most intensive adopter of frontier digital technologies: more than 86% of firms use at least one of the three technologies, and 39% deploy cloud computing, big data analytics and AI simultaneously. Professional, scientific and technical activities (Section M) follow, with 22% of firms adopting all three technologies. In contrast, construction (Section F), accommodation and food service activities (Section I), and transportation and storage (Section H) display more fragmented adoption patterns, typically centred on cloud computing alone or in partial combinations. These sectoral differences highlight where co-ordinated adoption is already well advanced and where firms may benefit most from targeted support to overcome organisational and skills-related barriers to integration.

Figure 3.5. Information and communication lead in co-ordinated adoption of frontier digital technologies across sectors

Mutually exclusive adoption rates of different combinations of frontier digital technologies, enterprises with ten employees or more, 2025 (or most recent)



Notes: Averages are based on data from OECD Member countries only.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Co-adoption patterns reinforce earlier observations on the influence of firm size. Large firms are most likely to adopt multiple technologies, with 44% using all three simultaneously. Medium-sized firms appear well positioned for further AI uptake, as over one in five already uses the full set and a further 20% already combine advanced cloud computing services with big data analytics. Small firms also show potential, with 19% already purchasing cloud computing services (see the Statistical Annex), although further upskilling in data analytics and AI would enable them to fully leverage additional advanced technologies.

To complement the analysis of adoption patterns and co-occurrences of frontier technologies, it is useful to examine digital intensity at the firm level. Digital intensity captures not only whether firms adopt individual technologies, but also the breadth and sophistication of their digital capabilities. The following section presents a microdata-based approach that maps firms according to their digital intensity, providing a nuanced view of how advanced technologies are distributed across firms and countries.

A distributed approach to measuring digital intensity

A distributed microdata analysis examines a way of measuring digital intensity by applying a multiple correspondence analysis (MCA) and clustering of ICT Access and Usage survey data. This analysis clusters firms in an MCA factor space according to their use of digital technologies. To that end, it leverages survey data that capture both widespread practices such as having a website, selling online and using simple cloud services like e-mail, and the uptake of intermediate and advanced technologies – including big data analytics, AI and purchasing cloud solutions for computing power and analysis. Digital intensity is defined as adoption relative to the technologies prevalent in each country, resulting in a country-specific digital intensity measure.

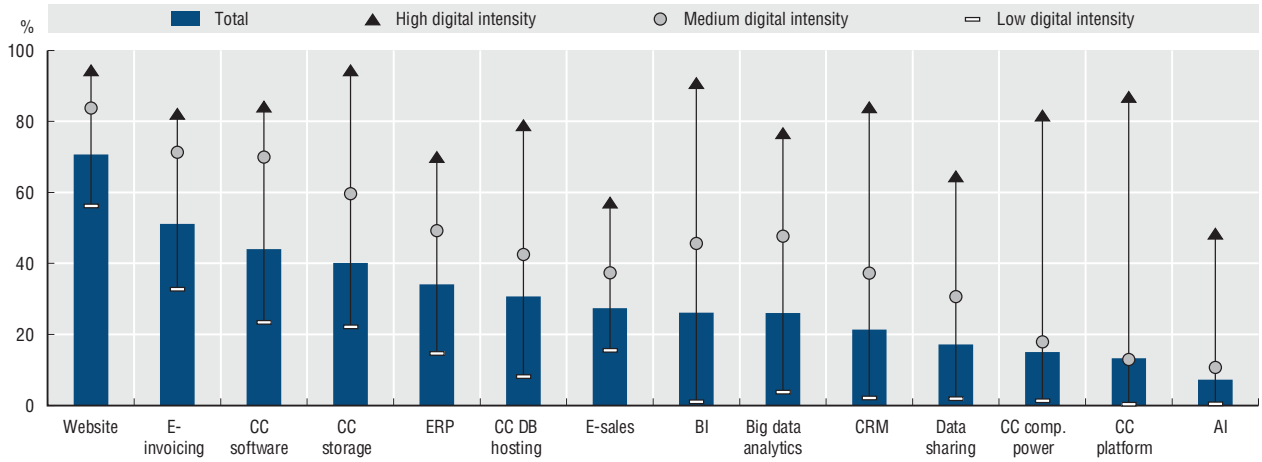
Identifying digital leaders

By partitioning firms into clusters of digital intensity, countries with stronger relative ICT presence across the business population can be identified. In this sample, Mexico has the largest share of firms in the most digitally intensive cluster (14%) followed by Sweden (8%) and the United Kingdom (6%), while fewer firms are in the corresponding cluster in Italy (4%) and Canada (3%). Compared with Sweden, Mexico exhibits a more contracted MCA, indicating smaller differences in digitalisation between clusters. Conversely, Canada and Italy display smaller high-intensity clusters combined with broader bases in lower-intensity clusters.

The structure of the business sector, including the presence of a large ICT sector, contributes to a higher digital intensity, as does having many large firms, which are more likely to adopt advanced digital technologies. On average, the top performing cluster across participating countries uses all considered technologies to a greater extent than the others, and in combination. Plotting the cluster shares by technology reveals a widening gap as technologies and their applications become more advanced. In Figure 3.6, AI is notably on the far-right side, indicating on average low uptake across all firms in 2023. However, almost half of firms in the highly digitalised cluster report using AI.

Figure 3.6. As technologies get more advanced, the gap in technology adoption rates between digital intensity clusters increases

Average technology adoption by digital intensity cluster, 2023 (or most recent)



Notes: CC = Cloud computing, ERP = Enterprise Resource Planning, DB = Database, CRM = Customer Relationship Management, BI = Business intelligence, AI = Artificial intelligence. Data refer to Canada, Italy, Mexico, Sweden and the United Kingdom. Data from the United Kingdom refer to 2020.

Source: OECD calculations based on result from a distributed microdata analysis performed by data producers.

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AI adoption patterns are starting to diverge

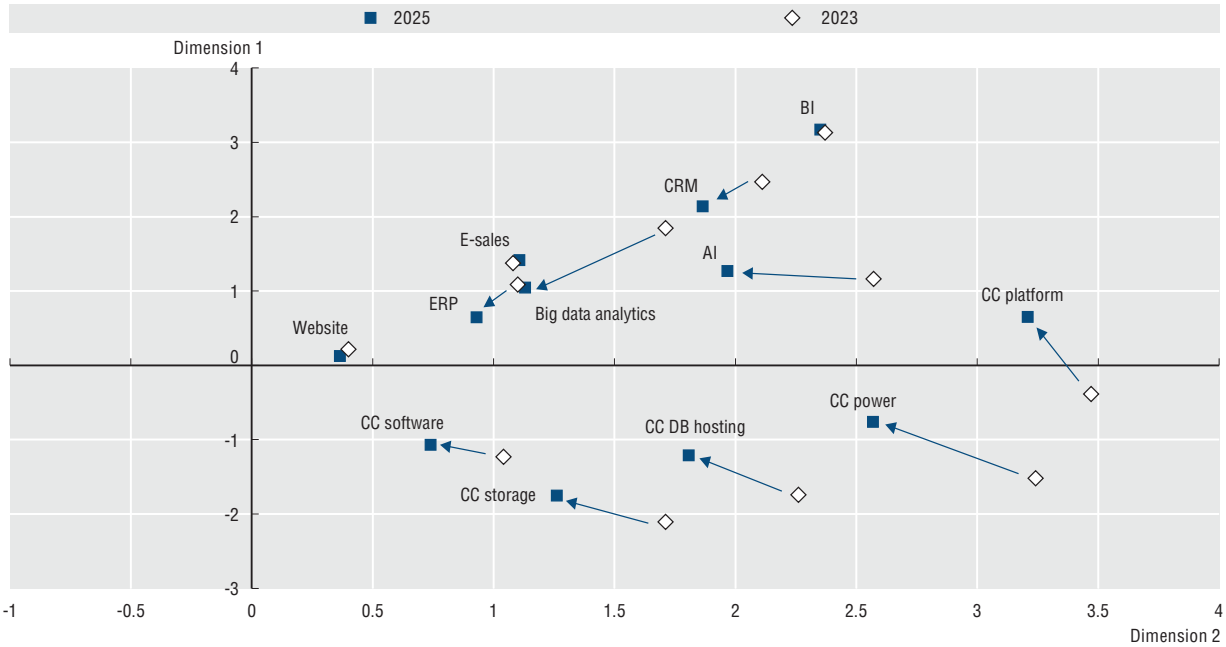
Since 2023, GenAI has become widespread due to the rapid diffusion of GenAI tools; more recent data show clear increase in adoption patterns. While this uptake is increasing quickly among OECD Member countries, firms diverge in the complexity of their use. Evidence shows that more advanced applications – such as analysis based on machine learning – place firms further from the centre in the MCA factor space, indicating a higher level of digitalisation. In

contrast, simpler use cases like text generation or text analysis, typically associated with GenAI, sit closer to the centre and reflect lower capability requirements. This pattern suggests that AI uptake is beginning to resemble cloud computing uptake: increasingly mainstream but differentiated by levels of sophistication that matter for measuring digital intensity. As adoption broadens, the key distinction becomes how well firms use AI rather than whether they use it.

Extending the analysis to 2025 for Italy clearly illustrates the shift towards rapid diffusion of GenAI tools (Figure 3.7). Comparing the placement of technologies between 2023 and 2025 shows how the space contracts as adoption increases. Both AI and advanced cloud services move towards the centre. This indicates less pronounced differences between digital intensity clusters because a larger share of firms uses these tools in some form. This is echoed by the share of Italian firms belonging to the highest-intensity cluster (6% – up from 4% in 2023). Together, these results underscore the importance of distinguishing between basic and advanced AI applications when assessing digitalisation trends.

Figure 3.7. Rapid diffusion of advanced technologies in Italy contracts the MCA factor space

Digital technologies placed in MCA factor space, Italy, 2023 and 2025



Note: CC = Cloud computing, ERP = Enterprise Resource Planning, DB = Database, CRM = Customer Relationship Management, BI = Business intelligence, AI = Artificial intelligence.

Source: OECD calculations based on analysis by Istituto Nazionale di Statistica (Istat).

StatLink https://stat.link/sfdy24

Trends and drivers of AI use by businesses and individuals

The rapid diffusion of GenAI across both firms and households present new opportunities and challenges for economic productivity, equity and policy design. This AI deep dive provides a more granular understanding of adoption patterns, technological choices and purposes of AI use. The section is structured to first examine firms, highlighting what drives AI uptake, which technologies are being deployed and where adoption is accelerating across sectors. This firm perspective provides context for the subsequent analysis of AI use among individuals, where GenAI is emerging as a particularly transformative force.

Business uptake: Drivers, technologies and sectoral patterns

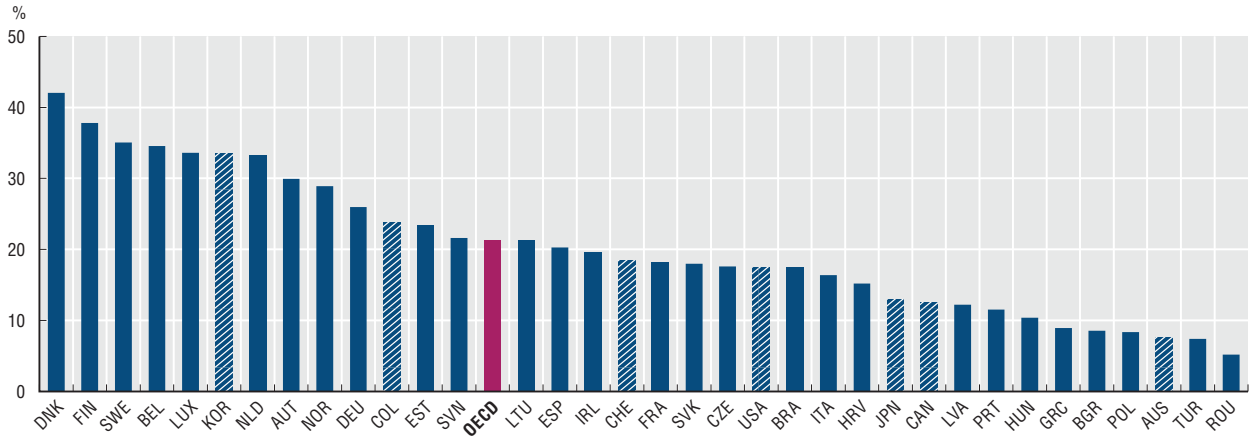
AI adoption among firms continues to expand rapidly, but the pace of diffusion varies markedly across countries. To provide a consistent 2025 snapshot, including for countries where the most recent data are not yet available, this analysis combines official statistics with nowcast estimates. The projections are based on a diffusion framework reflecting a well-established empirical regularity: new technologies typically spread in an S-shaped pattern – gradual initial uptake,

followed by acceleration as use cases mature before growth stabilises (Meade and Islam, 2006[6]). The model draws on observed cross-country trajectories to produce economically grounded estimates where recent observations are missing, while allowing countries to differ in their overall level of adoption. Additional methodological details and accompanying predictive ranges are reported in Annex 3.B.[3]

Figure 3.8 presents the resulting share of enterprises with ten or more employees using AI in 2025 across OECD Member countries. Solid blue bars correspond to official data from the *OECD ICT Access and Usage Database* (OECD, 2026[1]), while hatched bars denote nowcast estimates. In several Nordic countries, more than one in three firms report using AI, whereas in others uptake remains below 10%. These contrasts underscore both the rapid diffusion of AI and the persistence of sizeable cross-country adoption gaps.

Figure 3.8. AI use in enterprises differs substantially across the OECD

Enterprises using AI as a percentage of all enterprises with 10 or more employees, official statistics (full blue bars) and nowcasted point estimates (hatched blue bars), 2025



Notes: Full blue bars point to official statistics while hatched bars refer to nowcasted point estimates. The OECD average includes both official statistics and nowcasted point estimates. See Annex 3.B for additional details on the methodology, along with predictive ranges accompanying the predictions presented above.

Source: OECD (2026 [20]), *Data Kitchen* (database), *https://goingdigital.oecd.org/datakitchen* based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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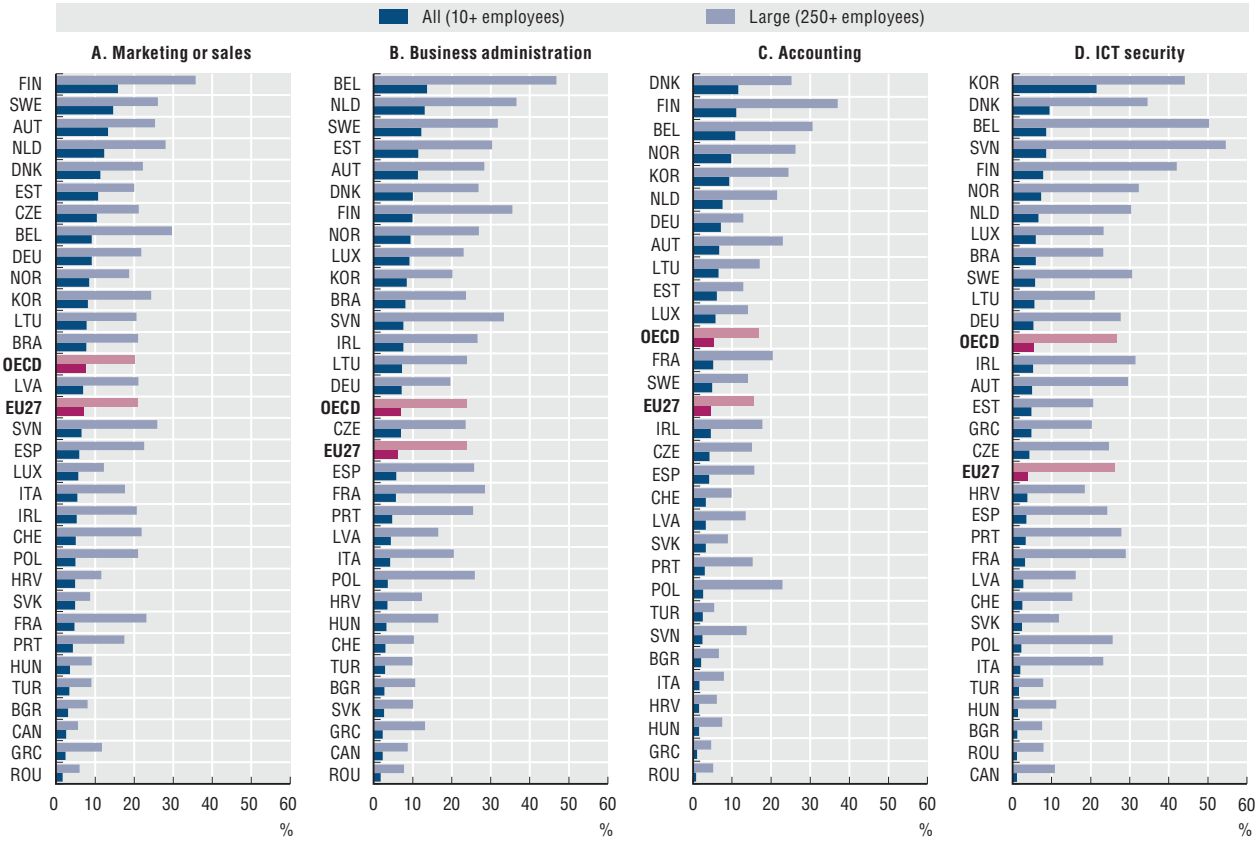
What drives AI adoption in firms

AI adoption among firms can reflect and be driven by a combination of operational efficiency, strategic decision making and customer engagement objectives. Across OECD Member countries, firms most commonly deploy AI for four purposes: marketing and sales; business administration and management; accounting, controlling or finance management; and ICT security. Marketing and sales applications are the most widespread, particularly among large firms. They include activities such as customer profiling, price optimisation, personalised marketing offers, market analysis based on machine learning and chatbots for customer support. Business administration and management applications support strategic decision making, document drafting, forecasting, human resources management and planning. For their part, accounting, controlling and finance management uses are generally less prevalent but show steady growth in certain countries and among larger firms (OECD, 2024[7]). Lastly, ICT security applications focus on authentication and cyber-attack detection.

Adoption rates vary markedly by country and firm size (Figure 3.9). Large firms consistently report higher uptake across all purposes, reflecting their greater resources and capacity to integrate AI across business functions. In marketing and sales, for example, adoption among large firms exceeds one-quarter in several countries, including Belgium, Finland, the Netherlands, Slovenia and Sweden, while remaining below 10% in many Southern and Eastern European countries. Integration of AI and ICT security is strong in Belgium, Finland, Korea and Slovenia, where 40% or more of large firms adopt the technology. Business administration and finance applications are gradually expanding, especially among large firms in Nordic countries, suggesting a gradual diffusion of AI use beyond customer-facing functions.

Figure 3.9. AI adoption purposes reflect efficiency, strategic and customer-focussed priorities among firms

Adoption rates of top four AI purposes by firm size, 2025 (or most recent)



Notes: The most recent observation refers to 2025 except for Korea (2024), Canada and Switzerland (2023). See endnote 4 for the full description of purposes as per in-survey questions.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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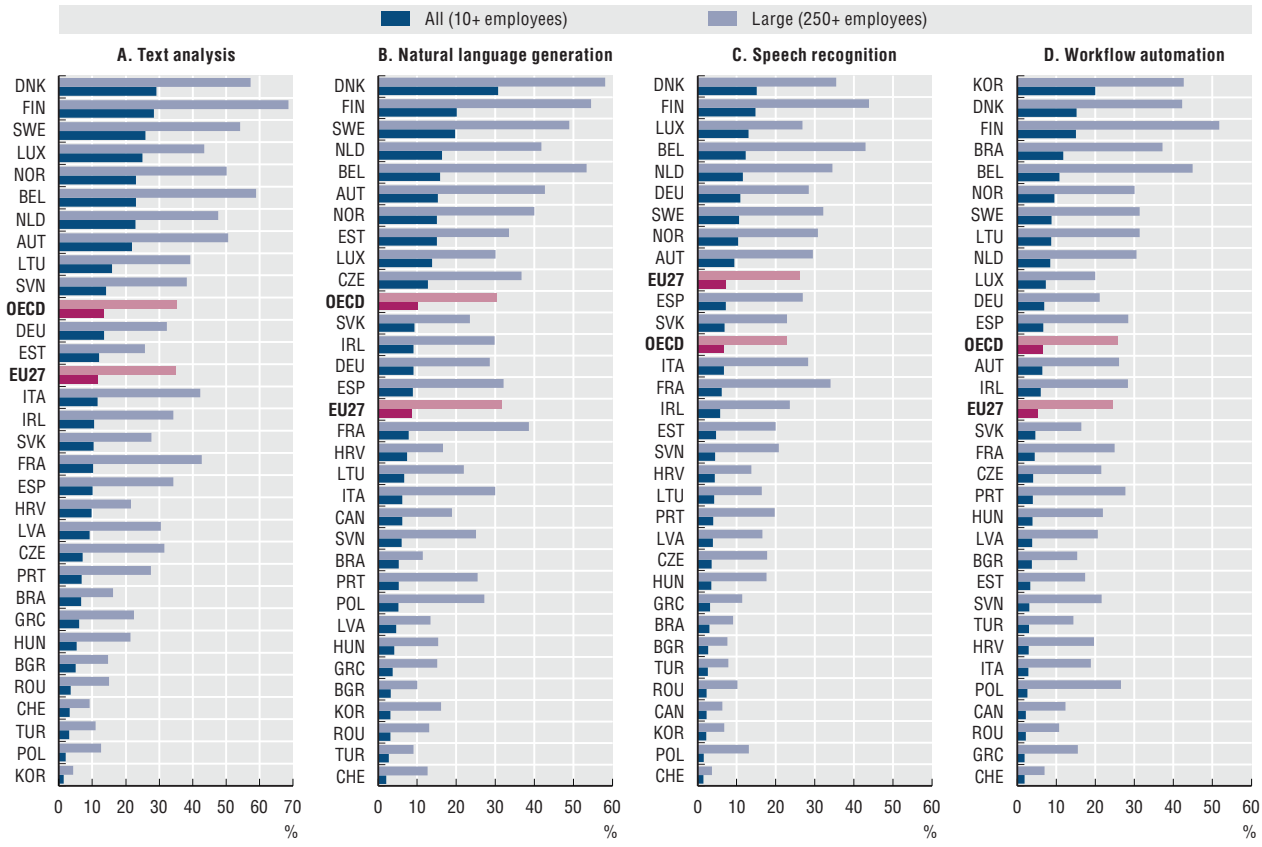
From business needs to AI solutions: Technologies in use

The AI technologies deployed by firms closely align with the purposes they serve, highlighting how solutions are tailored to business priorities. The top technologies include AI for analysing written language; AI for generating written or spoken language; speech recognition; and AI for workflow automation or decision support. Text analysis and machine learning are widely used across countries and sectors, underpinning applications in marketing, business administration and financial analysis. Natural language generation and speech synthesis are emerging in areas such as customer support, document drafting and virtual assistants. Workflow automation and decision-support technologies, including software-based robotic process automation, support back-office efficiency and strategic decision making.

Technology adoption is highly correlated with firm size (Figure 3.10). Large firms consistently report higher usage rates across all technologies, reflecting their ability to deploy complex AI solutions and integrate them into existing processes. Among the different technologies, text analysis and natural language generation are the most widely adopted, highlighting the growing importance of language-based technologies in driving digital transformation. Their broad applicability across industries likely reflects lower entry barriers compared to more specialised AI systems, underscoring the need for policies that support responsible deployment and skills development in this area. Workflow automation technologies are also widely used, supporting both operational efficiency and higher-level decision making. These patterns suggest that firms are not only meeting current operational needs but are also investing in scalable AI solutions that can transform multiple business functions.

Figure 3.10. AI technologies deployed align with business priorities and firm sizes

Adoption rates of top four AI technologies by firm size, 2025 (or most recent)



Notes: The most recent observation refers to 2025 except for Korea (2024), Canada and Switzerland (2023). See endnote 5 for the full description of technologies as per in-survey questions.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Sectoral patterns and the surge in AI uptake

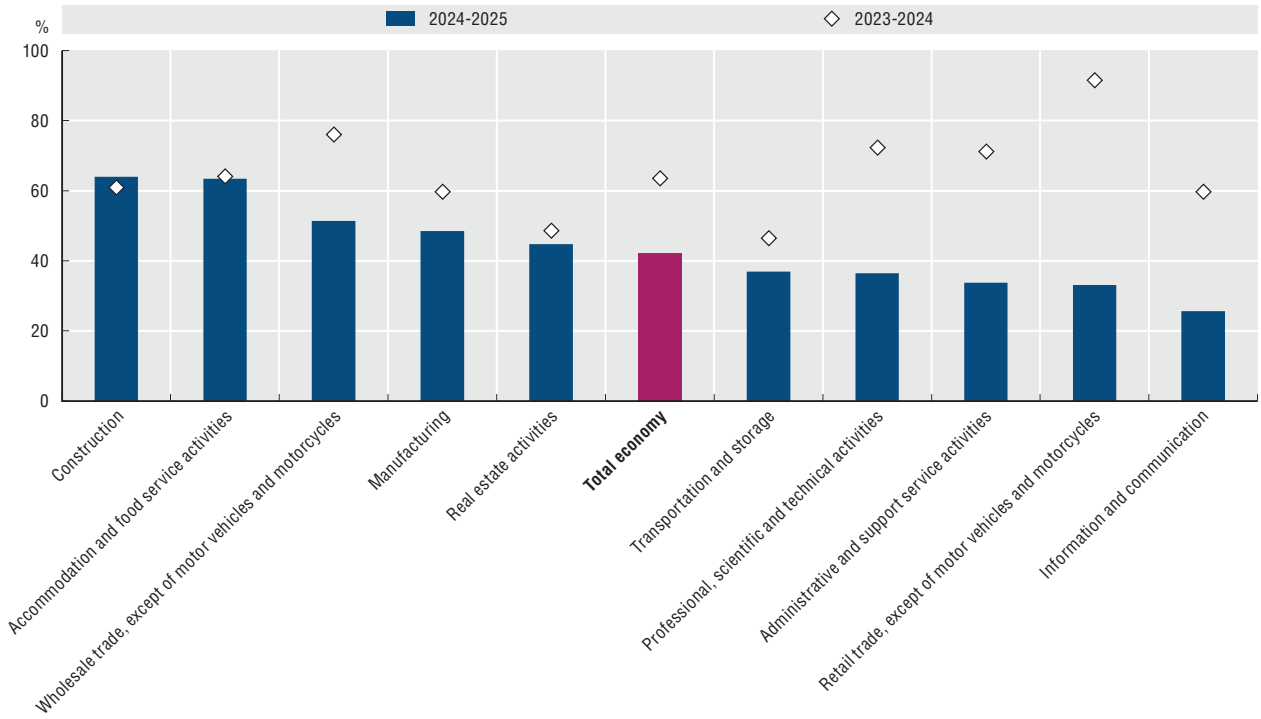
AI adoption accelerated rapidly across sectors between 2023 and 2024, with growth rates exceeding 50% in most industries (Figure 3.11). This surge points to a broad-based expansion of AI use, likely reflecting heightened awareness of AI's potential to improve efficiency, support decision making and enhance customer-facing activities. Growth remains strong through 2025, although at a slower pace across most sectors, suggesting a transition from an initial surge towards more gradual diffusion.

Retail trade (Section G, Division 47) experienced the fastest growth in 2023-2024 (over 90%), followed by wholesale trade (Section G, Division 46), professional, scientific and technical activities (Section M) and administrative and support services (Section N), all recording growth rates above 70%. In 2025, growth moderates across all sectors but remains relatively strong in construction (Section F), accommodation and food services (Section I), and wholesale trade (Section G, Division 46). The latter all record rates above 50%, indicating continued diffusion beyond early adopters.

While AI adoption continues to rise, its growth rate is slowing in several sectors. Growth in information and communication (Section J), while strong in 2023-2024, slows more markedly in 2024-2025, consistent with earlier and more mature adoption patterns.[6] Administrative and support service activities (Section N), retail trade (Section G, Division 47) and professional, scientific and technical activities (Section M) similarly shift from rapid initial uptake to more moderate growth, suggesting that early experimentation is giving way to consolidation. Transportation and storage (Section H), real estate activities (Section L) and manufacturing (Section C) also record steady but lower growth rates, pointing to a more gradual embedding of AI into existing business processes. Overall, these patterns indicate that while AI adoption continues to expand across the economy, the pace increasingly reflects sector-specific maturity, operational readiness and the scope for further integration.

Figure 3.11. AI adoption surged in 2024 but has moderated in 2025 with strong disparities across sectors

Adoption growth rates of AI by sector, enterprises with ten employees or more, 2023-2024 and 2024-2025



Note: Growth rates are based on data from OECD Member countries only.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/73ydlc

The sharp acceleration in 2024 partly reflects the rapid uptake of general-purpose GenAI tools. Tools such as ChatGPT, Gemini and Copilot have lowered entry barriers by offering ready-to-use solutions for a wide range of business functions (Calvino, Haerle and Liu, 2025[8]). Evidence shows that enterprises use these tools not only to generate written content but also to generate pictures, videos and sound – 10% of European firms report such uses in 2025 (Eurostat, 2025[9]). Yet many firms continue to face challenges that constrain broader adoption. In the European Union in 2025, 80% of firms do not use AI and only 11% of non-users have considered using these technologies in the future (Eurostat, 2025[9]). Among enterprises considering use of AI, the most frequently cited obstacle is lack of in-house expertise. Firms also report concerns related to data protection and privacy, uncertainty about the legal and regulatory implications of AI use, perceived high implementation costs and difficulties in integrating AI systems into existing infrastructure[7] (OECD, 2026[1]). These findings suggest that policies to promote AI diffusion need to address a broad set of constraints simultaneously, combining skills development, clarity on legal and data protection frameworks, and support for integration costs, particularly for firms with limited digital capabilities.

Individuals' use of generative AI: Purposes and key divides

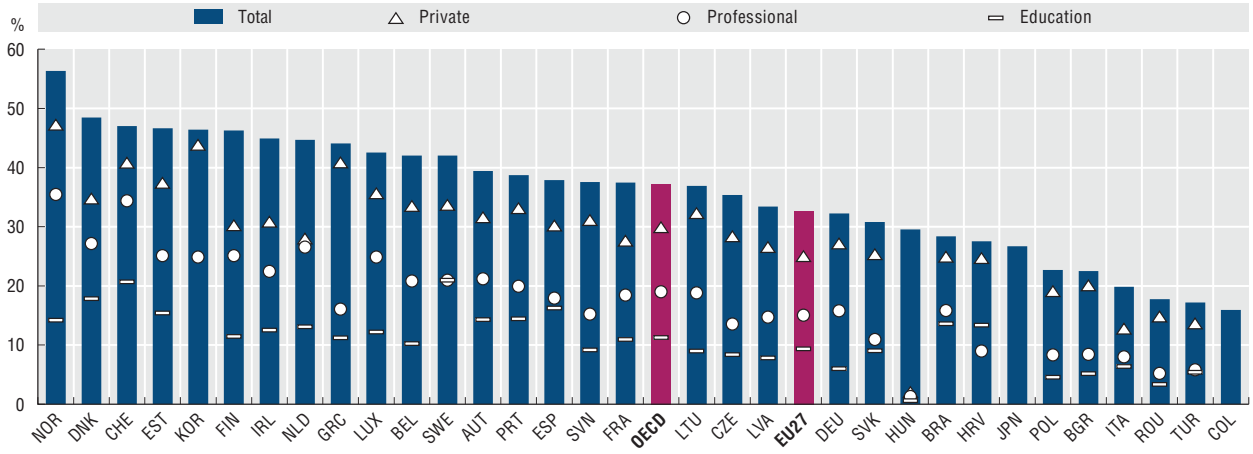
The growing role of GenAI is particularly important. Not only is GenAI likely driving firm adoption, it is also reshaping how individuals engage with AI in their daily lives. This dual influence makes GenAI a natural bridge between business and personal use, which is the focus of this subsection.

Generative AI spreads widely among individuals, driven mainly by private activities

GenAI tools are now widely accessible, and their usage extends well beyond professional contexts. Across the OECD, around 37% of adults reported use of GenAI tools in the last three months (Figure 3.12), with adoption exceeding 45% in several Nordic and smaller European countries. Use is most common for private purposes, reported by around 30% of individuals on average, compared to 19% for professional activities and 11% for formal education, such as school or university. This pattern indicates that GenAI is increasingly embedded in everyday life, not only in work or learning environments.[8]

Figure 3.12. About 40% of individuals use generative AI in the OECD, mostly for private purposes

Share of adults (aged 16 to 74) using any generative AI tools to create content in the last three months by purpose of use, 2025 (or most recent)



Notes: For Colombia, data refer to 2024 with a reference period of 12 months. For Japan, data refer to 2024 and no reference period is specified. In addition, data relate to individuals aged 20 to 69. See endnote 9 for the full description of purposes as per in-survey questions.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/h94e61

Younger, highly educated and higher-income individuals are more likely to use generative AI

According to the data, the use of GenAI is strongly associated with age, with younger individuals using these technologies at a higher rate. The share of individuals aged 16 to 24 who reported using GenAI is on average 68%, and the share for students aged 16+ reached 76%. The adoption rates decline significantly with age across all countries, with the largest differences observed between the 16-24 and 55-74 age groups. In these cases, the OECD average gap reaches 54 percentage points (p.p.), ranging from 26 p.p. in Colombia to over 67 p.p. in the Slovak Republic.

Moreover, individuals with a tertiary education report higher usage rates than those with only compulsory education. The average gap of 22 p.p. reflects greater awareness and access to AI for more educated individuals. Similarly, adoption of the technology is also correlated with income. On average, individuals in the highest income quintile reported usage rates at around 22 p.p. higher than those in the lowest quintile. Together with the strong age and education gradients, this suggests that exposure to GenAI is concentrated among younger, more educated and higher-income individuals, who are more likely to use these tools. Usage is also generally higher among men than women, although the gap across sexes is much smaller, at around 4 p.p., and it varies considerably across countries, from slightly favouring women in Estonia, Slovenia, Lithuania and Croatia, to over 9 p.p. higher for men in Ireland (Figure 3.13).

These findings are broadly consistent with those of the *OECD Truth Quest Survey* (2024[10]), which shows that younger adults (those aged 18-24) and those with a tertiary education are also the most optimistic about the impact of AI on their lives. After students aged 16 and over, GenAI is most favoured by those in employment (41%) and unemployed (37%) – groups with strong connections to the jobs market. In contrast, retired and other inactive groups use the technology less, at 13%. Existing evidence further suggests that GenAI can have both augmenting and displacing effects in the labour market: occupations with higher exposure to GenAI tend to experience income gains, while those more exposed to automation face greater risks (Engberg et al., 2025[11]; Johnston and Makridis, 2025[12]). As GenAI becomes common practice in more workplaces, these gaps between AI users and non-users are likely to widen, stressing the need for on-the-job AI training, and policies that support awareness and educational initiatives for AI adoption.

Selected countries that collected data for both 2024 and 2025 display an average growth rate of 64%, showing that adoption is still increasing strongly. The share of those aged 55-74 adopting the technology more than doubled over the year, while adoption among those aged 16-24 increased by 41%. The shares of those identified as belonging to unemployed, retired and other groups further from labour markets also more than doubled, while adoption among students increased by 32%.

Figure 3.13. Disparities in AI use are greatest by age

Differences in the share of adults (aged 16 to 74) using any generative AI tools to create content in the last three months, 2025 (or most recent)



Notes: For Colombia, data refer to 2024 with a reference period of 12 months. For Japan, data refer to 2024 and no reference period is specified. In addition, data relate to individuals aged 20 to 69. Gaps are defined as the difference in usage rates between men and women; young (aged 16 to 24) and older people (aged 55 to 74); individuals with high levels of educational attainment and individuals with low levels of educational attainment; and individuals residing in households in the fifth quintile of the household income distribution and individuals in households in the first quintile.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/d0jcxo

Groups report a variety of reasons for not using GenAI. The most common factor, cited by around 36% of individuals in the OECD, is a lack of perceived need. Smaller shares report barriers linked to awareness and capabilities: about 6% indicate they are not aware of GenAI tools, while 9% cite a lack of knowledge on how to use them. Concerns related to privacy, security or safety are less frequently reported, affecting around 4% of individuals (OECD, 2026[1]).

Countries are increasingly considering how to incorporate AI into their national curriculum. Sweden funded universities to develop short courses to strengthen AI skills among professionals. It also tasked higher education institutions to increase educational offerings related to AI and make efforts to integrate AI elements into the education programmes where relevant (OECD.AI, 2025[13]). Few education systems prepare students to engage properly with AI and to understand how to use it safely. Consequently, the OECD and the European Commission are joining forces to develop an AI Literacy framework. This will outline the knowledge, skills and attitudes to prepare students in primary and secondary education (OECD/European Union, 2025[14]; Schleicher, 2025[15]).

Beyond adoption rates: ICTs as drivers of economic growth and resilience

ICTs are central to modern economic activity, supporting productivity growth, enabling innovation and shaping how firms organise production, deliver services and connect to global markets. While indicators of ICT adoption provide valuable insights into how widely digital tools are used, they offer only a partial view of the economic role of ICTs. A fuller assessment can be achieved based on how ICT value is created, how it circulates across sectors and borders, and how countries position themselves within increasingly interconnected digital production systems.

This broader perspective is particularly relevant in the context of heightened attention to economic resilience and supply-chain interdependence. ICTs are both engines of growth and key channels of international integration. Their production and use rely on global networks, simultaneously shaping countries' exposure to external shocks and developments. Policymakers can enrich their understanding of ICT performance by moving beyond adoption and diffusion to consider growth dynamics, domestic spillovers[10] (i.e. indirect use of ICT value added embodied in intermediate goods and services) and international sourcing structures.

Estimates for 2025 point to continued ICT growth across the OECD, with signs of convergence

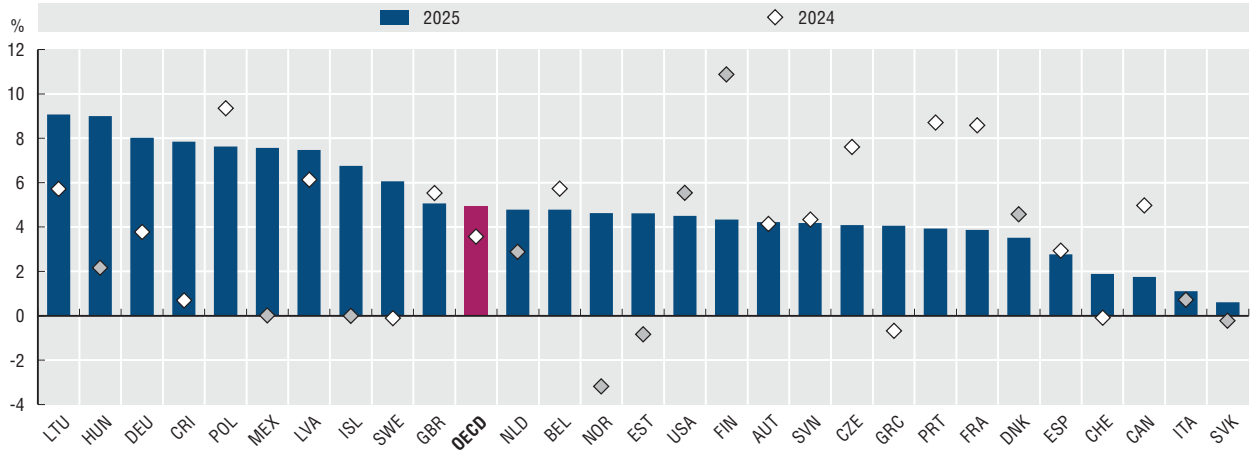
Timely estimates of ICT sector performance are essential to understanding shifts in the digital economy. While official statistics provide a reliable baseline, they are often subject to publication lags. Complementary short-term indicators, such as nowcasts based on online search and demand-side data, provide a more immediate view of sector performance and emerging trends (OECD, 2024[16]; Umana Dajud, 2024[17]).

Estimates for 2025 point to a continued growth in ICT value-added relative to 2024, with an OECD average of 5% highlighted in red in Figure 3.14. While this aggregate reflects a generally resilient expansion, substantial variation persists across countries. Growth is strongest in Lithuania (9%), Hungary (9%) and Germany (8%). However, several previously high-growth countries from 2024, Finland (11%), Portugal (9%), France (9%) and Czechia (8%), are projected to moderate, suggesting a partial normalisation following strong short-term expansions.

Comparing 2025 with 2024 predictions, the distribution of growth is more compressed, with fewer extreme outliers and a convergence towards the OECD average. Some countries, such as Germany, Hungary, Mexico, Norway and Sweden see an increase relative to 2024, while others, including Czechia, Finland, France, and Portugal, experience a slowdown. At the lower end, Italy (1%), Canada (2%), Switzerland (2%) and the Slovak Republic (1%) are projected to see modest growth. Mid-tier countries, including Belgium (5%), the Netherlands (5%), Norway (5%) and the United States (5%), remain close to the OECD average, reflecting broad-based, moderate expansion.

Figure 3.14. ICT sector growth in 2025 points to broad convergence across the OECD

Predicted (full bars and white diamonds) and observed (grey diamonds) ICT sector growth rates, 2024 and 2025



Notes: Vertical bars show 2025 nowcasted point estimates derived from TiVA-based optimal pooling. Overlapping white diamonds indicate 2024 nowcasts while grey diamonds refer to official statistics. Full country-level predictions for all 2025 (or most recent), with 90% confidence intervals and historical missing years, are reported in the complementary technical paper (OECD, 2026[18]).

Source: OECD (2026[20]), *Data Kitchen* (database), *https://goingdigital.oecd.org/datakitchen* based on OECD (2026[19]), *STAN Database*; OECD (2026[24]), *TiVA Database*; and *Google Trends* (dataset) (accessed from 1 to 20 January 2026).

StatLink https://stat.link/qzv1js

This greater convergence echoes the patterns of AI diffusion, which suggests that the exceptionally rapid acceleration in AI adoption observed in 2023-2024 has given way to a more mature and incremental phase in 2025, as firms move from initial deployment to optimisation and integration (OECD, 2026[21]).

ICT outputs are critical enablers of economic activity across global value chains

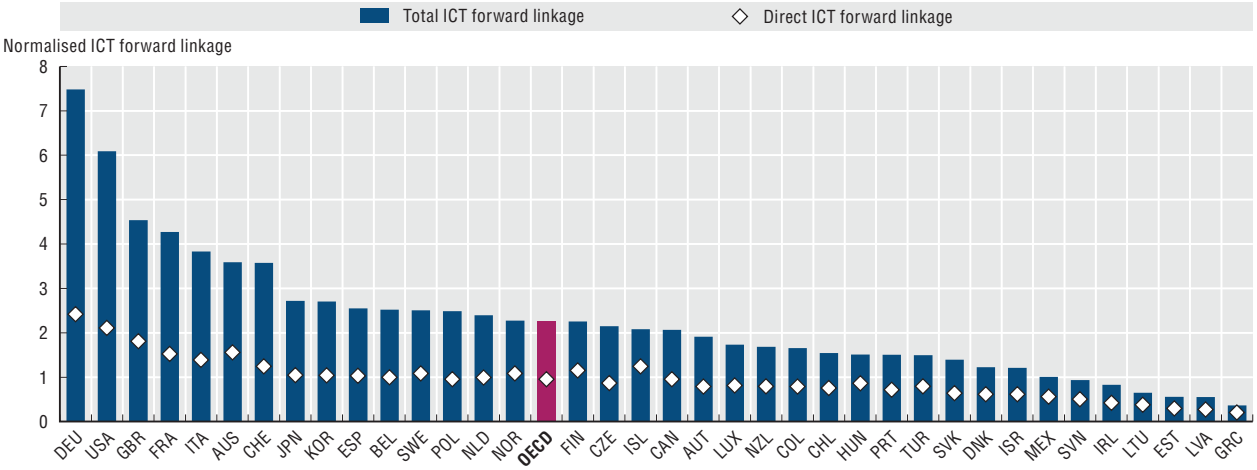
The economic contribution of ICTs extends far beyond firms and sectors that directly produce or adopt digital technologies. ICT goods and services are widely used as intermediate inputs across the economy, supporting production in manufacturing, market services and the public sector. Through these supply-chain connections, the direct purchase of ICTs influences productivity, costs and innovation. At the same time, they have an indirect influence on these factors as ICT-enabled inputs are passed along production networks.

Analysis of OECD Inter-Country Input-Output (ICIO) Tables highlights substantial cross-country differences in the extent to which economic activity relies on ICT outputs (Figure 3.15).[11] These linkages can be broken down into two components. Direct ICT forward linkages capture the immediate use of ICT goods and services by downstream sectors (e.g. firms purchasing software, data services or telecommunications). For their part, indirect ICT forward linkages capture spillovers transmitted through supply chains, where ICT-intensive inputs are embedded in other intermediate goods and services used throughout the economy.

In countries such as Germany, ICTs play a particularly strong supporting role, with a large share of this contribution occurring indirectly through suppliers and production networks. This suggests that ICTs are deeply embedded across German value chains, amplifying their impact beyond direct users. The United States and the United Kingdom also show a high reliance on ICT outputs, combining strong direct use with sizeable indirect spillovers transmitted through supply chains. Even in countries where the overall reliance on ICT outputs is more modest, indirect linkages remain substantial. This indicates that ICTs operate as general-purpose technologies: improvements in ICT production or adoption can generate multiplier effects across the economy, while digital bottlenecks can constrain performance well beyond digitally intensive sectors.

Figure 3.15. ICT spillovers represent a significant share of forward linkages in most countries

Total and direct ICT forward linkages, 2022



Notes: Total forward linkages measure the use of ICT outputs by non-ICT sectors, combining both direct consumption (direct ICT forward linkages) and indirect spillovers (indirect ICT forward linkages) through upstream supply chains. Country-level totals exclude ICT sectors and are normalised by the OECD average of non-ICT sectors, so the plotted values are dimensionless.

Source: OECD calculations based on OECD (2026[22]), *Inter-Country Input-Output Tables*, *https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html*. StatLink contains more data.

StatLink *https://stat.link/n9rps5*

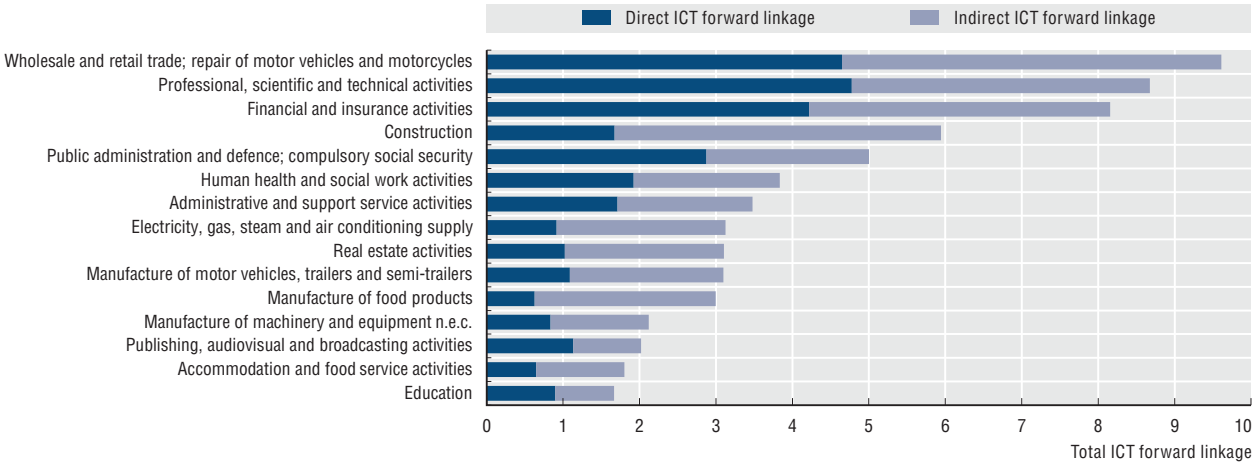
At the sectoral level, wholesale and retail trade (Section G), followed closely by professional, scientific and technical activities (Section M), show the strongest reliance on ICT outputs (Figure 3.16). In these sectors, ICTs are used intensively and directly to manage complex production processes, logistics and information flows. These sectors combine high direct purchases of ICT services with strong spillovers[10] (i.e. indirect use of ICT value added embodied in intermediate goods and services) transmitted through supply chains.

Conversely, sectors such as food products (Section C, Divisions 10 to 12), electricity supply (Section D), real estate (Section L) and machinery manufacturing (Section C, Division 28) make more limited direct use of ICT goods and services but benefit substantially from indirect ICT inputs embedded in intermediate goods and services supplied by upstream firms. For example, construction (Section F) and real estate (Section L) rely heavily on ICT-enabled inputs such as engineering services, even if their own ICT purchases are relatively modest.

This pattern reveals that the economic importance of ICTs extends well beyond digitally intensive sectors. Productivity growth in sectors such as construction (Section F) increasingly relies on the digital sophistication of their suppliers and service providers. As a result, the returns to ICT investment are not confined to adopting firms but accrue across interconnected value chains. This implies that digital transformation strategies should focus on both firm-level adoption and strengthening complementary assets that enable diffusion throughout production networks.

Figure 3.16. Reliance on ICT goods and services varies significantly across sectors

Top 15 non-ICT sectors by direct and indirect ICT forward linkages, OECD average, 2022



Notes: ICT forward linkages measure the total output generated across sectors by one unit of ICT sector output. Values are normalised by the average forward linkage of non-ICT sectors, so the plotted values are dimensionless. A value greater than 1 indicates that the sector is more dependent on ICT inputs than the average non-ICT sector, while a value less than 1 indicates lower dependence.

Source: OECD calculations based on OECD (2026[22]), *Inter-Country Input-Output Tables*, *https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html*.

StatLink https://stat.link/zm17v0

The United States and the People's Republic of China drive ICT value creation in the global economy

While ICTs support activity through domestic supply chains, their impact increasingly extends across borders. The international dimension can be examined by considering where ICT value is created and how it supports demand abroad. Domestic ICT value added embodied in foreign final demand captures the extent to which ICT production in one economy ultimately contributes to consumption and investment elsewhere.

In 2022, global ICT value embodied in foreign final demand was highly concentrated among a small number of economies (Figure 3.17). The structure of these cross-border flows can be represented as a network, where nodes correspond to countries and directed links capture the value added generated in one economy and ultimately absorbed in another's final demand. This network perspective highlights both the scale of leading contributors and the intensity of bilateral value-added corridors that anchor the global digital economy.

Two economies dominate: the United States and the People's Republic of China (hereafter "China"). China is the single largest supplier of ICT value added embodied in foreign demand, including USD 26.3 billion flowing to the United States alone. Major additional corridors link China to Japan (USD 10.0 billion), Korea (USD 3.9 billion) and Chinese Taipei (USD 2.5 billion), underscoring the central role of East Asia in ICT manufacturing.

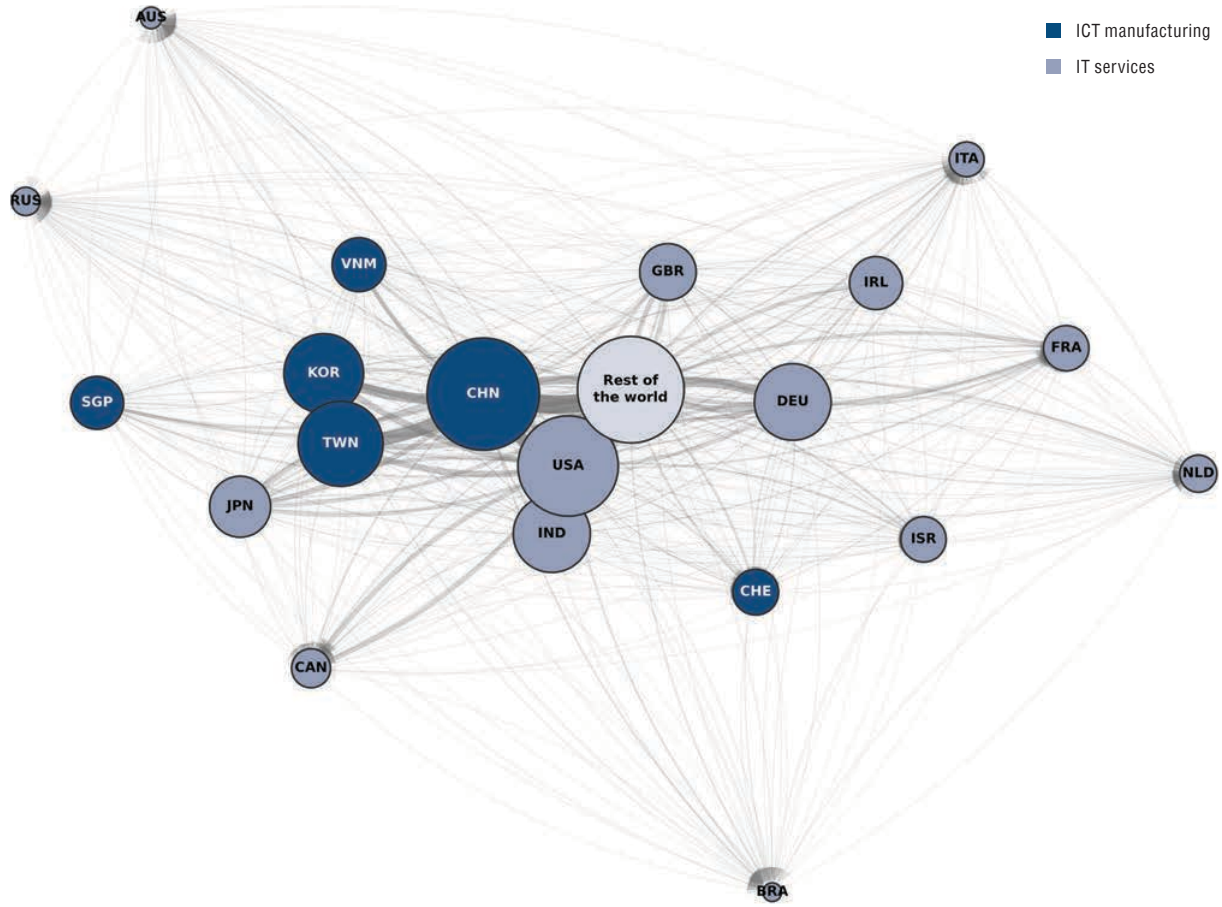
The United States is both a major supplier and a major destination within the network. It supplies substantial ICT value added to key partners, including Canada (USD 11.3 billion), China (USD 10.4 billion) and Japan (USD 10.4 billion), while also absorbing large inflows from North American and European partners, such as Canada (USD 7.9 billion), Germany

(USD 7.5 billion) and Mexico (USD 7.0 billion). These dense trans-Pacific and North American corridors illustrate the regional clustering and interdependence that characterise global digital production networks.

The composition of these flows reflects complementary specialisations. The outward contribution of the United States is largely driven by ICT services, including software development, digital platforms and advanced technological solutions. Conversely, China's prominence reflects its central role in ICT manufacturing and hardware production, supported by large-scale and deeply integrated supply chains. Together, these patterns show that global ICT value creation is not only concentrated but organised around a limited number of powerful production hubs connected by high-volume bilateral value-added channels.

Figure 3.17. A few economies drive most global ICT value added absorbed abroad

Domestic ICT value added embodied in foreign final demand, top 20 economies, 2022



Notes: The figure shows domestic ICT value added embodied in foreign final demand, capturing cross-border flows of ICT value through final consumption and investment. Node colour indicates the dominant ICT sub-sector. Node size reflects total ICT value added exported. The distance between nodes indicates the relative strength of ties, and link thickness the magnitude of bilateral value added flows. Please refer to OECD (2025[23]) for the methodology for deriving the TiVA indicators.

Source: OECD calculations based on OECD (2026[24]), *TiVA Database*, *http://oe.cd/dk-tiva*.

StatLink *https://stat.link/v7pwie*

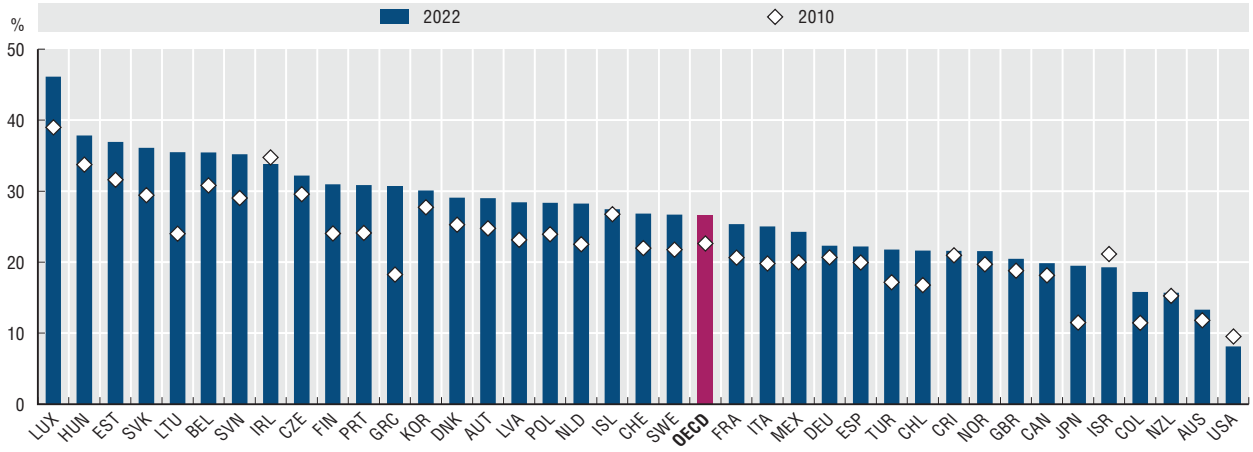
OECD Member countries vary in how they integrate into global digital supply chains

While some countries stand out as major suppliers of ICT value to global markets, all countries rely to some extent on ICT inputs produced abroad. The share of foreign ICT value added embedded in domestic ICT demand provides insight into how deeply countries are integrated into international digital production networks. It also sheds light on the exposure of countries to cross-border supply dynamics.

Across the OECD, the degree of international ICT input integration varies widely but has increased overall between 2010 and 2022 (Figure 3.18). Smaller and more open countries tend to rely more heavily on foreign ICT inputs, reflecting their roles as assembly hubs or specialised service providers within global value chains (Johansson and Olaberría, 2014[25]; OECD, 2021[26]). Larger countries generally rely less on foreign inputs, supported by broader domestic production bases, although none are fully insulated from international linkages. These differences reflect a combination of factors, including countries' industrial structure, the balance between ICT manufacturing and services, and their position within global value chains.

Figure 3.18. The dependence on imported ICT inputs varies significantly across the OECD

Foreign ICT value added as a share of domestic ICT demand, 2010 and 2022



Notes: Foreign ICT value added is measured as the share of domestic ICT demand that originates abroad. ICT demand includes both intermediate and final use of ICT goods and services. Please refer to OECD (2025[23]) for the TiVA indicators' methodology.

Source: OECD calculations based on OECD (2026[24]), *TiVA Database*, *http://oe.cd/dk-tiva*.

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ICT sourcing is highly concentrated around a small number of strategic hubs, reflecting both efficiency gains and deep interdependencies

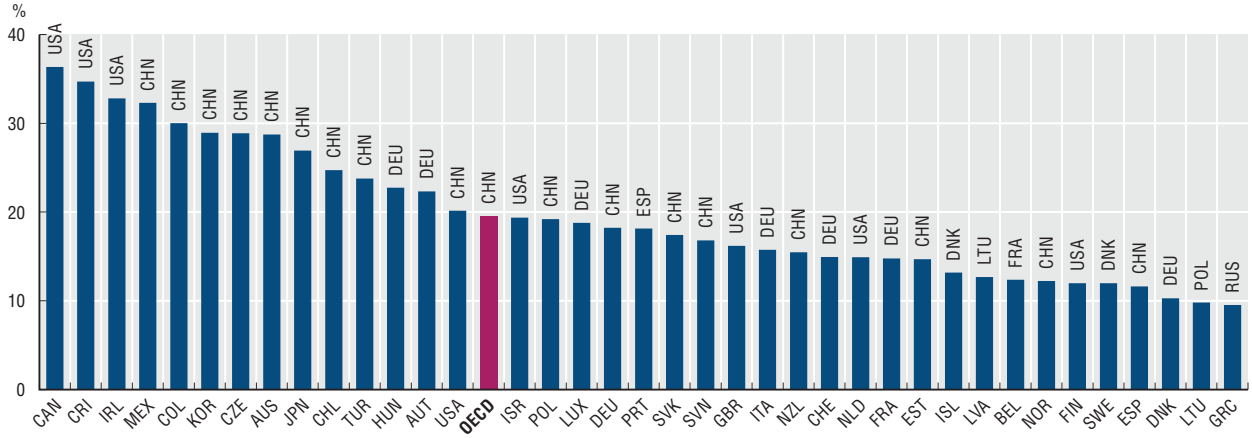
The structure of ICT sourcing provides critical insight into how OECD Member countries navigate global production networks. Concentration in sourcing – the extent to which foreign ICT inputs originate from a limited number of partner economies – often arises from efficiency gains and scale effects. However, it also defines a country's exposure to regional or partner-specific supply shocks.

In 2022, China emerged as the single largest source of foreign ICT value added for OECD Member countries (Figure 3.19). For many OECD Members, China accounted for a substantial share of foreign ICT inputs, particularly in hardware-related segments, where production benefits from scale and deeply integrated manufacturing ecosystems. In several countries, including Australia, Japan, Korea and Mexico, more than one-quarter of foreign ICT value added originated from China, highlighting its central role in global ICT production.

Other major countries also play an important role as sources of foreign ICT value added, reflecting complementary areas of specialisation. The United States is a key supplier for several OECD Member countries, particularly in high-value digital services and advanced ICT solutions, while Germany plays a central role within European regional production networks. These patterns underscore the importance of long-standing, trusted partnerships in shaping ICT sourcing structures.

Figure 3.19. China is the leading source of foreign ICT value added for most OECD Member countries

Share of foreign ICT value added accounted for by the largest supplier, 2022



Notes: The figure shows, for each OECD Member country, the share of foreign ICT value added accounted for by the single largest foreign supplier. ICT value added refers to value generated in foreign ICT sectors and embodied in domestic ICT demand. The figure highlights concentration in sourcing, not overall reliance on foreign ICT inputs. Please refer to OECD (2025[23]) for the TiVA indicators' methodology.

Source: OECD calculations based on OECD (2026[24]), *TiVA Database*, *http://oe.cd/dk-tiva*. StatLink contains more data.

StatLink *https://stat.link/sm1tof*

From a policy perspective, high concentration in ICT sourcing does not automatically imply vulnerability. In many instances, it reflects stable, high-efficiency supply relationships that accelerate the diffusion of frontier technologies. However, the stark contrast between the concentration in hardware manufacturing and the relative diversity in IT services suggests that policy efforts to enhance supply-chain resilience should be sector specific. For OECD Member countries, maintaining reliable and trusted international partnerships remains the cornerstone of a resilient and interconnected digital economy.

Maximising the benefits of digital technologies for the economy and society

This chapter highlights how frontier digital technologies and ICT outputs are reshaping business activity, individual behaviour and economic performance, while also exposing persistent gaps. Cloud computing has become widely adopted across firms, forming a foundation for complementary digital tools. Conversely, AI and big data analytics remain concentrated among larger, knowledge-intensive firms, with full integration across all three technologies still limited. Growth in AI adoption surged in 2024 but moderated in 2025, and projections suggest that uptake may continue to be skewed towards large firms. GenAI is rapidly diffusing among individuals, with younger, highly educated and higher-income users leading use.

Beyond uptake, ICT goods and services underpin productivity, innovation and competitiveness across the economy. Forward and horizontal linkages illustrate that indirect use of ICT outputs embodied in intermediate inputs and transmitted through supply chains (i.e. ICT spillovers[10]) extend well beyond direct users, supporting other sectors and strengthening interconnections within the ICT ecosystem. These effects are amplified by international integration: OECD Member countries rely to varying degrees on foreign ICT inputs, while sourcing structures and the concentration of suppliers. Notably, China plays a central role in ICT manufacturing, while other major players like the United States make complementary contributions in IT services, and shape exposure to global production networks and the diffusion of ICT value across borders.

Policy responses must therefore adopt a systemic perspective that goes beyond promoting uptake of individual technologies. Expanding access to cloud services, alongside targeted support for AI and big data analytics, can help narrow firm-size gaps, foster co-ordinated adoption of technology bundles and accelerate enterprise-level transformation. At the same time, policies should recognise the international dimension of ICTs, supporting stable and trusted cross-border partnerships, and mitigating risks arising from concentrated sourcing of ICTs.

Strengthening digital infrastructure, interoperability and open standards can amplify ICT spillovers, benefitting both lagging sectors and smaller firms. Taken together, these approaches can enhance productivity and innovation potential. At the same time, they can ensure that digitalisation gains are more broadly shared across firms, sectors and society, and that countries remain resilient and well positioned within global digital production networks.

Annex 3.A. Methodology for the diffusion path forecasts and regression tables

The diffusion paths are estimated using ordinary least squares (OLS) regressions on logistic-transformed adoption rates, a standard approach for modelling *S-shaped* technology diffusion curves. For each technology and firm size, the logit of the OECD average adoption rate was regressed on year. This model set-up ensures consideration of country-specific, time-invariant factors influencing adoption.

Forecasts extending to 2030 were derived by applying the inverse logit function to the predicted logit values from the fitted models. While these forecasts provide an indication of potential future trends based on historical data, the actual diffusion of fast-growing technologies can be influenced by unforeseen market dynamics, rapid technological advancements and evolving policy landscapes. Therefore, these projected pathways should be interpreted as informed estimates rather than precise predictions. The estimated specification can be found below:

$$logit\left(AdoptionRate\right) = \beta_0 + \beta_1 \cdot Year + \epsilon$$

Where $logit\left(AdoptionRate\right) = log\left(\frac{AdoptionRate}{1 - AdoptionRate}\right)$, β_0 is the intercept, β_1 represents the coefficient for year, indicating the average annual change in the log-odds of adoption, while ϵ is the error term.

Table 3.A.1. Estimated diffusion paths for cloud computing and AI

OLS regressions, OECD average, by firm size, 2010-2025 (or most recent)

	All firms (+ 10 employees)		Large firms (+ 250 employees)	
	Cloud computing	AI	Cloud computing	AI
Year	0.1485***	0.2747***	0.2065***	0.2994***
	(0.0070)	(0.0410)	(0.0068)	(0.0406)
R-squared	0.9783	0.9181	0.9894	0.9314
Observations	12	6	12	6

How to read the table: The dependent variable is the logit-transformed adoption rate, i.e. $log\left(s_{it} / (1 - s_{it})\right)$, where s_{it} is the adoption rate in country i in year t. Robust standard errors are in parentheses. *, ** and *** denote statistical significance at the 10%-, 5%- and 1%-level, respectively.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

Annex 3.B. Methodology for nowcasting AI uptake in enterprises in 2025

This annex describes the statistical framework used to generate 2025 nowcasts of AI adoption for enterprises with ten or more employees in countries in which official data are not available to date. The approach is designed for settings in which historical time series are short and uneven across countries. It combines a flexible diffusion model grounded in the innovation literature with a cross-country borrowing mechanism that stabilises estimation under limited data availability. Model performance is assessed through rolling out-of-sample validation, and uncertainty ranges are reported to reflect predictive precision.

The generalised logistic curve

The diffusion of new technologies typically follows an S-shaped trajectory: gradual early uptake, a phase of acceleration and eventual saturation. While the standard logistic function captures this pattern, it imposes symmetry around the inflection point. To allow for greater flexibility, the analysis employs the generalised logistic (or *Richards*) curve (Richards, 1959[27]), which introduces an additional shape parameter governing asymmetry. The functional form is:

$$A(t) = \frac{L}{\left[1 + \nu e^{-k(t-t_0)}\right]^{1/\nu}}$$

Where $A(t)$ is the AI adoption rate in year t; L is the saturation level (upper asymptote); k is the growth rate (steepness of diffusion); t_0 is the inflection point (year of maximum marginal growth); and ν governs the asymmetry: when $\nu = 1$, the function collapses to the standard logistic curve; $\nu \geq 1$ implies earlier acceleration and slower convergence; $\nu \leq 1$ implies later acceleration and faster convergence.

The additional flexibility provided by ν is particularly relevant in the context of AI, where adoption patterns differ substantially across countries due to variations in industrial structure, digital infrastructure, skills and policy frameworks, for example. The Richards specification allows for heterogeneous diffusion speeds and take-off dynamics, while maintaining a coherent theoretical structure consistent with the innovation diffusion literature (Tsoularis and Wallace, 2002[28]; Rogers, 2003[29]; Meade and Islam, 2006[6]).

Data and estimation

The analysis uses annual data from the *OECD ICT Access and Usage Database* (OECD, 2026[1]) beginning in 2017. The focus is on enterprises with ten or more employees. Only countries with at least two observed data points are retained for nowcasting, ensuring a minimal empirical basis for estimation.

Because country-level time series are short, the first step consists of estimating a global reference trajectory. A Richards curve is fitted to the mean adoption rate by year across the OECD. This pooled estimation yields global parameters k, t_0 and ν, which capture the typical diffusion pattern across OECD Member countries. The saturation parameter L is capped at 50%, calibrated based on observed maximum adoption and expected remaining diffusion potential.

For countries with fewer than four observations, full country-specific estimation of all Richards parameters is not statistically robust. A borrowed approach is therefore applied, wherein the global shape parameters (k, t_0, ν) are retained while a country-specific scaling factor s is estimated to adjust the effective saturation level. The underlying intuition is that while the pace and timing of adoption may follow a common pattern across countries, the ultimate level of adoption can vary according to national circumstances, which the scaling factor captures efficiently.

Performance assessment and uncertainty quantification

Model performance is evaluated using a rolling one-step-ahead out-of-sample Root Mean Square Error (RMSE), obtained by re-estimating the model up to year t, predicting year $t+1$ and repeating iteratively. Across all evaluated countries, the Richards borrowed specification produced lower or more stable out-of-sample errors than alternative logistic models. In particular, standard logistic variants generated implausible trajectories and large forecast dispersion, whereas the Richards borrowed model maintained economically coherent dynamics and bounded uncertainty. This superior predictive performance supports its selection for the final predictions.

Alternative estimation techniques were explored, including machine-learning approaches such as random forests and gradient boosting. Their application proved challenging given the short length of the available time series (at most seven annual observations per country). With limited temporal depth, these data-driven methods tended to overfit, producing unstable out-of-sample predictions. By contrast, the parsimonious structure of the Richards borrowed model, anchored in a theoretically grounded diffusion function and borrowing strength across countries, delivered more robust and interpretable results. This approach was therefore preferred for its combination of flexibility, stability and economic interpretability.

Each prediction for 2025 is accompanied by a predictive interval constructed as:

$$\hat{A}_{2025} \pm RMSE_{pred} \times \left(1 + 0.5\sqrt{h}\right)$$

Where $\hat{A}_{2025}$ is the point estimate, $RMSE_{pred}$ is the out-of-sample RMSE and h represents years beyond the last observation. The term $1 + 0.5\sqrt{h}$ imposes a horizon-dependent penalty that progressively widens intervals as the forecast horizon extends, reflecting the increasing uncertainty inherent in longer-range extrapolation. Bounds are truncated at 0 and 100 to respect natural adoption limits. These intervals account for model error, parameter uncertainty and extrapolation risk, and should therefore be interpreted as predictive ranges rather than strict statistical confidence intervals.

Estimation results

Table 3.B.1 presents the 2025 nowcasts of AI uptake among enterprises with ten or more employees for selected OECD Member countries, together with model-based measures of predictive uncertainty.

Table 3.B.1. Nowcasts of AI uptake in enterprises for selected OECD Member countries

Richards borrowed diffusion model, enterprises with ten or more employees, 2025

	Point estimate (%)	RMSE (p.p.)	Lower bound (%)	Upper bound (%)
Australia	7.6	1.7	4.4	10.8
Canada	12.5	0.7	11.4	13.6
Colombia	23.8	1.4	20.9	26.7
Japan	13.0	2.5	8.8	17.2
Korea	33.5	12.4	14.9	52.1
Switzerland	18.5	3.6	12.4	24.6
United States	17.5	4.2	9.2	25.8

Notes: Bounds are derived from out-of-sample Root Mean Square Error (RMSE), scaled by a horizon-dependent factor to account for growing uncertainty with forecast distance. The relatively high RMSE for Korea reflects a sharp acceleration in observed AI uptake between 2021 and 2023, which generates larger one-step-ahead forecast errors in the rolling validation exercise.

Source: OECD calculations based on OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

Annex 3.C. Methodology for ICT linkages and results

This annex describes the approach used to compute ICT forward linkages based on the OECD Inter-Country Input-Output (ICIO) Tables (OECD, 2026[22]). The objective is to capture the extent to which output from ICT-producing industries is used as an input in the production of goods and services across countries. This, in turn, allows tracing the role of ICT as an enabler of activity throughout global value chains.

The ICIO framework

Forward linkages are estimated using the Ghosh (supply-driven) input-output model (Ghosh, 1958[30]). Let Z = inter-industry transaction matrix across all countries and sectors (with elements $Z_{(i,c),(j,d)}$, i.e. deliveries from sector i in country c to sector j in country d); and X = vector of total outputs by country-sector, with elements $x_{(i,c)}$. The output coefficients matrix is defined as:

$$B_{(i,c),(j,d)} = \frac{Z_{(i,c),(j,d)}}{x_{(i,c)}}$$

Where each entry shows the share of output from sector i in country c delivered as input to sector j in country d. The Ghosh inverse is then given by:

$$G = (I - B)^{-1}$$

Where I is the identity matrix. G traces how a unit change in the supply of one country-sector propagates through downstream production chains globally.

ICT forward linkages

ICT forward linkages are obtained by focusing on the ICT-producing sectors identified in the OECD ICIO classification (C26 "Computer, electronic and optical products", J61 "Telecommunications", J62T63 "IT and other information services") across all countries.

For each year t, country c and non-ICT sector j:

- Direct forward linkage (immediate purchase of ICT outputs):

$$FL^{direct}_{(j,c)} = \sum_{(i,d)\in ICT} B_{(i,d),(j,c)}$$

- Total forward linkage (direct and indirect dependence, via global production chains):

$$FL^{total}_{(j,c)} = \sum_{(i,d)\in ICT} G_{(i,d),(j,c)}$$

- Indirect forward linkage:

$$FL^{indirect}_{(j,c)} = FL^{total}_{(j,c)} - FL^{direct}_{(j,c)}$$

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Notes

1. For cloud computing and artificial intelligence, the most recent observation refers to 2025 except for Korea (2024), Canada, Japan and Switzerland (2023), and Australia and New Zealand (2022). For big data analytics, the most recent observation refers to 2025 except for Korea (2024), Japan (2023), and Australia and Switzerland (2022).

   For countries in the European Statistical System, data for "big data analytics" relate to "data analytics".

   For Australia, data are for the financial year 2021-2022 ending 30 June 2022.

   For Brazil, Retail trade (ISIC Rev.4 Section G, Division 47) and Administrative and support service activities (ISIC Rev.4 Section N) are not collected.

   For Canada, the North American Industry Classification System is used instead of ISIC Rev.4.

   For Japan, data originate from the Japanese National Innovation Survey 2024 and refer to the three-year period 2021-2023.

   For Korea, Wholesale trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G Division 46) includes Retail trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G, Division 47).

   For Switzerland, data refer to businesses with five or more employees (instead of ten or more) and for "cloud computing", to proportion of total businesses using (rather than buying) cloud computing services.

2. The most recent observation refers to 2025 except for Korea (2024), Canada and Japan (2023), and Australia (2022).

   For countries in the European Statistical System, data for "big data analytics" relate to "data analytics". Moreover, data for "cloud computing services" relate to the purchase of sophisticated or intermediate cloud computing services. Sophisticated or intermediate cloud computing services are defined as the purchase of one or more of the following as a cloud computing service: finance or accounting software applications; ERP software applications; Customer Relationship Management (CRM) software; security software applications; hosting for the enterprise's database; computing platform providing a hosted environment for application development, testing or deployment.

   For Australia, data are for the financial year 2021-2022 ending 30 June 2022.

   For Brazil, Retail trade (ISIC Rev.4 Section G, Division 47) and Administrative and support service activities (ISIC Rev.4 Section N) are not collected.

   For Canada, the North American Industry Classification System is used instead of ISIC Rev.4. Moreover, the Canadian survey only asks about one cloud computing services use case that is considered sophisticated: "Cloud-based environment for application development, testing or deployment." Furthermore, 2023 data for "big data analytics" relate to "data analytics".

For Japan, data originate from the Japanese National Innovation Survey 2024 and refer to the three-year period 2021-2023.

For Korea, Wholesale trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G, Division 46) includes Retail trade, except of motor vehicles and motorcycles (ISIC Rev.4, Section G, Division 47).

3. As with any predictions, uncertainty increases with nowcast distance from the last observed data point. Annex 3.B reports predictive ranges alongside each nowcast and provides full methodological details. These ranges should be interpreted as indicative bounds reflecting historical forecast error and extrapolation risk, rather than precise confidence intervals.

4. The indicator on AI use for marketing or sales measures the share of enterprises employing AI for activities such as customer profiling, price optimisation, personalised marketing offers, market analysis based on machine learning, chatbots using natural language processing for customer support, or autonomous robots for order processing. AI use for business administration or management captures enterprises deploying AI for business virtual assistants to support document drafting, data analysis or strategic decision making. This includes risk assessment, planning or business forecasting, and human resources management tasks such as candidate pre-selection, employee profiling or performance analysis. The use of AI for accounting, controlling or finance management measures the adoption of AI for automated invoice processing, bookkeeping tasks based on machine learning or natural language processing, and the analysis of financial data to inform decision making. The ICT security indicator refers to the application of AI technologies for authenticating users through facial recognition or detecting and preventing cyber-attacks using machine learning.

5. AI technologies used by enterprises: the indicator on AI technologies performing analysis of written language captures the use of methods such as text mining, sentiment analysis and other text analytics. The generation of written or spoken language measures enterprise use of AI for natural language generation, chatbots or speech synthesis. Speech recognition refers to AI technologies converting spoken language into machine-readable format. Finally, AI technologies for automation or decision support cover the use of AI-based software for robotic process automation, workflow automation, and decision-support systems designed to assist or streamline enterprise processes.

6. These patterns are broadly consistent with recent findings showing that AI intensity is highest in knowledge- and data-driven sectors such as IT services, media and telecommunications, and lowest in traditional manufacturing and construction industries (Calvino et al., 2024[32]).

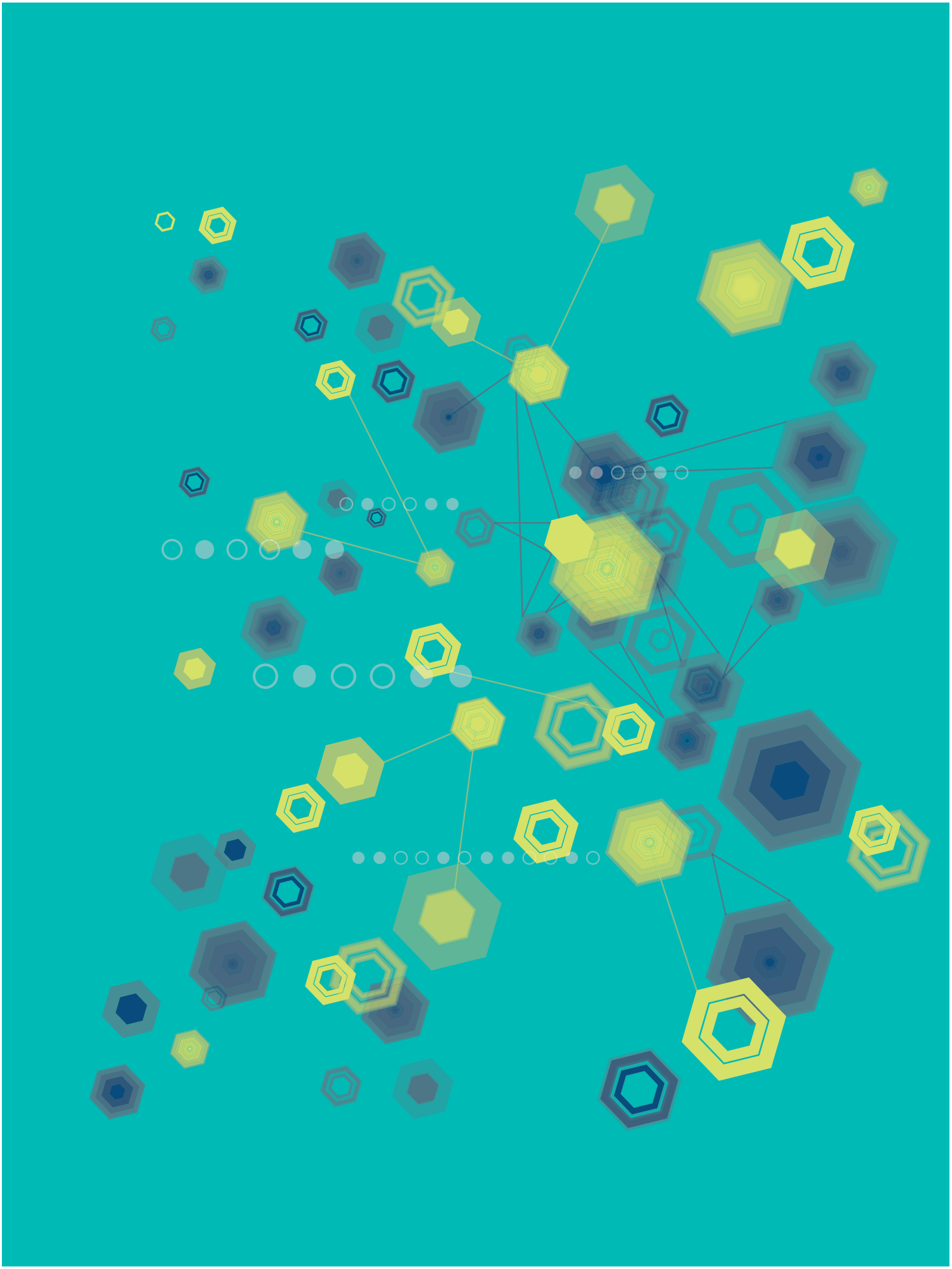
7. The data refer to the proportion of businesses not using AI due to perceived high costs. The following options were included in the survey as reasons that AI is not considered useful for business operations: i) a lack of relevant expertise in the enterprise; ii) an incompatibility with existing equipment/software or systems; iii) difficulties with availability or quality of the necessary data; iv) concerns regarding violation of data protection and privacy; v) a lack of clarity about the legal consequences (e.g. liability in case of damage caused by the use of AI); and vi) ethical considerations.

8. Despite the widespread use of generative AI, public understanding and confidence remain limited. An Austrian study shows that 73% of individuals report having little to no knowledge of AI, and only around one-third express a positive attitude towards its increasing use in society (Statistics Austria, 2025[31]). This cautious outlook is mirrored in the *OECD Truth Quest Survey*, which finds that in 2024, only about 30% of adults believed that AI would have a positive impact on their lives (OECD, 2024[10]).

9. The indicator on generative AI (GenAI) use captures the purposes for which individuals employed tools such as ChatGPT, Copilot, Gemini, LLaMA, Midjourney or DALL-E to create new content – including text, images, programming code or videos – over the past three months. Use for private purposes reflects engagement with GenAI in personal activities, such as hobby projects, creative writing or leisure applications. Professional purposes capture the adoption of GenAI in work-related tasks, including content creation, coding assistance or data analysis. Use for formal education refers to applications of GenAI in school or university contexts, such as completing assignments, learning or research activities.

10. ICT spillovers refer to the indirect use of ICT outputs through production networks. In the context of Inter-Country Input-Output Tables (OECD, 2026[22]), they capture ICT value added embodied in intermediate goods and services that are used as inputs across sectors throughout the economy. Forward linkages are estimated using the Ghosh (supply-driven) input-output framework (Ghosh, 1958[30]). Further methodological details are provided in Annex 3.C.

11. Additional methodological details are provided in Annex 3.C.



Spotlight

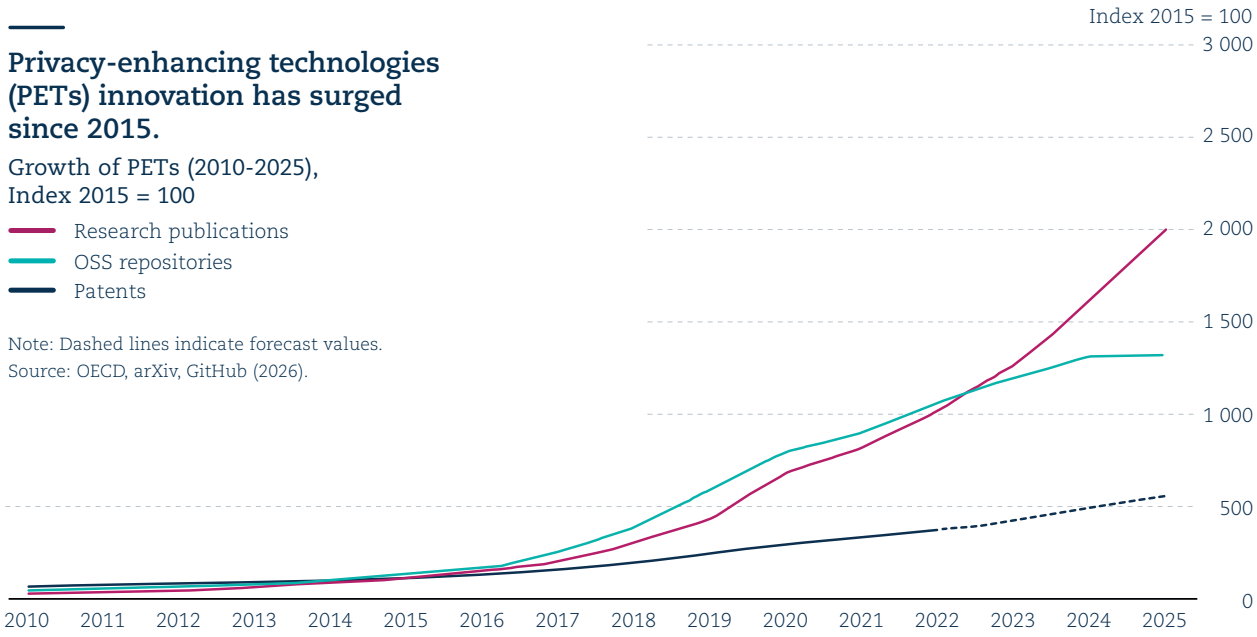
The innovation landscape of privacy-enhancing technologies

This Spotlight examines the fast-evolving innovation landscape of privacy-enhancing technologies (PETs), which are tools designed to protect confidentiality and privacy while enabling responsible data use and sharing. The latest generations of PETs hold growing economic and strategic significance as they increasingly contribute to reconciling national, organisational and individual control over data to support data sharing and cross-border collaboration. Despite growing recognition of their potential in critical domains and sectors, adoption of PETs remains limited due to perceived complexity, low awareness, unclear return on investment and regulatory uncertainty, particularly for small and medium-sized enterprises. Drawing on new quantitative indicators, the Spotlight presents comparative evidence on PET-related scientific publications, open-source software developments and patenting activities. It complements these supply-side trends with analysis of demand-side considerations, including emerging use cases and policy initiatives. In so doing, it offers a first empirical glance at the global PET ecosystem and its evolving drivers of innovation and adoption.

PETs are unlocking a new era of trusted data innovation

Privacy-enhancing technologies (PETs) innovation has surged since 2015.

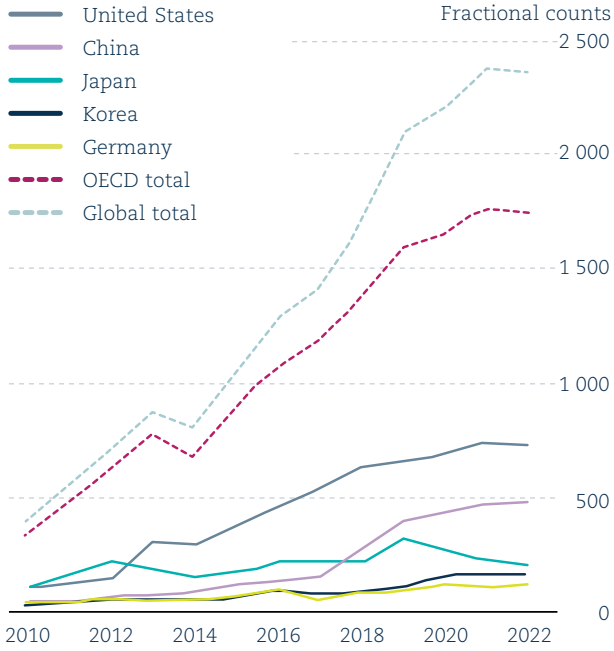
Growth of PETs (2010-2025), Index 2015 = 100



Note: Dashed lines indicate forecast values.
Source: OECD, arXiv, GitHub (2026).

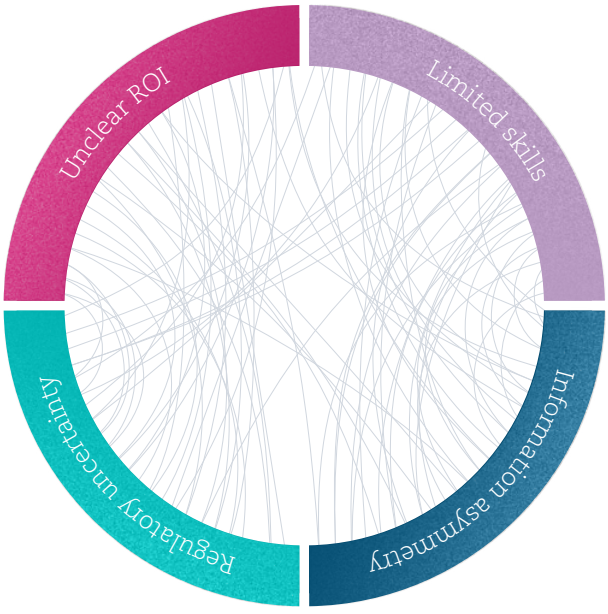
PETs patenting is highly concentrated in a handful of economies.

PETs patent filings in fractional counts for top 5 economies, OECD total and global total



PETs show promise, but adoption lags.

The complexity of PETs is often overestimated despite their effectiveness. Main adoption barriers include:



THE INNOVATION LANDSCAPE OF PRIVACY-ENHANCING TECHNOLOGIES

Introduction

Privacy-enhancing technologies (PETs) are digital technologies that enable the collection, processing, analysis and sharing of information while protecting personal or otherwise confidential data (OECD, 2023[1]). Many technologies considered PETs were first developed decades ago in academic or theoretical settings. However, recent advances in cryptography, computing power and network connectivity have made them deployable in real-world systems at scale.

These advances open new opportunities for data collaboration that were previously infeasible or carried disproportionate confidentiality, privacy or security risks. For instance, PETs now make it possible for multiple parties to jointly train or share artificial intelligence (AI) models without transferring the underlying data (OECD, 2025[2]). Accessing new data sources while ensuring compliance with privacy and data protection and other obligations is increasingly relevant: organisations face rising data quality challenges during the development of their AI systems (OECD, 2025[3]; 2025[4]).

Beyond privacy, PETs can also protect intellectual property and commercially or otherwise sensitive information. This protection reduces disclosure and digital security risks that can limit collaboration and undermine trust in the face of escalating reputational and financial costs of digital security incidents. One major study estimates that the average global cost of a data breach was USD 4.44 million in 2025, up from USD 3.79 million in 2015. The healthcare sector alone averaged USD 7.42 million per breach with the compromise of companies' intellectual property being the costliest type of record breached (IBM, 2025[5]).

PETs thus hold significant economic and strategic value in addition to their privacy and confidentiality benefits. They help balance data control with the benefits of sharing and cross-border co-operation, especially as concerns about security and data sovereignty increase. By enabling trust in the global data ecosystem, PETs can thus support AI-driven innovation and global value chains. In this sense, they can be seen as key technologies enabling data free flow with trust (DFFT).

Despite their growing technical maturity and demonstrated potential for addressing economic, policy and social challenges, however, the deployment of PETs across sectors and organisations remains limited. Many organisations still perceive PETs as too complex or costly to integrate into existing data infrastructures. This perception became apparent from OECD expert workshops,[1] stakeholder consultations in diverse sectors and jurisdictions, and insights provided by the OECD DFFT Experts Community Working Group on PETs.

These barriers, in turn, have detrimental effects on the most innovative PET service providers. Many of these providers are start-ups or small and medium-sized enterprises (SMEs) that face high upfront customer acquisition costs. Each new client typically requires substantial engagement and demonstration to understand the value and applicability of PETs. This Spotlight seeks to address these problems, identifying the structural constraints that impede uptake of PETs, while highlighting how countries are shaping data governance policies to advance their adoption.

This Spotlight describes the economic landscape of PETs, focusing on innovation and policy trends that underpin development and shape adoption from both a supply- and a demand-side perspective. On the supply side, it examines patterns across the innovation lifecycle – from scientific research and open-source software (OSS) development to patenting. On the demand side, it considers emerging PET use cases and the policy, regulatory and market factors that influence adoption across sectors and countries. These include data protection, privacy regulations and more targeted policy measures, which appear to have contributed to PET-related innovation and adoption. Broader opportunities to analyse personal data in the context of data-driven innovation can also drive growth in PETs. However, analysis of these incentives falls beyond the scope of this paper.

By mapping these dynamics, this Spotlight presents first-of-a-kind empirical insights into the economic and innovation landscape of PETs. It shows that the PET ecosystem demonstrates clear signs of technological maturity and growing strategic importance. However, it also illustrates how the broad diffusion (e.g. in research applications) and commercial deployment of PETs remain constrained by a range of structural and regulatory challenges.

Addressing these barriers is of strategic importance to policymakers, particularly in the context of international co-operation. As such, several areas are identified for deeper analysis of the innovation, market and policy factors shaping their development and adoption. This forthcoming analytical work will support the set-up of a Global Repository of PET Use Cases at the OECD. The repository will provide an evidence base to support greater alignment of regulatory and policy practices around PETs, including in cross-border use cases that directly contribute to DFFT.

Research, open-source development and patent filings in PETs have surged since 2015, partly driven by regulatory incentives

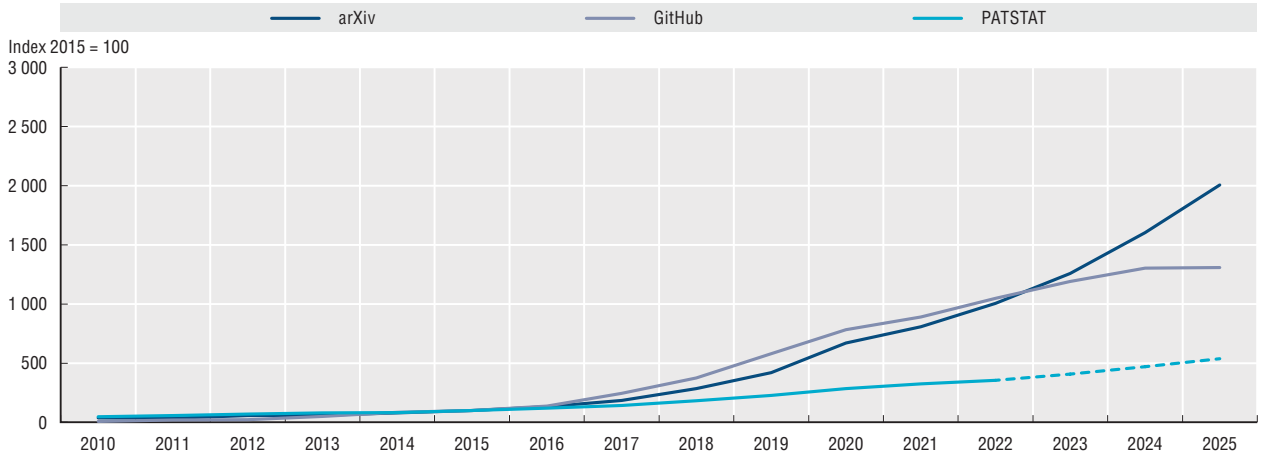
Like other advanced digital technologies, the development of PETs takes place within a complex innovation ecosystem spanning the full innovation cycle – from fundamental research to experimental implementation to commercial application (OECD, 2015[6]). Analysing trends across these stages helps trace how ideas move from early theoretical work to product development (including software implementation) and eventual market protection through intellectual property (e.g. patents). This, in turn, offers insights into global market and innovation dynamics that shape technology adoption.

Combined analysis of global data on PET-related scientific publications, OSS projects and patent applications between 2010 and 2025 reveals a striking acceleration across these phases of the PET innovation cycle.[2] Although innovation rarely follows a strictly linear path (OECD, 2020[7]), the evidence indicates a coherent progression: research output expands alongside subsequent implementation efforts, eventually followed by formal protection through patents. Although increasingly prominent, OSS development and patenting are only two potential routes from concept to market deployment. The choice of route can depend on firms' market strategies and countries' patent systems. Other forms of knowledge diffusion such as copyright, trade secrets or open research collaborations, including between public research and innovative entrepreneurs (Breschi et al., 2019[8]), remain outside the scope of this quantitative analysis. However, they are also central to the PET innovation ecosystem.

Since 2015, research, OSS development and patenting activity in PETs have expanded in parallel, although at different speeds (Figure 2.S.1). Academic publications on PETs grew 20-fold by 2025 (reaching an index of 2 005), while open-source repositories increased about 13-fold (index 1 307) (see Annex 2.S.A and Annex 2.S.B for information on the methodology). Patent filings also rose steadily, almost fourfold between 2015 and 2022 (index 355), reflecting the release of mature research ideas for their commercialisation and legal protection. The annual time series suggest parallel acceleration, where peaks in implementation often coinciding with rapid research expansion. Meanwhile, patent filings typically appear with a two-to-three-year delay as technologies approach market maturity.

Figure 2.S.1. Trends in patent applications, scientific publications, and OSS development show that innovation in PETs is surging

Growth of PETs in patent applications, scientific publications, and OSS development (Index 2015=100), 2010-2025



Notes: All series indexed to 2015 = 100. 2015 baseline: 346 arXiv papers, 112 GitHub repositories and 3 024 patent applications. Dashed lines indicate forecasted values. Patent applications are based on a broad definition of PETs, including relevant keywords and IPC/CPC classification codes. GitHub: total repositories related to PETs created per year. arXiv: publications related to PETs published per year.

Source: OECD calculations based on data in 30 248 papers, 9 119 repositories and 62 714 patent applications collected from arXiv (2010-2025), GitHub (2010-2025) and PATSTAT: OECD, STI Micro-data Lab: Intellectual Property Database, *http://oe.cd/ipstats*, February 2026 (2010-2022).

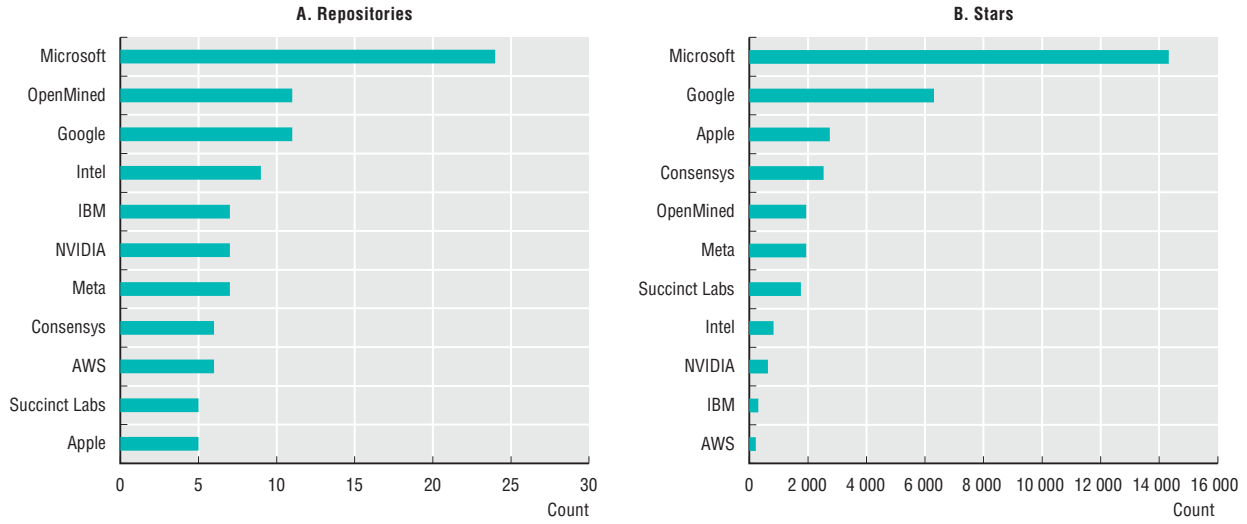
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The cumulative and reinforcing nature of the PET innovation cycle is illustrated by the trajectory of federated learning, originally prompted by Google's reference publication in 2016 (McMahan et al., 2016[9]). This research catalysed a surge of academic work on federated learning (around 1 750 papers by 2021), which in turn led to the release of open-source frameworks such as Google's *TensorFlow Federated* (2019). Another example is the decades-long evolution of homomorphic encryption – from theoretical concept (Gentry, 2009[10]) to practical software repositories (Microsoft, 2026[11]) to commercial deployment.

In both cases, large digital firms acted as ecosystem anchors, with their respective software repositories enabling early commercial deployment and spurring further innovation. This pattern is reflected in the OSS ecosystem, where large technology companies dominate both by the number of repositories and visibility metrics, measured by the total GitHub stars attributed to each repository (Figure 2.S.2).[3] However, the sample size is relatively small, and GitHub use reflects only a partial picture of PET software development. Together, this means these figures should be interpreted cautiously and serve as conservative estimates of commercial activity in the OSS ecosystem.

Figure 2.S.2. A large range of corporate entities are active in the OSS ecosystem

Top businesses by GitHub PETs repository count (Panel A) and by total stars (Panel B), February 2026



Notes: Business identification based on organisations name patterns. Only corporate entities with five or more repositories were included.

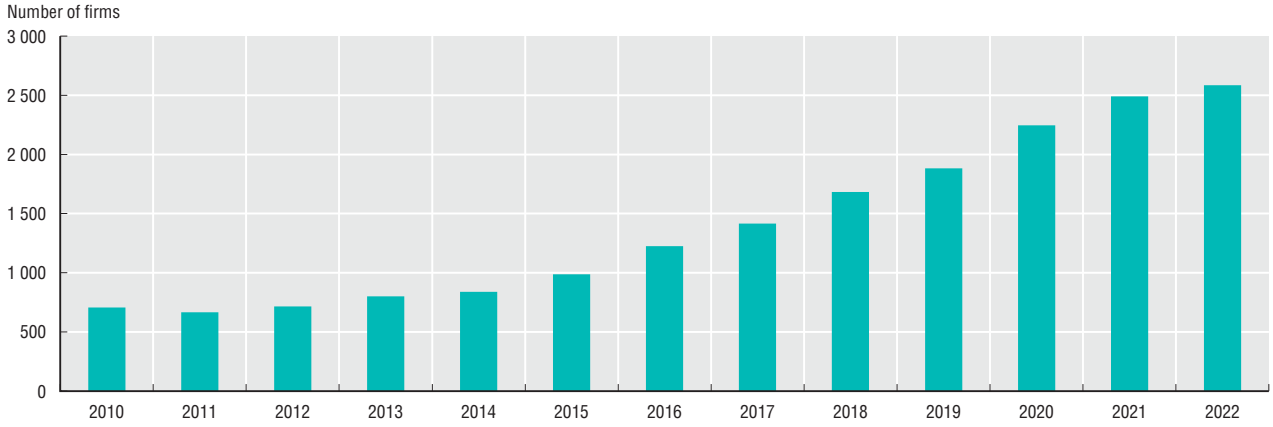
Source: OECD calculations based on data on 285 corporate repositories and 158 702 corporate stars collected from GitHub (2026).

StatLink https://stat.link/ntejs9

The surge in the number of firms active in developing PETs is illustrated by the growth in PET-related patent applications from private companies (Figure 2.S.3). In 2010, 707 unique companies filed a PET-related patent for the first time. By 2022, this number had increased by almost fourfold to 2 585, underlining the rise in the strategic development of PETs as intellectual property leveraged in commercial applications. However, not all innovations follow the same research-to-patent pathway. Many companies, such as in blockchain (distributed ledger technologies), prioritise OSS release over patent protection. As such, they view community adoption and network effects as more valuable than holding intellectual property rights. In contrast, some organisations pursue proprietary development without open-source release, maintaining competitive advantage through trade secrets rather than patents. These alternative pathways explain apparent disconnects between research volume and patent/repository counts in certain types of PETs and certain sectors (see next sections).

Figure 2.S.3. The number of new firms patenting PETs is on the rise

Number of unique firms filing PET-related patents for the first time, 2010-2022



Notes: Only the first PET-related patent filed by each firm is counted, meaning each firm only appears once in this aggregation. A given patent can be filed by multiple firms, each of which is given the count of one (i.e. there is no fractional counting). Patent applications are based on a broad definition of PETs, including relevant keywords and IPC/CPC classification codes.

Source: OECD calculations based on data on 62 714 patent applications collected from PATSTAT: OECD, STI Micro-data Lab: *Intellectual Property Database*, *http://oe.cd/ipstats*, February 2026.

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The simultaneous surges across all phases of the PET innovation cycle between 2015 and 2025, marked by a 20-fold increase in research output, 13-fold growth in OSS development and a 4-fold rise in patent filings, coincides with several related trends. These trends include the diffusion of data-driven digital technologies and data-intensive business models (e.g. AI, automated decision systems, ubiquitous connectivity, cross-border cloud infrastructure), and escalating cybersecurity threats (e.g. data breaches). It also coincides with the introduction and entry into force of laws and regulations concerning data protection and privacy, cybersecurity, health, online child protection, etc., all around the globe. Taken together, these frameworks converge towards stronger safeguards for data processing, interoperability and sharing, and raise liability and reputational risk for data breaches or misuse.

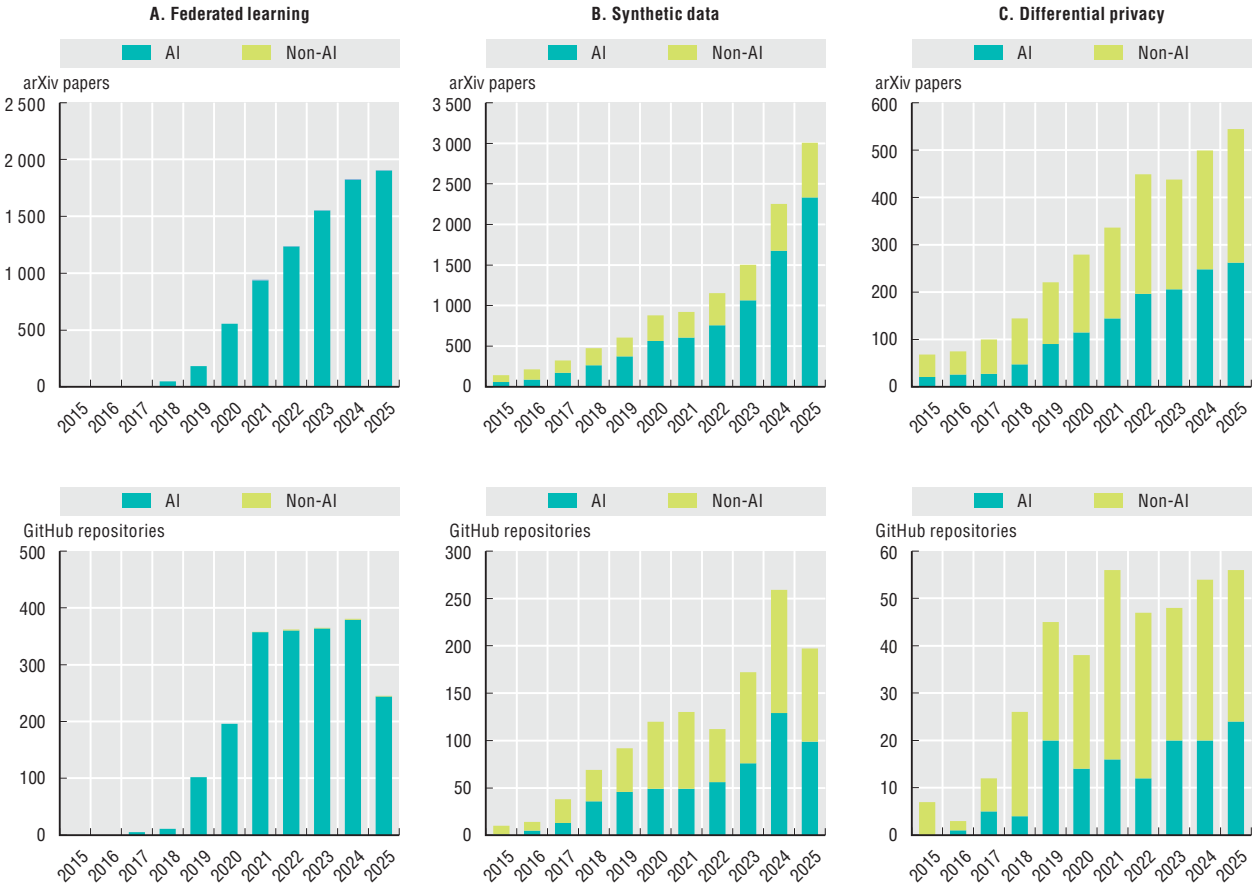
In the European Union (EU), a turning point was the adoption of the General Data Protection Regulation (GDPR). Adopted in 2016 and effective from 2018 (European Union, 2016[12]), the GDPR led research funding bodies to explicitly link PET research projects to GDPR compliance and Article 25 on "data protection by design and by default". This trend was reinforced by subsequent legislation such as the California Consumer Privacy Act, introduced in 2018 and entering into force in 2020 (State of California, 2018[13]), which has since amplified similar compliance incentives across other major digital markets. Examples from the People's Republic of China (hereafter "China") include the Cybersecurity Law (Cyberspace Administration of China, 2016[14]), the Personal Information Protection Law (National People's Congress of the People's Republic of China, 2021[15]) and the Data Security Law (National People's Congress of the People's Republic of China, 2021[16]). These entered into force in 2017, 2021 and 2021, respectively.

Generative AI and blockchain drive the current wave of research and innovation on PETs

The intersection of AI and PETs represents perhaps the most transformative trend in the field, shaping and accelerating research and development (R&D) on PETs. As shown in Figure 2.S.4, a significant share of scientific papers and OSS repositories are related to PETs and AI. While federated learning is the most obviously AI-related PET, it is not the largest source of recent activity. Synthetic data dominate by research volume and are growing fastest, featuring in the region of 3 000 papers in 2025. They have been experiencing steady growth in OSS implementation through a mix of AI and non-AI tools (e.g. generative model toolkits vs. test-data generators and masking utilities). Differential privacy also shows a substantial uptake.

Figure 2.S.4. Research and development on PETs is partly driven by AI

Percentage of PETs related to AI applications across federated learning, synthetic data and differential privacy, 2015-2025



Notes: Top row shows arXiv papers; bottom row shows GitHub repositories. Turquoise segments indicate AI-related items, green ones are non-AI. AI tagging uses a consistent keyword arrangement across sources; GitHub counts are by repository creation year.

Source: OECD calculations based on data in 29 316 papers and 8 911 repositories collected from arXiv and GitHub that were published or created between 2015 and 2025. StatLink contains more data.

StatLink https://stat.link/zcqxto

Evidence reveals a clear divergence between PET research and implementation.[4] Publication counts continue to rise across all major types of PETs, while OSS activities have stagnated or even declined for federated learning, possibly indicating a phase of consolidation. Research on synthetic data and differential privacy is substantially more AI-oriented than OSS implementation. Papers on synthetic data are predominantly focussed on generative AI, whereas software repositories still have a large non-AI focus such as on masking tools. The inversion is most striking for federated learning. Here, research outputs remain above the 2024 peak, yet OSS implementations have fallen well below 2024 levels. However, newly created repositories can take time to be discovered and forked, which means that discovery lag may partially explain the observed gap.

Yet these AI-related PETs are likely to remain highly attractive as demand for privacy-preserving data sharing and model training continues to grow. AI systems rely increasingly on high-quality and often sensitive data combined with emerging AI and data governance obligations. This creates strong incentives for these PETs (OECD, 2025[3]; 2025[4]), as does the increase in the number of reported AI incidents and hazards (OECD-GPAI, 2026[17]; OECD, 2026[18]).[5] More importantly, as PET capabilities mature, they increasingly make new categories of use cases both technically and legally feasible, including cross-border data collaborations previously considered too risky or infeasible (see Box 2.S.1).

Box 2.S.1. Using privacy-enhancing technologies to enable international data sharing

The United Kingdom (UK) Department for Science, Innovation and Technology (DSIT) piloted the use of PETs to enable the National Disease Registration Service of the National Health Service (NHS), alongside the US National Cancer Institute, to securely study ultra-rare childhood tumours, while keeping NHS data under NHS control. The pilot, building on the 2022-2023 UK-US PETs prize challenges, demonstrates how PETs can advance digital innovation and deliver on the UK *Blueprint for Modern Digital Government*.

The data-scarcity problem: each childhood cancer subtype is extremely rare – some affect fewer than two children per million annually. Pooling data internationally helps clinicians and researchers, but privacy and regulatory constraints make exporting patient-level data slow, costly or impossible. DSIT identified the need for "a better technical approach".

A PET-led solution: using the Duality platform, the pilot "moved the code, not the records". Researchers could perform joint analyses without transferring personal data outside NHS systems. The solution combined:

- Federated querying within each partner's firewall, returning only site-level aggregates;
- Trusted execution environments (TEEs) to combine results in a secure enclave;
- Differential privacy and cell suppression adding noise and hiding results; and
- Embedding privacy preservation into the architecture to reduce information governance friction.

Outcomes and lessons: analysts ran no-code queries from a central interface. The PET workflow cut the governance process from over a year to about two months, allowing more time for research while maintaining rigorous security checks. DSIT noted that guidance from the UK Information Commissioner's Office on PETs was instrumental.

Key lessons for government:

- PETs turn information governance into a design choice, not an afterthought.
- Trust modelling beats trust transfer – TEEs let partners verify code execution locally.
- Parameter transparency matters for governance evaluation.
- Iterate with dummy or synthetic data first to align analysts and governance teams.

Implications: this UK-US pilot shows that PETs can make international data collaboration faster, safer and more trustworthy, turning privacy compliance into an enabler of responsible, cross-border research.

Source: Durkee et al. (2025[19]), *Using privacy enhancing technologies to enable international data sharing*, *https://gds.blog.gov.uk/2025/10/09/using-privacy-enhancing-technologies-to-enable-international-data-sharing*.

Alongside AI-driven developments, blockchain-related PETs have emerged as another major engine of applied innovation, particularly through the development of zero-knowledge proofs and related smart-contract frameworks.

Combined analysis of scientific publications and GitHub repositories shows that blockchain is the only domain in which implementation activity far exceeds research output in PETs.[6] There are more than 550 active OSS repositories compared to around 150 academic papers, a near 4-to-1 ratio. This inversion reflects the commercial incentives of decentralised finance and digital-asset markets, where open-source and rapid iteration are perceived as key success factors within the blockchain community (Canidio, 2018[20]). Consequently, blockchain has become a leading testbed for real-world deployment of PETs in finance.

Health and finance are the most active application domains for PETs

Analysis of PET activity across application domains shows clear sectoral concentrations, with healthcare and finance standing out as the most active (Figure 2.S.5). Yet their innovation profiles differ markedly: healthcare features in 13% of all PET-related papers compared to 6% of PET-related GitHub repositories. This suggests that PET activity is concentrated relatively similarly across research and OSS implementation. Finance, however, is significantly more prominent in OSS implementation, comprising 31% of PET-related GitHub repositories and only 7% of research papers.

Figure 2.S.5. The uptake of PETs varies across application domains

Percentage of publications and repositories of each PET attributed to each application domain, 2010-2025

	Federated learning	Synthetic data	Zero-knowledge proofs	Differential privacy	Anonymisation	Homomorphic encryption	TEEs	Secure MPC
Healthcare and medical	19.3	25.6	3.9	20.5	20.3	13.4	5.1	10.6
Finance and banking	16.9	11.5	72.3	11.4	9.8	34.7	30.6	59.8
IoT	21.3	2.7	4.1	4.0	3.3	5.0	11.8	3.0
E-commerce and advertising	11.6	7.0	1.9	8.3	2.3	2.6	0.5	1.5
Databases and data management	1.6	15.0	4.5	19.9	30.9	13.4	2.9	8.9
Industrial and manufacturing	5.0	10.3	2.0	2.1	1.7	2.2	2.9	4.0
Wireless and mobile networks	7.5	3.8	1.4	2.6	0.0	2.2	0.7	0.0
Cloud computing	6.4	6.0	4.7	2.4	7.0	21.8	43.4	7.6
Mobility and transportation	3.8	9.3	1.4	20.0	10.1	1.4	0.5	2.0
Smart grid and energy	5.2	2.8	1.1	2.5	0.7	2.5	0.5	0.0
Social media and social networks	1.4	6.1	2.7	6.3	13.9	0.7	1.0	2.7

Note: Percentages indicate the share of publications and repositories of each PET attributed to each domain (normalised by technology).

Source: OECD calculations based on data on 16 879 papers and 3 033 repositories mapped to application domains collected from arXiv and GitHub.

StatLink https://stat.link/tg19ch

Healthcare and medical research publications have a strong emphasis on synthetic data and differential privacy, technologies that enable secondary data use while preserving patient privacy (Durkee et al., 2025[19]; OECD, 2025[21]). Research efforts concentrate on clinical applications and multi-site collaborations in areas like brain imaging, cancer prediction, patient monitoring and epidemiological surveillance, spurred by the COVID-19 pandemic. In terms of OSS repositories, a few mature initiatives such as Kaapana (a medical-imaging platform) account for the small share of roughly 180 healthcare-related OSS repositories, compared with more than 930 in finance.

Finance and banking represent the highest relative share of PET-related research activity and OSS development, accounting for about 70% of all zero-knowledge proof activity and 60% of secure multi-party computation (MPC). This reflects the central importance of cryptography-enabled privacy in blockchain-based applications (ConsenSys, 2026[22]; Ben-Sasson et al., 2014[23]), where blockchain-focussed companies are highly active in OSS repositories. At the same time, more traditional financial use cases such as those supporting efforts to combat money laundering and promote regulatory compliance remain prominent in scientific literature (BIS Innovation Hub, 2023[24]; Mastercard, 2024[25]).

A broader comparison across application domains reveals distinctive application patterns. Database and data-management systems show the greatest focus on anonymisation techniques (around 31% of related PET activity), while cloud-computing environments concentrate on trusted execution environments (TEEs) and homomorphic-encryption solutions (roughly 43% and 22%, respectively), reflecting the need to preserve confidentiality in shared infrastructures. By contrast, the Internet of Things (IoT) displays a more fragmented pattern, with no single PET type exceeding 21% of total activity.

Within this landscape, industrial and manufacturing applications represent a smaller but distinct pattern of PET adoption, driven primarily by non-personal data protection needs. Activity is growing in areas such as supply-chain confidentiality, predictive maintenance, and federated learning for quality control. These are areas where confidentiality concerns centre on proprietary process data, sensor telemetry and trade secrets. Adoption remains exploratory, spanning all types of PETs. OSS implementation, however, remains extremely limited (at 1% of repositories). This may reflect a preference among major industrial players for proprietary solutions, often protected through patents rather than shared as OSS tools.

International patent filing trends reveal divergent national concentrations and specialisations in PETs between 2010 and 2022

Over the past decade, patenting activities in PETs have expanded rapidly – from 1 455 applications filed in 2010 to 10 729 in 2022. Since national patent systems differ in coverage and incentives, data on patenting activity are not directly comparable across countries. However, they do capture the overall scale and dynamics of inventive activities. To assess cross-border trends and international innovation capacities, the analysis that follows focuses on international patent families, i.e. inventions filed in more than one jurisdiction or through the Patent Cooperation Treaty. It applies fractional inventor counts in line with common OECD methodologies (OECD, 2009[26]; 2025[27]).[7]

Between 2010 and 2022, the number of international PET patent families increased from 396 to 2 344. When nationally filed patents are included, the overall volume is substantially larger, as only around 40% of PET patents are filed internationally. This compares to around 35% for information and communication technology (ICT) patents overall. This may suggest that some PET inventions are still at a research or early commercialisation stage. They are often developed by academic or specialised actors or by large multinational firms without immediate intentions for global commercialisation.

Within the wider innovation landscape for ICTs, PETs remain a relatively small but fast-growing component. In 2022, the last complete year of data, PETs accounted for 9% of international ICT patent families compared with just 3% in 2010 – a threefold increase in relative weight over little more than a decade.[8] This sustained expansion underscores the accelerating importance of PETs as a distinctive field of digital innovation.

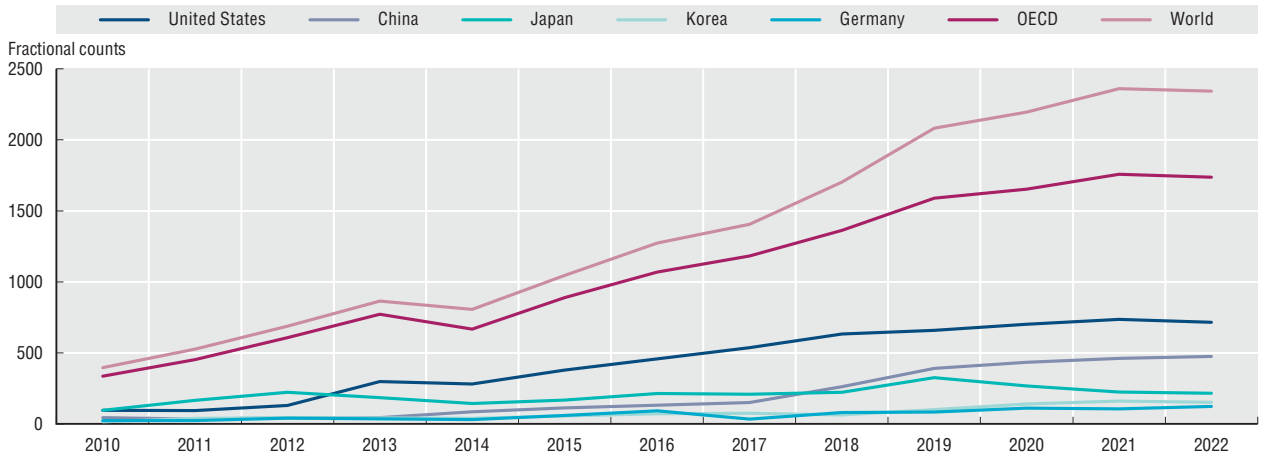
The total number of international PET patent families increased from 396 in 2010 to 2 344 in 2022, a near sixfold increase over the period (Figure 2.S.6). This trend was experienced both by OECD Member countries and partner economies, including China. The fall in the total between 2021 and 2022 mirrors the broader slowdown observed across global innovation systems during the COVID-19 pandemic. This can be explained by backlogs in patent offices and a short-term shift in corporate R&D budgets (Fink et al., 2022[30]; WIPO, 2022[28]; 2023[29]; Trunschke et al., 2024[31]). Performance varied significantly across OECD Members, however. Fourteen countries, including Germany and Canada (which are relatively large contributors), grew their international filings on PETs; five countries experienced moderate declines of below 10%, including the United States, Japan and the United Kingdom; while eight countries faced steeper declines, notably France, Sweden and Switzerland.

Post-2020, international PET patent filings experienced a broad slowdown linked to COVID-19 pandemic effects, patent office backlogs and shifting R&D budgets. Despite these shocks, growth in China's international filings remained resilient between 2020 and 2022 at +32.5%, with a compound annual growth rate (CAGR) of +15.1%. This was nearly three times the OECD average (+11.1%, CAGR +5.4%), and almost double that of the United States (+17.4%, CAGR +8.4%).[9]

In contrast to the decline in international filings, domestic (national-only) PET patent filings grew substantially, increasing by 30% globally between 2020 and 2022. This growth was highly concentrated outside of OECD Member countries, primarily in China, which saw domestic filings surge by almost 40% (from around 4 500 to around 6 500 fractional counts). Domestic filings of OECD Members grew more slowly (+7%), with significant heterogeneity between countries. Korea saw strong domestic growth (41%); the United States and United Kingdom remained stable (3-5%); and Japan, Germany and Australia experienced notable declines (between -9% and -24%). That said, national patent filings, including numbers on China, should be interpreted with caution.[10] International patent families signal inventions deemed valuable enough for multi-jurisdictional protection and reflect genuine cross-border innovation capacity. However, domestic filings may include lower-quality patents and strategic filings for subsidy purposes. Still, they also show inventions targeting local markets, and when combined with international filings, they capture the overall scale and dynamics of inventive activities.

Figure 2.S.6. PETs patenting is highly concentrated in a handful of economies

Fractional patent count for top five countries, OECD and World, 2010-2022



Note: For Costa Rica and Slovenia, there were no international PET patents data available.

Source: OECD calculations based on OECD, STI Micro-data Lab: Intellectual Property Database, *http://oe.cd/ipstats*, February 2026 and on data from 25 857 international PET patent families derived from a sample of 62 714 patent applications filed between 2010 and 2022.

StatLink https://stat.link/t62u75

In 2022, the distribution of international PET filings reveals high concentration in a few economies. China, Japan and the United States account for almost two-thirds of all inventor-attributed international patent families. The United States alone represents almost one-third of the total (715 fractional counts of international PET families), followed by China (475) and Japan (216). Korea, Germany and Canada follow, while emerging contributors include India, Israel and Singapore. These data reflect where inventive activity takes place, not where patents are owned or exploited commercially. National innovation systems exhibit distinct specialisation patterns across PET types, as revealed by analysis of the top 15 countries in terms of international PET patent families (Figure 2.S.7).

Figure 2.S.7. PETs specialisation differs by country

Percentage of PET-related patent fractional counts by top 15 countries, 2010-2022

	TEEs	Federated learning	Anonymisation	Homomorphic encryption	Secret sharing	Synthetic data	Zero-knowledge proofs	Differential privacy
CAN	18.7	15.0	35.3	14.4	4.8	6.1	1.8	3.9
CHE	23.1	7.6	16.0	22.8	25.1	0.8	4.6	0.0
DEU	27.6	12.7	31.7	14.6	5.7	4.5	1.1	2.0
FIN	28.4	48.5	14.9	3.7	3.0	0.7	0.0	0.7
FRA	24.1	9.8	16.7	35.1	7.4	1.1	4.7	1.1
GBR	35.4	12.9	19.8	6.1	20.0	2.3	3.0	0.6
ISR	33.6	5.1	18.7	22.2	15.2	2.3	2.6	0.1
JPN	25.2	9.1	22.6	14.2	27.4	1.0	0.5	0.0
KOR	15.0	29.9	7.0	33.8	4.7	3.9	5.1	0.6
NLD	15.8	12.5	35.5	19.4	11.5	1.4	3.9	0.0
SWE	21.1	46.6	17.1	0.0	9.9	1.2	3.7	0.3
USA	35.9	17.8	18.2	9.5	8.1	5.4	2.9	2.1
CHN	27.9	40.9	5.2	10.4	11.0	1.6	2.1	1.0
IND	25.6	22.7	21.2	12.7	4.5	9.6	1.6	2.1
SGP	22.3	17.3	15.8	24.5	9.4	7.9	2.9	0.0

Note: The heatmap displays each country's relative emphasis across nine core PET types, with colour intensity representing the share of each type within the country's total PET patent portfolio.

Source: OECD calculations based on OECD, STI Micro-data Lab: Intellectual Property Database, *http://oe.cd/ipstats*, February 2026 and on data from 62 714 patent applications filed between 2010 and 2022.

StatLink https://stat.link/dziu26

Three economic profiles for PET development emerge from this analysis:

- **Diversified portfolios**: countries such as Singapore, Switzerland, India and Japan maintain balanced portfolios spanning several PETs. Singapore shows the broadest PET distribution, with no single one exceeding 25% of its portfolio. Switzerland combines relatively strong positions in TEEs (23%), homomorphic encryption (23%) and secret sharing (25%), while Japan exhibits an even spread across TEEs (25%), anonymisation (23%) and secret sharing (27%). Meanwhile, India's focus lies in a combination of TEEs (26%), federated learning (23%) and anonymisation (21%).
- **Moderately diversified portfolios**: these economies demonstrate a dual or limited multi-technology focus for PETs. Korea, for example, focuses on federated learning (30%) and homomorphic encryption (34%), maintaining less significant capacities in other PETs. Concurrently, the United States, the United Kingdom and Israel concentrate around one-third of their portfolios on TEEs. France, meanwhile, directs almost 60% of its capacity on homomorphic encryption and TEEs, with anonymisation having a share of 17%.
- **Highly specialised portfolios**: a small group of the top 15 countries concentrate their inventive efforts in one or two PETs. Finland and Sweden exhibit the most pronounced specialisation, with 49% and 47% of their PET patents related to federated learning, respectively. China, meanwhile, displays a dual concentration in federated learning (41%) and TEEs (28%).

Overall, PET innovation across the top patenting economies is strongly concentrated in a small set of PETs (federated learning, TEEs, anonymisation and homomorphic encryption).

Limited awareness, unclear return on investment and regulatory uncertainty remain primary barriers to PETs adoption

The evidence above shows the growing technical maturity of research in PETs. Nevertheless, other work also highlights that widespread adoption remains constrained by a combination of barriers. These barriers include limited awareness and understanding of PET capabilities among decision makers, as well as organisational and regulatory barriers (OECD, 2023[1]; 2025[2]; Information Commissioner's Office (ICO), 2024[32]). Combined, the evidence and findings underscore the need for concerted intervention from policymakers to address the gap presented by these trends.

Consultations, including by the UK Information Commissioner's Office (2024[32]), confirm persistent gaps in understanding PETs and inconsistent terminology. Many organisations remain uncertain about what qualifies as a PET; how different tools function; which ones are ready for deployment; and which have already been deployed in other contexts and sectors. This results in both overestimation of PET capabilities and underestimation of their practicality, with organisations dismissing them as too complex, costly or immature.

The shortage of specialised technical expertise exacerbates these challenges. Deploying PETs requires advanced knowledge of cryptography, distributed systems and privacy engineering, skills that are high in demand, specialised and expensive. Public sector organisations and SMEs often lack in-house capacity to assess or implement these tools, creating dependencies on external consultants and vendors. This bottleneck is particularly acute in healthcare and government – sectors where privacy requirements are among the highest, but where technical expertise is the most constrained.

The lack of awareness and technical expertise leads to organisations struggling to articulate a clear business case for PETs. Because the benefits are largely preventive (reducing the risk and cost of data breaches rather than generating direct revenue), their return on investment is difficult to quantify. Complex pricing models and the absence of standardised metrics for measuring privacy risk reduction further obscure cost-benefit analyses.

Regulatory uncertainty amplifies these obstacles. Although a growing number of data protection and privacy regulators have expressed support for PETs through a variety of initiatives, organisations remain unsure about the actual cost-benefit analysis of using PETs for compliance with existing privacy and data protection frameworks. This uncertainty is further compounded by possible diverging regulatory interpretations, both across sectors (e.g. between data protection and financial market requirements on the fight against money laundering and the financing of terrorism) and across jurisdictions (where divergent thresholds for anonymisation or acceptable risk are applied). Without consistent guidance and recognition that PETs yield benefits in cross-border compliance efforts in an effective manner, organisations may tend to adopt conservative compliance strategies that restrict experimentation and slow PET adoption.

These barriers weigh most heavily on start-ups and specialised PET service providers, which face long sales cycles and demanding customer education processes (see Box 2.S.2). During the Singapore-OECD Expert Workshop on PETs and AI (July 2024), participants described lengthy proof-of-concept demonstrations and pilot projects lasting 12-18 months

as challenges for PET service providers. This extended sales cycle can create severe cash flow challenges for early-stage companies that lack the capital reserves of established technology firms. Furthermore, the need for customised solutions for each client (given varying data architectures, regulatory requirements and use cases) may contribute to smaller profit and limited growth potential.

Box 2.S.2. Market dynamics and competition challenges: The case of Inpher

Founded in 2015 with backing from investors including JP Morgan and Swisscom Ventures, Inpher developed sophisticated multi-party computation (MPC) protocols, enabling financial institutions and healthcare organisations to perform joint analytics without sharing the underlying data.

Despite raising over USD 25 million and establishing partnerships with major enterprises, Inpher struggled with common PET commercialisation challenges: lengthy sales cycles (often 12-18 months) due to customer education requirements; high implementation costs requiring substantial professional services revenue to offset product licences; and difficulty scaling beyond proof-of-concept deployments to production-grade implementations. The company's MPC platform, while cryptographically sophisticated, may have required significant computational resources and network bandwidth, limiting its applicability to high-value use cases that could not justify the performance overhead.

The competitive dynamics in the PET market further complicated Inpher's position. As highlighted by participants at the three OECD Expert Workshops on PETs, small and medium-sized PET service providers face significant challenges when competing against big technology companies, particularly those offering PETs as integrated components of their cloud services. Bundled offerings from established providers are often easier for customers to understand and adopt, as they come with familiar interfaces, existing support infrastructures and the perceived stability of large corporations. Consequently, innovative start-ups with potentially superior technical solutions may be overlooked in favour of less optimal but more accessible offerings from incumbent technology giants.

Moreover, the risk associated with start-up service providers creates an additional barrier. Potential enterprise clients, particularly in regulated industries such as healthcare and finance, typically express concerns about vendor continuity, i.e. the possibility that a start-up might cease operations, leaving critical services unsupported. This creates a negative cycle where customer hesitation limits revenue growth, which in turn increases the actual risk of business failure, ultimately validating the initial concerns.

In 2024, Arcium acquired Inpher primarily for its technical team and intellectual property rather than its customer base. This reflects a broader pattern in the PET industry where technological capabilities are valued but sustainable business models remain elusive. This outcome, despite strong technical foundations and blue-chip investors, underscores that PET commercialisation must go beyond cryptographic innovation. It also requires fundamental advances in performance optimisation, user experience design and market positioning that can compete effectively against both technical limitations and market incumbents.

Source: OECD Expert Workshop on PETs and AI; Swisscom Ventures (2021[33]) *Inpher secures strategic investment from Swisscom Ventures*, *https://ventures.swisscom.com/inpher-secures-strategic-investment-from-swisscom-ventures/*; Arcium (2025[34]), *Arcium acquires core tech and team from Inpher, supercharging confidential computing*, *https://www.arcium.com/articles/arcium-acquires-core-tech-and-team-from-inpher-supercharging-confidential-computing*.

Governments and regulators deploy co-ordinated complementary measures to accelerate adoption of PETs

PETs are increasingly addressed, explicitly or implicitly, in countries' privacy and data protection frameworks. This often takes the form of (i) legal requirements for privacy and data protection by design and by default; (ii) provisions on de-identification, digital security and accountability; and/or (iii) mandates to privacy enforcement authorities to promote adoption of PETs (OECD, 2023[1]).

To complement these measures, governments and regulators are issuing guidance to clarify compliance pathways. In June 2023, the UK ICO published guidance on how PETs can help organisations comply with UK data protection law (Information Commissioner's Office (ICO), 2023[35]), followed by its Guide on Anonymisation (Information Commissioner's Office (ICO), 2025[36]). Similarly, the Singapore Personal Data Protection Commission issued a Proposed Guide on Synthetic Data Generation (PDPC, 2024[37]), while the Israel Privacy Protection Authority released a PET guide in early 2025 (Privacy Protection Authority, 2025[38]) and a Professional Guide for Medical Data Anonymisation, which includes guidance on the implementation of PETs in the health sector (Privacy Protection Authority; Ministry of Health; Ministry of Justice, 2026[39]).

Beyond regulatory guidance, governments promote adoption of PETs through demand- and supply-side initiatives. Most target demand creation, encouraging experimentation and uptake, particularly in AI contexts, through a variety of measures and initiatives:

- **Regulatory sandboxes** enable innovators to test PET-based solutions under regulatory supervision. In Singapore, the IMDA/PDPC PET Sandbox allows companies to trial PETs with AI technologies, producing case studies and best-practice guidance (Infocomm Media Development Authority (IMDA), 2024[40]). Norway's Datatilsynet Sandbox promotes data protection by design in AI systems (Datatilsynet, 2025[41]). Meanwhile, the UK ICO Sandbox supports privacy-preserving innovation across sectors, and demonstrates how PETs can be integrated into complex systems as part of a wider data governance framework (ICO, 2025[42]). The key areas of focus include "Personalised AI" and "Next-generation IoT" (Information Commissioner's Office (ICO), 2026[43]), which use PETs to embed privacy from the outset (ICO, 2022[44]; 2024[45]).
- **Innovation contests** incentivise creative PET solutions. The UK-US prize challenges (2022-2023) invited innovators to use PETs to combat money laundering and improve pandemic forecasting. Winning projects combined homomorphic encryption, secure MPC and differential privacy (UK-US prize challenges, 2025[46]). Since 2016, the CNIL-Inria Privacy Award has similarly promoted PET-related research excellence (CNIL, 2026[47]).
- **R&D support** remains essential to address technical challenges of PETs. The United States National Strategy for Privacy-Preserving Data Sharing and Analytics (NSTC, 2023[48]) and the Privacy Enhancing Technology Research Act (Stevens, 2024[49]) commit federal agencies to fund R&D in PETs. Türkiye's TÜBİTAK provides over 50 grant initiatives supporting PET-related innovation.
- **Collaboration initiatives** link public and private expertise. In Israel, the Ministry of Health collaborates with IBM and start-ups on AI diagnostics using de-identification based on differential privacy. Meanwhile, the UK's OpenSAFELY enables secure analysis of 55 million patient records through remote computation within protected environments – an approach directly aligned with PET principles.
- **Government procurement** can accelerate diffusion by rewarding PET-integrated solutions. Estonia's "Bürokratt", launched in 2022, is the world's first AI-based virtual public-service assistant using federated learning and synthetic data to safeguard citizen privacy (Information System Authority (RIA), 2025[50]).
- **Cost-benefit awareness tools**, such as those provided by the UK Department for Science, Innovation and Technology (2024[51]), can help organisations evaluate potential returns from PET adoption, supporting investment decisions and addressing perceived cost barriers.

Annex 2.S.A. Glossary and typology of privacy-enhancing technologies

Privacy-enhancing technologies (PETs) encompass a diverse array of technical approaches and tools, each designed to address various privacy and confidentiality challenges in data processing and sharing. The OECD (2023[1]) report on emerging PETs categorises them into three main groups based on their functional characteristics, and data governance and privacy objectives (data accountability tools are not covered in this report).

Data obfuscation tools increase privacy protections by altering the data, by adding "noise" or by removing identifying details

In addition to anonymisation and pseudonymisation tools, data obfuscation tools include the following:

- **Synthetic data generation** creates artificial datasets that preserve statistical properties of original data without containing actual individual records, enabling AI model training and testing without privacy risks (particularly when combined with differential privacy guarantees).
- **Differential privacy** adds calibrated statistical noise to data or computational outputs to prevent individual re-identification, while preserving aggregate patterns. However, determining optimal privacy budgets (epsilon values) remains challenging, particularly for unstructured or multimodal data.

PETs that encrypt data processing allow data to remain encrypted while in use (in-use encryption), avoiding the need to decrypt the data before processing

- **Homomorphic encryption** allows computations to be performed directly on encrypted data without decryption. This enables secure cloud computing and privacy-preserving analytics, although with computational overhead. However, such overhead is becoming less significant with increased computing capacity.
- **Secure multi-party computation** enables multiple parties to jointly compute functions over their combined data without revealing individual inputs, using techniques such as secret sharing and garbled circuits. However, this requires substantial communication bandwidth.
- **Trusted execution environments** provide hardware-based secure enclaves for confidential computing, leveraging processor-level isolation to protect data during processing, with applications ranging from cloud computing to edge devices.

Federated and distributed analytics allows executing analytical tasks upon data that are not visible or accessible to those executing the tasks

- **Federated learning** trains machine-learning models across distributed datasets without transferring raw data, aggregating only model updates rather than underlying information. This requires co-ordination mechanisms and protection against inference attacks.
- **Private set intersection** identifies common elements across datasets held by different parties without revealing non-matching records, enabling applications such as contact tracing and fraud detection while preserving privacy.

Data accountability tools aim to enhance privacy and data protection by enabling data subjects to control their own data

Data accountability tools are often not considered as PETs in the strict sense given that they do not primarily aim to protect the confidentiality of personal data at a technical level. Most tools are in their early stages of development; have narrow sets of use cases; and lack stand-alone applications. In fact, the number of publications, OSS repositories and patent applications were negligible compared to other types of PETs. That said, further analysis is needed to ensure that the keywords are most appropriate to identify data accountability tools.

Annex 2.S.B. Methodology

The analytical framework builds on OECD approaches to tracking emerging technologies through patent and publication data, notably the OECD report *Identifying emerging AI technologies using patent data* (OECD, 2025[27]), in line with the guidance from the *OECD Patent Statistics Manual* (OECD, 2009[26]). It adapts these methods to PETs using a more simplified approach (excluding, for example, a formal Delphi study for keyword validation).

The keyword taxonomy was derived from the OECD report on emerging privacy-enhancing technologies (PETs) (OECD, 2023[1]), and on PETs and AI (OECD, 2025[2]). It covers the four main families of PETs defined and adopted in these reports: (i) data obfuscation; (ii) encrypted data processing; (iii) distributed data processing; and (iv) accountable systems (see Annex 2.S.A).

Supplementary terms were identified through text mining of recent arXiv publications (2020-2025), extracting and filtering unigrams, bigrams and trigrams co-occurring with core PET terms. This led to a list of 20 keywords related to differential privacy, homomorphic encryption, federated learning and trusted execution environments, as well as around 150 alternative terms (See Table 2.S.B.1.). This final taxonomy was used across all three datasets featured in the analysis.

Three complementary datasets were analysed to capture the innovation cycle of PETs. Extensive filtering removed non-technical or duplicate entries to reduce false positives. This led to the following records retrieved and filtered:

- arXiv (publications): 30 971 records retrieved; 30 248 created between 2010-2025.
- GitHub (open source): 46 581 repositories identified; 9 410 verified after excluding forks and inactive projects; 9 119 created between 2010-2025.
- PATSTAT (patents): from the EPO Spring 2025 release, 80 737 (broad definition) and 31 084 (narrow definition) applications were identified. "Narrow" and "broad" definitions of PETs combined keyword and CPC/IPC classification searches as presented in Tables 2.S.B.2 and 2.S.B.3. This analysis uses the broad definition unless otherwise specified. Of the patents identified using the broad definition, 62 714 were filed between 2010-2022. This included 25 857 international families, 23 081 of which were filed between 2010-2022.

Sectoral and AI-related linkages were detected through keyword co-occurrence, with AI-related keywords adopted from the OECD report *Identifying emerging AI technologies using patent data* (OECD, 2025[27]). See keywords in Tables 2.S.B.4 and 2.S.B.5.

Inventor country contributions follow OECD fractional counting (see endnote 7), and patent families were de-duplicated via PATSTAT's DOCDB identifiers. Coverage extends to February 2026 for arXiv/GitHub and 2022 for PATSTAT, due to limitations associated with an 18-month publication lag (see endnote 2).

To complete the incomplete years for PATSTAT (2023-2025), counts for these years were forecasted using a basic AR(1) regression model using annual data. This approach models the value of the dependent variable in the current year as a linear function of its value in the previous year, plus an estimated constant term capturing the average drift. This function is used to forecast missing values using latest available baseline.

Overall, key constraints include incomplete coverage of non-English or proprietary sources, cross-country differences in software and cryptography patentability, recent-year under-reporting and evolving PET terminology (see endnote 2).

Table 2.S.B.1. Keywords for identifying PETs

Keywords and alternative terms used for identifying PETs in arXiv, GitHub and PATSTAT

Primary term	Alternative terms
privacy enhancing technologies	privacy-enhancing technologies; privacy enhancing technology; privacy-enhancing technology; privacy enhancing; privacy-enhancing; privacy tech; privacy tools; privacy preserving; privacy preserving technologies; privacy preserving technology; confidentiality-enhancing technologies; confidentiality enhancing technologies; confidentiality-enhancing technology; confidentiality enhancing technology; confidentiality enhancing; confidentiality-enhancing; confidentiality-preserving technologies; confidentiality preserving technologies; confidentiality preserving technology; privacy preserving data sharing; privacy preserving data processing
privacy-preserving machine learning	confidential inference; privacy-preserving inference; homomorphic inference; private inference
privacy by design	data protection by design; data minimization; data minimisation by design
data obfuscation	data obfuscation tools; obfuscation tools; de-identification
anonymisation	anonymization; data anonymisation; data anonymization; anonymous data; k-anonymity; k anonymity
pseudonymisation	pseudonymization; data pseudonymisation; pseudonymised information
synthetic data	synthetic data generation; synthetic dataset; data synthesis
differential privacy	-differential privacy; noise addition; noise injection; privacy budget; epsilon differential privacy
zero-knowledge proofs	zero-knowledge; zero knowledge; zero-knowledge proof; zero knowledge proofs; zk-SNARKs; zk-STARKs; ZK proofs
selective disclosure	attribute suppression; column suppression; record suppression; row suppression; character masking; data masking
encrypted data processing	aggregation with encryption
homomorphic encryption	fully homomorphic encryption; somewhat homomorphic encryption; partially homomorphic encryption
multi-party computation	multi party computation; secure multi party computation; secure multiparty computation; multiparty computing
private set intersection	secure set intersection; private matching
trusted execution environments	trusted execution environment; secure enclave; confidential computing
distributed data processing	distributed data analysis; distributed analysis; privacy-preserving distributed; distributed analytics
federated learning	federated training; on-device learning; on-device training; on-device processing; on-device analytics; federated data processing; federated transfer learning; federated analytics
threshold secret sharing	secret sharing; computation threshold signing; Shamir's secret sharing
accountable systems	privacy accountability
personal data stores	personal data store; personal information management system; data pods; Solid pods

Note: Terms in bold are names of the four PET categories (see Annex 2.S.A). In total ~150 alternative terms were attributed to 20 primary terms.

Table 2.S.B.2. Narrow definition of PET patents

CPC classification codes for extending the keywords for identifying PETs as listed in Table 2.S.B.1

CPC classification code	Code description
G06F21/6245	Protecting personal data (e.g. for financial or medical purposes)
G06F21/6254	Anonymising data (e.g. decorrelating personal data from owner's identification)
G06N 3/098	Distributed learning (e.g. federated learning)
H04L9/008	Homomorphic encryption
H04L9/085	Secret sharing or secret splitting (e.g. threshold schemes)

Table 2.S.B.3. Broad definition of PET patents

IPC/CPC classification codes for extending the narrow definition as described in Table 2.S.B.3

IPC/CPC classification code	Code description
G06F21/60	Privacy computing
G06F21/62	Data protection
G06F21/71	Secure computing or processing of information
G06F21/57	Certifying or maintaining trusted computer platforms
G06F21/53	Executing in restricted environment (e.g. sandbox or secure virtual machine)
H04W12/02	Privacy protection in wireless communication
H04L9/00	Arrangements for secret or secure communication
H04L9/32	Cryptographic mechanisms for secret or secure communication
H04L63/04	Confidential data exchange among entities through data packet networks
G06F16/256	Federated or virtual databases

Table 2.S.B.4. Keywords for identifying application domains

Keywords used for co-occurrence in arXiv and GitHub

Domain	Keywords used for co-occurrence
Healthcare & Medical	healthcare; health care; medical data; clinical data; patient data; patient privacy; hospital; electronic health record; ehr; medical image; clinical trial; biomedical; pharmaceutical; drug discovery; genomic data; genome privacy; epidemiological; covid-19; pandemic; telemedicine; radiology; diagnostic; wearable device; medical device
Finance & Banking	financial data; financial institution; bank; banking; payment system; financial transaction; credit card; fraud detection; anti-money laundering; trading; stock market; cryptocurrency; blockchain; loan; insurance; fintech
Industrial & Manufacturing	industrial; manufacturing; industry 4.0; industrial iot; iiot; supply chain; logistics; predictive maintenance; quality control; smart factory; production line; industrial control
E-commerce & Advertising	e-commerce; ecommerce; online shopping; online retail; online marketplace; shopping platform; retail platform; online store; online purchase; recommendation system; recommender system; collaborative filtering; personalized recommendation; content recommendation; product recommendation; personalization; advertising; advertisement; targeted advertising; online advertising; ad auction; ad targeting; marketing analytics; programmatic advertising; behavioral advertising; ad network
Mobility & Transportation	autonomous vehicle; self-driving; connected vehicle; vehicular network; vehicle-to-vehicle; v2v; v2x; automotive; location privacy; location data; location-based service; trajectory privacy; mobility data; gps; geolocation; spatial data
Wireless & Mobile networks	wireless network; 5g; 6g; cellular network; mobile network; base station; wireless communication; mobile communication; spectrum sharing
Social Media & Social Networks	social media; social network; facebook; twitter; instagram; online social; social graph; social computing
Cloud Computing	cloud computing; cloud service; cloud server; cloud storage; multi-cloud; cloud provider; serverless
Education & E-Learning	education; e-learning; online learning; educational data; student data; learning analytics; mooc
Smart Grid & Energy	smart grid; power grid; energy consumption; electricity consumption; smart meter; demand response; renewable energy system
Internet of Things (IoT)	internet of things; iot; smart home; smart city; smart device; sensor network; edge computing; fog computing
Web & Browser	web browser; web tracking; browser; cookie; web privacy; online tracking; tracking protection; fingerprinting
Databases & Data Management	database; data management; query processing; sql; nosql; data warehouse; data lake; postgresql; mysql; mongodb

Table 2.S.B.5. Keywords for identifying AI co-occurrence

Keywords used for co-occurrence in arXiv and GitHub

Keywords used for AI co-occurrence
action recognition activity recognition adaboost adaptive boosting adversarial learning adversarial network ai algorithm ai chipset algorithmic of ai ambient intelligence answer set program ant colony ant colony optimisation artificial bee colony algorithm artificial evolution artificial intelligence artificial neural network association rule attention transformer attention based autoencoder automated planning automated scheduling autonomic computing autonomous car autonomous vehicle autonomous weapon backpropagation bayes network Bayesian learning bayesian network bee colony blind signal separation bootstrap aggregation brain computer interface brownboost classification tree cluster analysis cognitive automation cognitive computing cognitive insight system cognitive modelling cognitive robotic collaborative filtering collision avoidance community detection computational intelligence computational pathology computer vision connectionis convolutional neural convolutional neural network decision model decision tree deep belief network deep convolutional neural network deep learning deep learning model deep neural deep neural network deep reinforcement learning dictionary learning differential evolution algorithm diffusion model dimensionality reduction driverless car driverless vehicle dynamic time warping embedding emotion recognition ensemble learning evolutionary algorithm evolutionary computation evolutionary robotic expert system extreme machine learning face recognition facial expression recognition factorisation machine feature engineering feature extraction feature learning feature selection federated learning firefly algorithm fuzzy c fuzzy environment fuzzy logic fuzzy number fuzzy set fuzzy system gaussian mixture model gaussian process generation model generative adversarial network generative ai genetic algorithm genetic programming gesture recognition gradient boosting gradient tree boosting graph convolutional network graph neural graph neural network graphical model gravitational search algorithm hebbian learning hidden markov model hierarchical clustering high dimensional data high dimensional feature high dimensional input high dimensional model Hough transformer human action recognition human activity recognition human aware artificial intelligence human robot interaction humanoid robot hybrid ai image classification image processing image recognition image retrieval image segmentation independent component analysis inductive logic inductive logic programm inductive monitoring instance based learning intelligence augmentation intelligent agent intelligent classifier intelligent geometric computing intelligent infrastructure intelligent software agent intelligent system intuitionistic fuzzy set K means Kernel learning language transformer language model large language large language model latent dirichlet allocation latent semantic analysis latent variable layered control system learning transformer learning algorithm learning automata learning model link prediction llm logistic regression logitboost long short term memory lpboost machine intelligence machine learning machine learning model machine translation machine vision madaboost MapReduce Markovian memetic algorithm meta learning model training motion planning multi agent system multi label classification multi layer perceptron multi objective evolutionary algorithm multi sensor fusion multi task learning multilayer perceptron multi objective optimisation natural gradient multinomial naïve Bayes natural language natural language generation naïve Bayes classifier natural language processing nearest neighbour algorithm neural architecture search neural machine translation neural network natural language understanding neural network cnn neural network model neural radiance field neural turing neural turing machine neuromorphic computing neuromorphic architecture neuromorphic engineering non negative matrix factorisation obstacle avoidance one class learning one shot learning object detection object recognition optical character recognition optimization for learning particle swarm optimisation pattern recognition optimisation for learning pedestrian detection policy gradient method Q learning random field random forest planning algorithm recommender system rankboost recurrent neural network regression tree reinforcement learning representation learning relational learning robot interaction robot learning rough set rule learning rule based learning self driving car self organising map self organising structure semi supervised training semi supervised learning sensor data fusion sensor fusion sentiment analysis similarity learning service robot simultaneous localisation mapping single linkage clustering sparse representation speech recognition speech synthesis speech to text spectral clustering stacked generalisation stochastic gradient stochastic gradient descent supervised learning supervised training statistical relational learning support vector machine support vector regression swarm intelligence swarm optimization t s fuzzy system Takagi Sugeno fuzzy system temporal difference learning text mining text to speech topic model totalboost training data trajectory planning trajectory tracking transfer learning trust region policy optimisation unmanned aerial vehicle unsupervised learning unsupervised training variational inference vector machine virtual assistant visual servoing xgboost

Source: OECD adopted from OECD (2025[27]), *Identifying emerging AI technologies using patent data: A semi-automated approach*, OECD Publishing, Paris, *https://doi.org/10.1787/d17e9a1a-en*.

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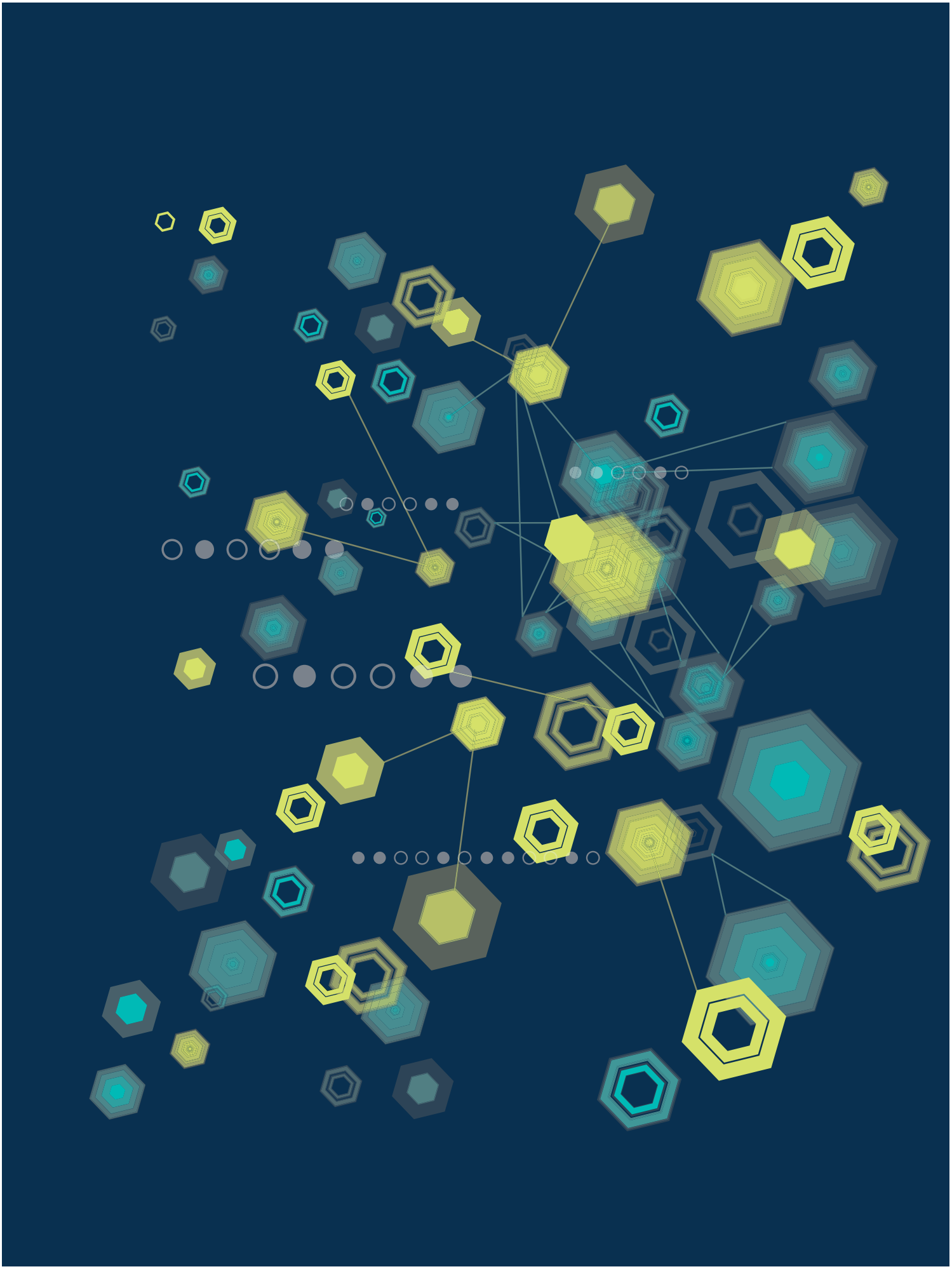
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Notes

1. The three expert workshops in question are: the United Kingdom-Estonia-OECD Expert Workshop on PETs (May 2024); the Singapore-OECD Expert Workshop on PETs and AI (July 2024); and the Canada-Japan-OECD Expert Workshop and High-Level Roundtable on PETs and AI held alongside the G7 Data Protection Authorities' Meeting in Ottawa (June 2025).
2. This paper is based on the analysis of 30 248 arXiv papers, 9 119 GitHub repositories and 62 714 PATSTAT patent applications, filed or published between 2010 and 2025 (except for PATSTAT data, where 2022 was the cut-off date). The latest extraction for each data source occurred in February 2026. A few limitations need to be acknowledged given the selection of data sources. First, while arXiv offers timely access to cutting-edge research outputs, it does not cover the full scientific literature (e.g. it excludes proprietary or peer-reviewed databases such as SCOPUS). Therefore, it may underrepresent some disciplines and research publications. Similarly, GitHub represents the largest OSS platform, yet not the entire OSS ecosystem, and many projects are hosted on other repositories. Third, patent data reflect only one route from concept to commercialisation. As emphasised in OECD (2025[27]), patents do not protect all inventions and patentability can vary significantly by jurisdiction. In particular, national patent systems differ in whether and how they recognise software and cryptographic methods, i.e. computer-implemented or algorithmic inventions, which may lead to cross-country comparability issues. See Annex S.2.B for further details on the methodology.
3. GitHub stars enable users to bookmark repositories as a signal of interest or usefulness.

References and Notes

4. Academic publications (i.e. arXiv) and OSS repositories (i.e. GitHub repositories) capture different stages of the innovation pathway for PETs. Academic publications primarily reflect the development and diffusion of the underlying scientific and technical knowledge base, whereas OSS repositories provide usable tools, libraries and applications that practitioners can adopt. Given the open-source nature of PET development, OSS activity serves as a useful proxy for early-stage implementation and experimentation outside formal commercial deployment. Consequently, a comparison of their trajectories provides indicative evidence of whether implementation activity is expanding faster or slower than foundational research.
5. The OECD defines an event where the development or use of an AI system results in *actual* harm as an "AI incident", while an event where the development or use of an AI system is *potentially* harmful is termed an "AI hazard" (OECD, 2024[55]).
6. As the large majority of papers and repositories at the intersection of Finance & Banking and Zero Knowledge are blockchain related, this intersection serves as a suitable proxy for blockchain activity.
7. International patent families, meaning inventions that have been filed in more than one jurisdiction or through the Patent Cooperation Treaty (PCT), are typically associated with higher-value or more commercially significant innovations, since international protection entails higher costs. To avoid double counting across countries, each patent family is fractionally attributed to the inventors' countries of residence. For example, a patent listing two inventors in Japan and one in Germany would allocate two-thirds to Japan and one-third to Germany. This fractional counting approach provides a more accurate measure of each country's actual contribution to global inventive activity, regardless of where a company files or owns the patent (OECD, 2009[26]).
8. The data used to calculate the number of ICT-related patent families are provisional and do not yet capture all relevant IPC codes. As a result, the absolute shares presented here may slightly overestimate the proportion of ICT patent families accounted for by PET patents. However, there is no reason to expect this limitation to have significant bearing on growth of this share over time.
9. The data used to calculate these growth rates are based on the narrow definition of PETs. The OECD average growth rate is calculated as the growth rate of the total number of all fractional counts attributed to OECD Member countries between 2020 and 2022.
10. China's apparent dominance in patent volume must be interpreted with caution due to several confounding factors. According to WIPO (2024[58]), applicants from China accounted for around 68% of all global patent families in 2021 and roughly 69% of global patent filings in 2023. Moreover, approximately 97% of patent families originating from China during 2019-2021 were single-office filings (i.e. limited international extension). These shares suggest that the high volume of filings from China may reflect strong domestic filing incentives and quantity-driven institutions rather than equivalent levels of globally oriented, multi-jurisdictional innovation. Additionally, USPTO (2021[57]) highlights many government subsidy programmes, performance-linked targets for patents in universities and state-owned enterprises, and other non-market drivers of filing behaviour in China. All these factors caution against interpreting patent counts alone as a direct measure of underlying innovation quality.



Chapter 4

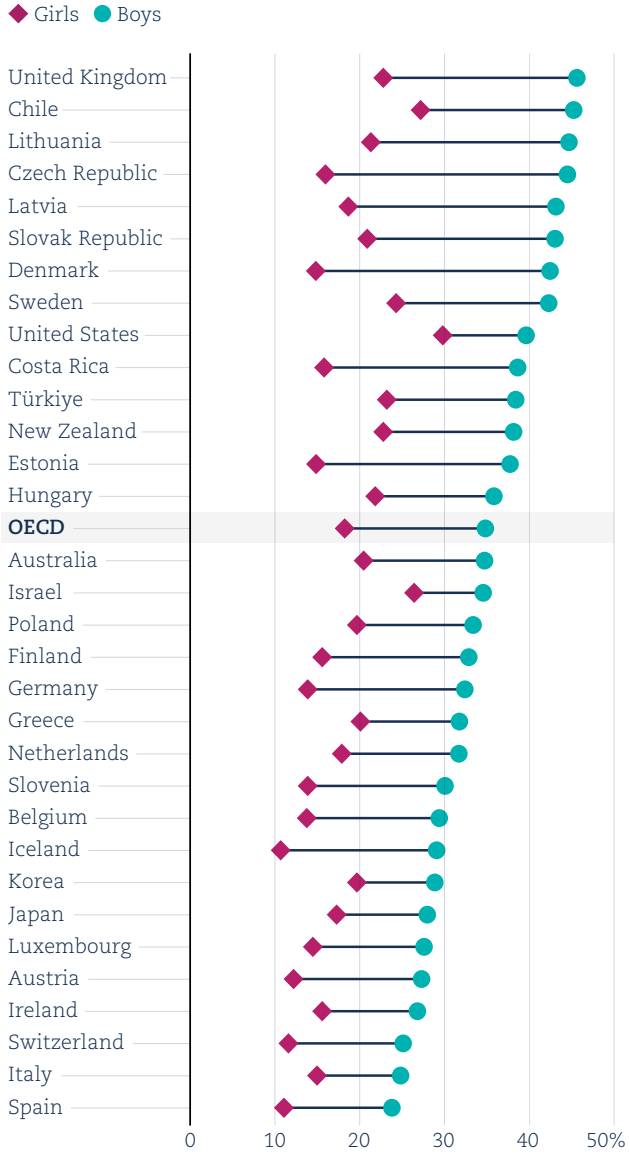
Levelling up child well-being in video gaming

Video games are a common form of play and leisure for children worldwide, offering opportunities for fun, learning, social connection and creative expression. Video gaming can support children's rights to play and participate in cultural life, while contributing to their well-being and development. At the same time, gaming environments pose risks to children, including contact with bad actors, privacy concerns and consumer risks, such as those related to in-app purchases and loot boxes. Beyond play, gaming extends into broader cultures and communities shaped by content creators, influencers and e-sport events. This chapter explores these opportunities and risks, presents trends in children's gaming behaviour and time spent playing, examines the interplay between gaming and school performance, and delves into gaming cultures and practices. It concludes with policy considerations for ensuring safe, age-appropriate and beneficial gaming experiences.

Boys game more, and excessive use correlates with lower grades

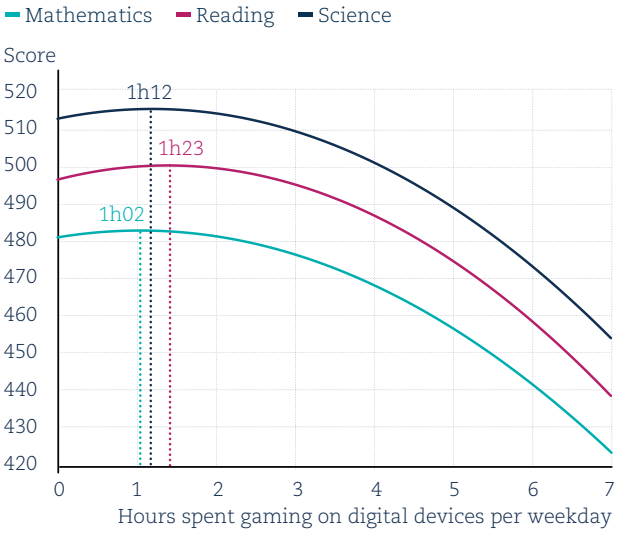
Boys are more likely than girls to game intensively.

Share of 15-year-olds playing video games 3 hours or more on a typical weekday, by sex, 2025 (or latest)



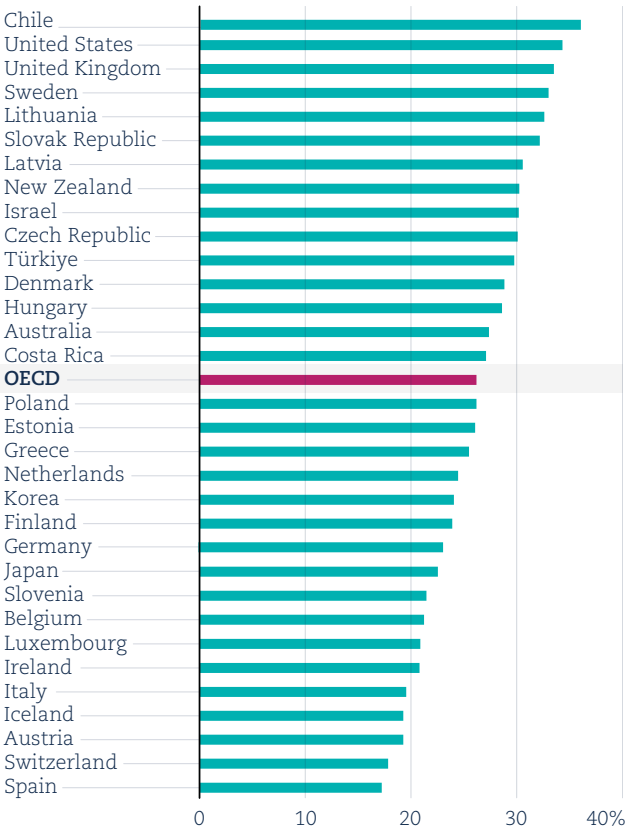
School performance declines with excessive gaming.

Estimated time when the association between academic scores and video gaming on weekdays turns negative, OECD Member countries, 2025



Intensive gaming varies widely across countries.

Share of 15-year-olds playing video games 3 hours or more on a typical weekday, 2025 (or latest)



Key findings

Children's video gaming experiences vary by age, device and socio-economic background

- Video gaming extends into broader ecosystems through streaming, influencers and e-sports, shaping norms, behaviours and commercial engagement.
- In 2025, 81% of 15-year-olds in OECD Member countries play on a typical weekday, making video gaming one of the most common forms of digital leisure.
- Problematic video gaming behaviours increase with playtime and frequency, especially among heavy and regular players.

Moderate video gaming shows no disadvantage for school performance, while intensive use carries risks

- Children who report playing video games for around one to three hours per weekday tend to show similar or slightly higher performance in mathematics, reading and science compared with those who spend less time gaming.
- Beyond this level, weekday video gaming is associated with lower academic outcomes, with earlier and steeper declines observed for girls and among students from more advantaged backgrounds.

Video gaming provides opportunities for learning and well-being, but can also expose children to harms

- Video gaming can support cognitive skills, creativity, social interaction and emotional well-being, but intensive play can carry risks. For instance, about one in eight adolescents are at risk of developing gaming disorder with symptoms more common among intensive players.
- Children may face exposure to harmful content, bullying and grooming, with multiplayer features increasing the potential for risky contact with strangers (e.g. on average, child abusers are able to lock children into high-risk grooming conversations in 45 minutes).
- Consumer risks, such as unauthorised or unplanned purchases, may arise from in-game transactions, gambling-like features and influencer-driven activities, potentially causing emotional and financial harm.

Policies should balance safety, consumer protection, learning and equity in video gaming

- Online safety laws and industry safeguards (e.g. parental supervision tools) should address the specific features of video games, ensuring that children benefit from consistent protections across platforms, clear age ratings and stronger digital literacy support.
- Other relevant frameworks, such as consumer policy, may need to be reviewed to ensure children's protection against new forms of financial and other consumer risks in video gaming.
- Policies should also promote balanced gameplay that supports learning, with special attention to children's individual differences, to prevent intensive gaming from reinforcing educational inequalities.

Introduction

Video games have long provided an outlet for play and leisure for adults and children alike and playing video games (or "gaming") is a common activity for many children around the world. Gaming today has come a long way from the grainy early video games on a desktop computer, or early console games with primitive graphics that required players to come together physically to play as a group. Through Internet connectivity and advances in technology, video games have become more realistic, connected and available across a wide spectrum of devices.

Video games have led to diverse cultures that spill over to other areas of digital environments and other areas of children's lives. Gaming culture is not limited to the gameplay itself; it is also the subject of dedicated chat or streaming platforms, such as on Reddit or Twitch. This provides children with opportunities for leisure and entertainment outside of gaming itself, such as in spaces where they watch (and comment on) the gameplay of others. It also provides opportunities for community and connection with people children already know (in person or online). However, the experience can expose children to people they have not physically met and to who they cannot be certain of their identity.

4. LEVELLING UP CHILD WELL-BEING IN VIDEO GAMING

Playing video games online (or "online gaming") is one important avenue through which children can access the many benefits that digital technologies afford, such as learning, having fun, socialising and exercising their rights. This includes the right to "rest and leisure, to engage in play and recreational activities appropriate to the age of the child and to participate freely in cultural life and the arts" ("the right to rest, play, culture and arts") (United Nations, 1989[1]). Online gaming provides children a space to exercise that right, particularly the component of play. Playing is important for child development. As noted by the Committee on the Rights of the Child, play facilitates "children's social skills, learning, expression, creative activities, such as music and art, and sense of belonging and a shared culture" (United Nations, 2021[2]). As a form of digital play, online gaming can contribute to children's well-being and development.

Online gaming also poses risks to children. Those risks may be related to the people they meet or the content they see in online games. For instance, child sexual offenders may engage in online gaming platforms because children are likely to be there. Through the use of the same communication and content-sharing features that can provide beneficial connections for children, offenders are known to contact children on popular gaming services before luring them to less moderated platforms (Suojellaan Lapsia, Protect Children, 2024[3]). Beyond contact risks, online games also bring privacy and consumer risks to children (OECD, 2021[4]). Consumer risks, such as loot boxes or incentives to make continual in-app purchases, are prevalent in online games, and those are risks to which children are particularly vulnerable (Ash, Gordon and Mills, 2023[5]).

The online gaming market is vast and diverse, offering a broad spectrum of experiences ranging from simple puzzle-solving to complex multiplayer strategy games and immersive world-building (eSafety Commissioner, 2023[6]). The devices on which video games can be played range from those that offer basic games (such as smartphones or tablets) to dedicated gaming consoles and virtual reality headsets. Gaming titles popular among children feature distinct characteristics with their own genres, gameplay mechanics, narrative and design. The appeal and child-accessibility of specific games can vary depending on the child's age, sex, country, skill level and personal preferences.

The gaming ecosystem extends beyond games themselves, encompassing a wide array of social and cultural practices. Certain games attract large communities of players across multiple platforms and are often structured around high-profile content creators and influencers. These communities contribute to the emergence of gaming subcultures, shaped by shared norms, language, values and events, ranging from online interactions to large-scale in-person gatherings such as e-sports tournaments (Lee, 2025[7]).

Online gaming is not an inherently harmful activity, but children could be more exposed to certain safety, privacy and consumer risks than adults, particularly when unsupervised (OECD, 2021[4]) (UNICEF, 2024[8]). Because digital technologies continue to develop at a fast pace, building safe, age-appropriate, rights-preserving and fun online games can benefit from input from children and collective efforts from all stakeholders.

This chapter examines current trends in online gaming among children, focusing on how gaming can contribute to, or hinder, child well-being. It provides an overview of the different types of video games that are popular among children; the features and functionalities they offer; and the broader gaming cultures that influence, and are influenced by, children. After examining how much children game and how it relates to school performance, the chapter reflects more broadly on the opportunities and risks that online gaming can bring to children, considering aspects of well-being such as safety and mental health. The chapter concludes with an examination of policy issues raised by online gaming now and in the future.

The features of games and gaming environments

Children navigate a highly diverse gaming landscape, and one that has significantly evolved over time. Games today, for instance, can have hyper-realistic graphics and less friction than earlier games through continuous save functions and easily found cheat codes or instructional videos. Games are offered on different types of devices and via different platforms. There is a wide choice of games that have different features, are aimed at different age groups and have varying functionalities beyond simple gameplay (e.g. chat functions, integrated purchases). Gaming ecosystems also have distinct cultures and communities, but they often converge in online spaces (like streaming or chat platforms) that exist separately from the games themselves.

The effects of online video games on children depend on many factors, including their genre and functionalities. An OECD report stresses the impacts of gaming depend on the content (e.g. educational, social simulation), context (e.g. co-operative games, playing alone), delivery interfaces (e.g. virtual reality-based devices, screen-based devices), interactivity (e.g. action video game play, puzzle games) and users (e.g. stages of neurodevelopment) (Burns and Gottschalk, 2020[9]).

This section provides an overview of that landscape, setting out the devices and platforms on which children play games, the types of games available to them, different functionalities within games and an overview of gaming culture(s).

Games are played on a variety of devices and platforms

Figure 4.1 shows the different types of devices commonly used by children to access and play games:

Figure 4.1. Types of devices commonly used by children to play video games



Sources: eSafety Commissioner (2023[6]), *Gaming*, *https://www.esafety.gov.au/parents/issues-and-advice/gaming*; Better Internet for Kids (2024[10]), *What parents should know about VR gaming*, *https://better-internet-for-kids.europa.eu/en/news/what-parents-should-know-about-vr-gaming*; Pew Research Centre (2024[11]), *Teens and video games today*, *https://www.pewresearch.org/internet/2024/05/09/teens-and-video-games-today*; Ofcom (2025[12]) *Children and Parents Media Use and Attitudes Report*, *https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/media-literacy-research/children/childrens-media-use-and-attitudes*; X Reality Safety Intelligence (2025[13]), *The metaverse*, *https://xrsi.org/definition/the-metaverse*.

The types of devices children use vary depending on factors such as the country they live in, age group and sex. For example, in the United Kingdom, consoles are the most popular gaming device with 56% of parents of children aged 3 to 17 reporting that their child uses a console to play games. Younger children are more likely to game on a tablet (53% of children aged 3 to 12 compared to 22% of those aged 13 to 17), while older children are more likely to use a console or portable device (66% compared to 51%) and/or a mobile device (56% compared to 40%) (Ofcom, 2025[12]). In the United States, most children aged 13 to 17 play video games on a gaming console (73%) or a smartphone (70%), 49% play on a desktop or laptop computer, 33% do so on a tablet and 24% play on a virtual reality headset (Pew Research Centre, 2024[11]). Boys are more likely than girls to play video games on all devices except tablets, which boys and girls use equally (Pew Research Centre, 2024[11]).

The places where children access games also vary. While some games can be purchased in a physical location, most are widely available through two main types of online platforms.

- **App stores** have large libraries of games, with sections of the stores dedicated to children and with recommendations such as "teacher approved apps and games" (Google, 2025[14]) or "top apps for kids" (Apple, 2025[15]), sometimes divided into different age groups (OECD, 2025[16]).
- **Digital game distribution services** allow players to buy and download games from the Internet directly to their devices (e.g. console, immersive technology device). Such services enable instant access to vast libraries of game titles without discs or cartridges, facilitate cross-platform gaming because users can access their game libraries from multiple devices, and often offer functionalities for chatting and socialising with other players (DeGraide, 2024[17]). Some gaming distribution sites are connected to a particular device platform, whereas others offer third party, multi-platform distribution.

Additionally, cloud gaming facilitates play regardless of a user's device by enabling players to stream games by directly accessing a server. Through cloud technology, players can access a large selection of games on demand with minimal entry barriers, saving time, storage capacity and money (Van Der Zwan, 2024[18]).

Children play multiple types of games

The online gaming industry offers a wide selection of games, ranging from single-player puzzles and quizzes, flight simulation, shooting and racing to multiplayer strategic battles, role playing and social simulations. Games can be classified into genres according to their player modes, gameplay, narratives, pricing structures and user bases.

Game genres

Video game genres are useful for classifying games based on how they are played, rather than on their visual or narrative elements. Table 4.1 presents common video game genres and sub-genres, along with examples of games that are popular among children.

Table 4.1. Common video game genres and sub-genres popular among children

Genres	Sub-genres	Examples
Action	First person shooter	Call of Duty, Valorant, Apex Legends
	Third person shooter	Splatoon 3, Fortnite, Grand Theft Auto V
	Battle royale	Fortnite: Battle Royale, PUBG: Battlegrounds
	Fighting	Super Smash Bros., Brawl Stars
	Action-Adventure	The Legend of Zelda, Tomb Raider
Adventure	Adventure	Disney Dreamlight Valley
	Graphic adventure	The Walking Dead, Tales from the Borderlands
	Point-and-click	Foolish Mortals, The Book of Unwritten Tales
Role-playing games (RPG)	Massively multiplayer online role-playing game (MMORPG)	World of Warcraft, Genshin Impact
	Tactical role-playing games (TRPG)	Final Fantasy Tactics, Fire Emblems
Puzzle	Puzzles	Candy Crush, Angry Birds
	Escape room	Escape Academy, The Room
Social games	Party	Among Us, Mario Party
Simulation	World building / sandbox	Minecraft, Roblox
	Sports	FIFA, NBA 2K
	Social simulations	The Sims, Animal Crossing,
	Farming simulations	Stardew Valley, Coral Island
Strategy	Multiplayer online battle arena (MOBA)	League of legends, Dota 2
	Real-time strategy (RTS)	Age of Empires, StarCraft
	Tower defence	Clash of Clans, Plants vs. Zombies

Notes: This is a non-exhaustive list. Individual games may belong to several genres and/or sub-genres depending on game modes.

Sources: eSafety Commissioner (2024[19]), *Levelling up to stay safe: Young people's experiences navigating the joys and risks of online gaming*, *https://www.esafety.gov.au/sites/default/files/2024-02/Leveling%20up%20to%20stay%20safe%20-%20gaming%20report.pdf*; App Figures (2025[20]), *Top ranked IOS app store apps*, *https://appfigures.com/top-apps/ios-app-store/united-states/iphone/games*; Ofcom (2025[12]) *Children and Parents Media Use and Attitudes Report*, *https://www.ofcom.org.uk/siteassets/resources/documents/research-and-data/media-literacy-research/children/childrens-media-use-and-attitudes*; Stream Hatchet (2025[21]), *Most Watched Games on YouTube Gaming*, *https://streamhatchet.com/rankings/youtube/games/?period=last-30-days*; Twitch Tracker (2025[22]), *Twitch Game Statistics*, *https://twitchtracker.com/statistics/games*; Victorian Responsible Gambling Foundation (2025[23]), *A guide to gaming technology*, *https://responsiblegambling.vic.gov.au/documents/1372/Factsheet_A_guide_to_gaming_terminology.pdf*.

Box 4.1 provides definitions for some of the genres and sub-genres:

Box 4.1. Glossary of popular game genres and sub-genres

- **First person shooter:** weapon-based game where players assume the character of a shooter and see the game through their eyes; players cannot see their characters, but they can see the weapon they are holding.
- **Third person shooter:** weapon-based game where the view is from behind and slightly above or from above, and players can see their characters.
- **Battle royale:** multiplayer game where players or teams compete to be the last one standing, while the area of play constantly or intermittently shrinks, so remaining players are forced closer and closer to each other, compelling combat.
- **Role-playing game (RPG):** players assume the role of a character with specific strengths and attributes in a fictional setting. RPGs can be single player or multiplayer and normally involve completing quests by acting out their role through structured decision making.
- **Massively multiplayer online role-playing game (MMORPG):** a vast, interactive world where thousands of people play together online and go on missions to defeat enemies.

Box 4.1. Glossary of popular game genres and sub-genres *(cont.)*

- **Multiplayer online battle arena (MOBA):** a player controls a single character in a team that competes to destroy the opposing team's main structure.
- **Sandbox:** players are free to roam through an open world and select whatever task or activity they want to participate in. This may include building structures, exploring different parts of a city, or interacting with various characters.
- **Tower defence:** players defend their territory or possessions by strategically placing traps and towers to set off waves of enemies.

Note: The list is non-exhaustive.
Sources: Fillari (2019[24]), *Battle royale games explained: Fortnite, PUBG and what could be the next hit*, *https://www.gamespot.com/articles/battle-royale-games-explained-fortnite-pubg-and-wh/1100-6459225*; Halai (2024[25]), *Demystifying tower defense game architecture: A practical guide*, *https://www.cubix.co/blog/demystifying-tower-defense-game-architecture-practical-guide*; Victorian Responsible Gambling Foundation (2025[23]), *A guide to gaming technology*, *https://responsiblegambling.vic.gov.au/documents/1372/Factsheet_A_guide_to_gaming_terminology.pdf*.

Children's gaming preferences may vary depending on many factors such as their country, age group or sex. A 2024 study of children aged 8 to 17 in Australia revealed that young gamers play a wide variety of games spanning multiple genres (eSafety Commissioner, 2024[19]). In the United Kingdom, the most popular game genre among children aged 3 to 12 is creative and building games, followed by puzzles or quizzes, and action/adventure games. Conversely, among children aged 13 to 17 the most popular types are games played against multiple people/teams, followed by creative and building games, and shooter games (Ofcom, 2025[12]). The most popular types of games played by girls are creative and building games (46%), puzzles or quizzes (42%), playing in a virtual world (28%) and action/adventure (28%). For boys, it is playing against multiple people/teams (43%), creative and building games (43%) and sports games (41%) (Ofcom, 2025[12]).

Player modes

Commonly referred to as player modes, the type (computer or human) and number of players vary in online games. Regarding the number of players, evidence shows that multiplayer mode is popular among children. For example, four out of five young Australian gamers play with others online, including two in five (40%) who play with people they do not already know offline (eSafety Commissioner, 2024[19]). Likewise, in the United Kingdom, three in ten children who game online play with people they do not otherwise know (Ofcom, 2025[12]). In the United States, 89% of children aged 13 to 17 say they play with other people, in person or online, whereas only 11% play on their own (Pew Research Centre, 2024[11]).

Other gaming terminology describes the types of interactions between players and the game environment, as explained in Figure 4.2.

Figure 4.2. Common types of interactions between players and the game environment



Player vs. player: two or more people play against each other, sometimes in the same physical location, but often online from different places.



Player vs. environment: one player faces a computer-controlled opponent or environment. These games are usually played alone and involve complex computer-generated story lines and challenges.



Co-operative: players work together either against other players or against computer-controlled opponents.

Source: Victorian Responsible Gambling Foundation (2025[23]), *A guide to gaming technology*, *https://responsiblegambling.vic.gov.au/documents/1372/Factsheet_A_guide_to_gaming_terminology.pdf*.

Target audience

Audiences for games can be divided into three main groups (Figure 4.3).

Figure 4.3. Main types of target audiences for online gaming



Source: OECD (2025[16]), *Age assurance practices of 50 online services used by children*, *https://doi.org/10.1787/a19853ab-en*.

In principle, games may target different age groups, but in practice children may access those designated as adults only. Likewise, games for a mixed audience may have a minimum age (frequently 13) and/or safeguards that restrict certain functionalities (e.g. direct messaging, livestreaming, targeted advertising) for certain age groups. However, children may nonetheless access those functionalities or games if services do not have effective age assurance mechanisms in place (OECD, 2025[16]). Furthermore, even though some games are expressly branded as "child-friendly" or "family-friendly", they do not necessarily prohibit adults from using them.

Pricing

Online games may have different pricing policies. Pay-to-play models (i.e. P2P, PtP or premium) require either an upfront payment or a monthly subscription. Free-to-play models (i.e. F2P, FtP or freemium) ostensibly have no cost but often incorporate microtransactions to generate revenue. Microtransactions are in-game purchases, usually small amounts, and they often use virtual currency.[1] Pay-to-play games may also use microtransactions, for example, to access add-ons or extra features (Victorian Responsible Gambling Foundation, 2025[23]).

Games offer a range of functionalities

Depending on the device and game, children may have access to a range of in-game functionalities to enrich their experience. These can include role play and customisability, rewards and quantification, communication and content-sharing features. Some games use age-tiered safeguards[2] to restrict the use of certain functionalities, particularly the latter two, for all children or a certain age group (OECD, 2025[16]).

Role play and customisability

Players are often given choices that affect the game mechanics and create a more customised experience (Ascanio, 2023[26]). For instance, many games allow players to embody a character (e.g. play as a particular character in an action/adventure or fighting game). Alternatively, players may have the option to customise aspects such as their character's physical appearance (e.g. hair, facial features, skin colour), skills and weapons, or to tailor settings, narratives and dialogues. Social simulation games or RPGs often enable users to create and customise an avatar (i.e. a graphical representation of the player, or the player's alter-ego or character) (Ascanio, 2023[26]) (Victorian Responsible Gambling Foundation, 2025[23]). Character customisation varies depending on the game genre. For example, in a RPG, game mechanics may allow players to choose from a variety of races and classes, each with its own unique abilities and attributes. Conversely, in a first-person shooter game, players may customise their weapons, armour and other equipment (Ascanio, 2023[26]).

Skins are another important customisation tool: they are vanity items that enable players to change the look of a character or weapon. They sometimes entail a commercial value and can be used as in-game currency or elsewhere, such as on special gambling websites. Skins can be earned while playing or purchased using real money or in-game currency (Victorian Responsible Gambling Foundation, 2025[23]).

Rewards and quantification

In-game rewards (i.e. virtual items such as loot boxes, badges, skins, objects) and the quantification of progress (e.g. levels, points, scores, goals) are key elements of video games across genres. For instance, experience points are commonly used in RPGs to "quantify a player's progress through a game" (Victorian Responsible Gambling Foundation, 2025[23]). The frequency and content of rewards vary from game to game. Shooter games often reward players with "higher ranks and flashier cosmetics the more they play the game" (Warner, 2019[27]). Fighting games tend to grant the player access to more characters and styles as they progress, and sporting games imitate real-life football or basketball games and scores. Similarly, many app games use rewards and other gamified items to boost user engagement (Bitrián, Buil and Catalán, 2021[28]).

This reward-based system plays a key role in keeping players engaged. Game developers use different psychological techniques, such as creating situations in which players experience a surge of dopamine every time they receive a reward. They may also leverage social comparison dynamics between players where rewards "become markers of status and prestige, driving players to strive for recognition and validation within their gaming communities" (Pass, 2023[29]).

Communication features

As gaming can be a social activity, many video games offer communication features. Children value such features and use video games to socialise, just like they would use a social media service. For instance, in the United States, 72% of children aged 13 to 17 who play video games say that one reason they play is to spend time with others (Pew Research Centre, 2024[11]). In the United Kingdom, three quarters (74% in 2024) of children who game online report that they use the in-game chat functions while gaming. More than six in ten (63%) of the same group say they chat to people they know outside the game via these in-game chat functions (Ofcom, 2025[12]).

As an example, Roblox a popular platform among children, offers experiences that are "explicitly designed for users to meet, chat and socialise" (Revealing Reality, 2025[30]). Users can engage in scenario-based interactions, socialise in private settings (e.g. virtual houses, hotels or restaurants) and participate in social hangouts to meet new people. Interaction features include a public chat text, private chat, voice chat (only for users over 13), as well as emojis[3] and animations (Revealing Reality, 2025[30]). Likewise, since its creation, Fortnite evolved from a fighting video game to "the meeting place, messaging service and increasingly central social gathering space for its millions of teen and tween players" (Bloom, 2019[31]). Beyond simple communication tools, some games provide social spaces where children gather to hang out and conduct a range of activities, and where they may also be confronted with commercial content. Roblox, for instance, blends together elements from games, advertising and social media. A marketing agency employed by Roblox has described the platform as "a kind of digital arcology where living, talking, shopping, and streaming are merged into one digital omni-existence" (Biddle, 2025[32]).

Content-sharing features

Some video games enable users to share content with others on their services by, for example, enabling creation of public content or exchange of content (e.g. screenshots, videos) via private chat. Sandbox and open world games typically revolve around user-generated creative content where players can produce and share their work with friends or on a public feed.

Gaming platforms may also allow users to broadcast their gameplay while playing live, such as through streaming services. In some cases, however, gaming services restrict access to livestreaming functionalities for certain age groups (OECD, 2025[16]). This type of feature illustrates the interconnectedness of gaming services with other types of services, and how gaming content can circulate across multiple platforms. Immersive video games, for instance, provide sharing features that enable users to share their virtual reality experience by livestreaming video to their networks on social media platforms (Meta, 2025[33]).

Children experience diverse gaming cultures

The gaming ecosystem is far from limited to the games themselves. Through gaming, children can have access to, and help shape, numerous, diverse and constantly evolving gaming subcultures. Thus, online games not only reflect culture; they also create it (Kowert, 2025[34]).

One key feature of the gaming ecosystem is its organisation into online communities that produce their own structures, cultural norms and practices (Lee, 2025[7]), playing a central role in shaping the experiences of children. Users of a specific game or platform can form large or small communities based on shared interests and values (ECPAT UK, 2022[35]). For example, massive communities have emerged around games like Fortnite, Call of Duty and World of Warcraft, "creating spaces where players can socialise, strategise, and form connections beyond the game" (Bycer, 2024[36]). Gaming experts stress that this can foster "a strong sense of belonging due to the importance of building communities which reflect and challenge norms in person" (ECPAT UK, 2022[35]).

In addition to in-game interactions, children engage with online communities when they conduct activities linked to gaming in the broader digital environment. In the United Kingdom, for example, 41% of children aged 3 to 12 and 49% of children aged 13 to 17 watch game tutorials, walk-throughs or others playing games (Ofcom, 2025[12]). Many popular games host large and active player bases that extend across multiple platforms and communication channels:

- **Streaming services:** children use streaming services to broadcast and watch live streams and pre-recorded videos of people playing video games (eSafety Commissioner, 2025[37]). For example, Fortnite is closely tied to a broader influencer ecosystem on Twitch and YouTube, where streamers shape gameplay trends, language and consumer behaviours.
- **Social media services:** children use social media services to discuss gaming-related topics. For example, there are communities on Discord and Reddit "centred around gaming topics such as Minecraft and Fortnite" (Ofcom, 2025[12]).

Gaming cultures have their own language, extending well beyond the written or spoken word, with shared values, references and representations. These can be reinforced through in-game features (e.g. emojis, chat functions) and out-of-game participation (e.g. streaming, tournaments, fan art) (Lee, 2025[7]). Children may learn oral and written words, expressions, abbreviations, codes, acronyms and emotes, to designate game names, actions, weapons or characters. Because the terminology is constantly evolving and can be difficult to understand for parents, or simply gaming culture outsiders, it has given rise to multiple guides and glossaries, sometimes with hundreds of entries (Blue, 2024[38]).

Influencers and streamers are an essential component of gaming cultures. Some prominent players who create game-based content attract millions of followers, particularly young ones, on platforms like YouTube, Twitch and TikTok, influencing game preferences, in-game behaviours and language. Some such players are children themselves, which contributes to peer dynamics and trend building among younger audiences.

Additionally, e-sports (i.e. video game competitions) have become a central component of gaming culture, with large-scale in-person events and international tournaments featuring famous players and attracting young spectators. The most common video game genres associated with e-sports include MOBA), first-person shooter games, fighting games or RTS.

How much do children game and how does gameplay relate to school performance?

Gaming has become a near-universal form of digital leisure among children, playing a central role in their daily lives across countries, sexes and age groups. A survey in five European countries[4] found that one quarter of all gamers are under 18 (Video Games Europe, 2023[39]). In the United Kingdom, 89% of children aged 3 to 17 play video games, often on a daily basis, and this number reaches 89% for those aged 8 to 17 in Australia, and 85% for those aged 13 to 17 in the United States (eSafety Commissioner, 2023[6]; Ofcom, 2025[12]; Pew Research Centre, 2024[11]).

Data from the 2025 and 2022 OECD Programme for International Student Assessment (PISA) provides insights into the gaming habits of 15-year-old students in a range of OECD Member countries, as well as how these habits vary between boys and girls, and between children in different socio-economic circumstances. These data also shed light on how gaming – and the amount of time spent gaming – affects children's performance in school. This section examines the association between video gaming and academic outcomes in mathematics, reading and science, with particular attention to understanding how time spent gaming interacts with other forms of online activity.

While most teenagers game moderately, a minority engages intensively

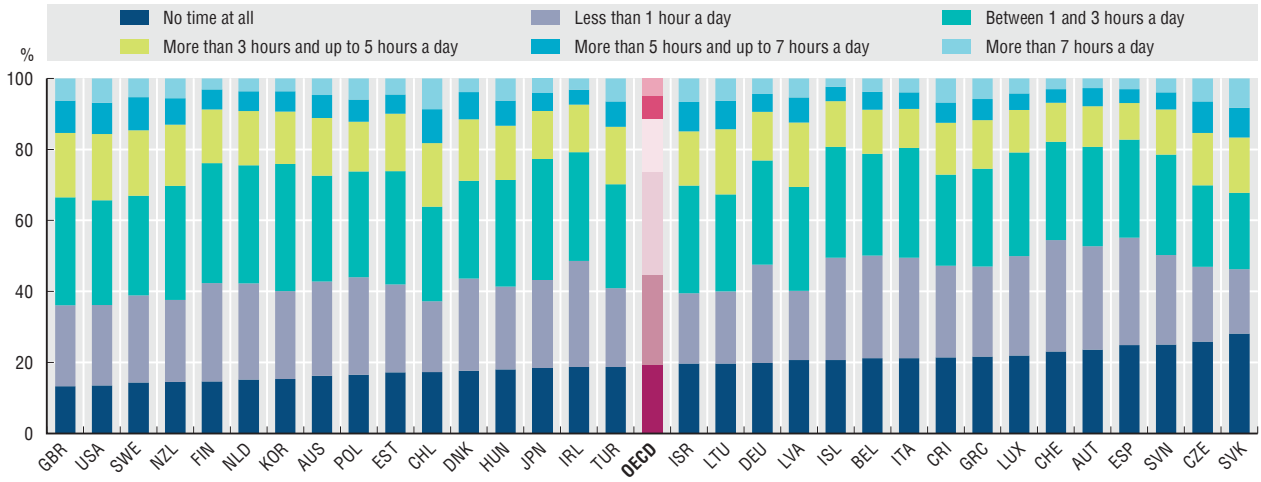
PISA captures gaming across all platforms, including smartphones, gaming consoles and online applications, providing a comprehensive measure of gaming activity (OECD, 2025[40]).[5] Across OECD Member countries,[6] 84% of students reported playing video games in a typical week in 2025 (OECD, 2026[41]).[7] Within the wider digital landscape, children also engage extensively in other online activities. For instance, almost all adolescents browse the Internet for fun (95%) or use social networks (96%), while a smaller share (65%) create or edit digital content (OECD, 2026[41]). Video gaming is therefore among the most common forms of online leisure.

Although participation is widespread, weekday gaming time is unevenly distributed. On average across the OECD, 19% of students reported not playing at all on a typical weekday in 2025 (Figure 4.4). About half (54%) played for up to three hours per weekday, a level classified in this chapter as moderate leisure use. In contrast, 26% played for more than three hours per weekday, the threshold used in this chapter to define intensive gaming. Notably, 5% of all students reported playing more than seven hours per weekday, indicating that the longest sessions are concentrated within a relatively small segment of adolescents (OECD, 2026[41]).

Cross-country differences in the full distribution of weekday gaming time are shown in Figure 4.4. In the Slovak Republic (28%), Czechia (26%) and Slovenia (25%), more than one-quarter of students reported not gaming at all on a typical weekday in 2025. In contrast, in the United Kingdom fewer than one in seven students reported zero weekday gaming. Differences are also visible in the upper tail of the distribution. In Chile, 9% of students reported playing more than seven hours per weekday, compared with less than 3% in Australia and Iceland. Finland had the highest share of students who are moderate video game players (61%) with a low share of intensive gaming (24%). In contrast, the Slovak Republic had at the same time a high share of students who are intensive video game players (32%) and those who do not play at all during weekdays (28%) with a smaller group of moderate players (40%). These patterns point to distinct national profiles in how gaming time is allocated across 15-year-olds.

Figure 4.4. The distribution of weekday gaming time varies markedly across countries

Distribution of time spent playing video games on a typical weekday among 15-year-olds, 2025 (or most recent)



Notes: Gaming includes using a smartphone, gaming console or online platform/app. For Chile, Costa Rica, Czechia, Denmark, Latvia, Lithuania, the Slovak Republic and Sweden, data refer to 2022.

Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

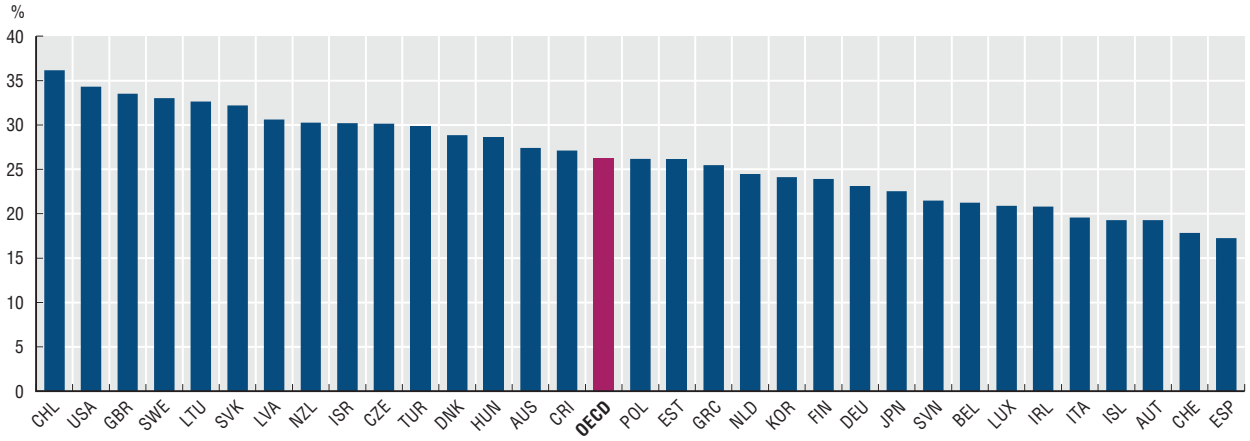
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A specific focus on intensive gaming can further illustrate cross-country differences (Figure 4.5). On average across the OECD in 2025, 26% of 15-year-olds report playing for more than three hours per typical weekday. However, the share ranges from 17% in Spain and 18% in Switzerland to 36% in Chile. In the United Kingdom, Sweden and Lithuania, around one in three students reported gaming for more than three hours per weekday, whereas in Austria (19%), Iceland (19%) and Italy (20%), the share was closer to one in five.

The prevalence of intensive gaming in a country is not simply a reflection of its overall participation rate. High levels of participation do not automatically lead to high intensity, nor does a large pool of non-gamers prevent a country from having a significant share of intensive users. For example, the share of non-gamers is relatively high in Czechia (26%) and the Slovak Republic (28%), yet intensive gaming is above the OECD average (30% and 32%, respectively). Conversely, in Spain, where participation is more widespread (25% of non-gamers), the share of students gaming for more than three hours remains the lowest in the OECD (17%).

Figure 4.5. The share of students gaming intensively differs widely across countries

Percentage of 15-year-olds playing video games for more than three hours per typical weekday, 2025 (or most recent)



Notes: Intensive gaming refers to more than three hours per typical weekday. Gaming includes using a smartphone, gaming console or online platform/app. For Chile, Costa Rica, Czechia, Denmark, Latvia, Lithuania, the Slovak Republic and Sweden, data refer to 2022.

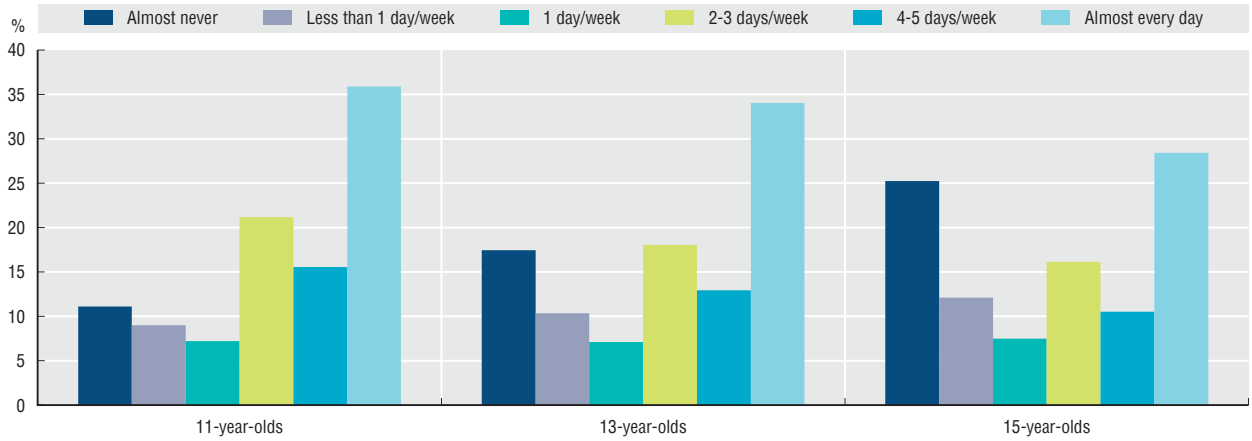
Source: OECD (2026[114]), "Share of 15-year-old students who are intensive social media users", *OECD Going Digital Toolkit*, *https://goingdigital.oecd.org/indicator/85* based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*. StatLink contains more data.

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Complementing PISA's focus on 15-year-olds, the Health Behaviour in School-aged Children (HBSC) 2021/2022 survey covers 11-, 13- and 15-year-olds across 44 countries and regions in Europe, Central Asia and Canada,[8] and shows that weekly gaming is common from early adolescence (Boniel-Nissim et al., 2024[42]). About 36% of 11-year-olds and 34% of 13-year-olds reported gaming (almost) every day, while the share is lower among 15-year-olds (28%). At the opposite end, approximately 11%, 18% and 25% of 11-, 13- and 15-year-olds respectively reported almost never gaming. These patterns reflect the levels of gaming prevalence reported via PISA while adding more information on younger children, showing that gaming is already common in children's daily life by age 11 (Figure 4.6).

Figure 4.6. Most children game regularly, with frequent gaming slightly declining with age

Average distribution of gaming frequency among children, by age, 2022



Notes: Shares represent the proportion of children reporting how often they play video games, including smartphone, console and online gaming. "Almost every day" includes children who play on most days, while "Almost never" includes those reporting no or very rare play. See also endnote 8.

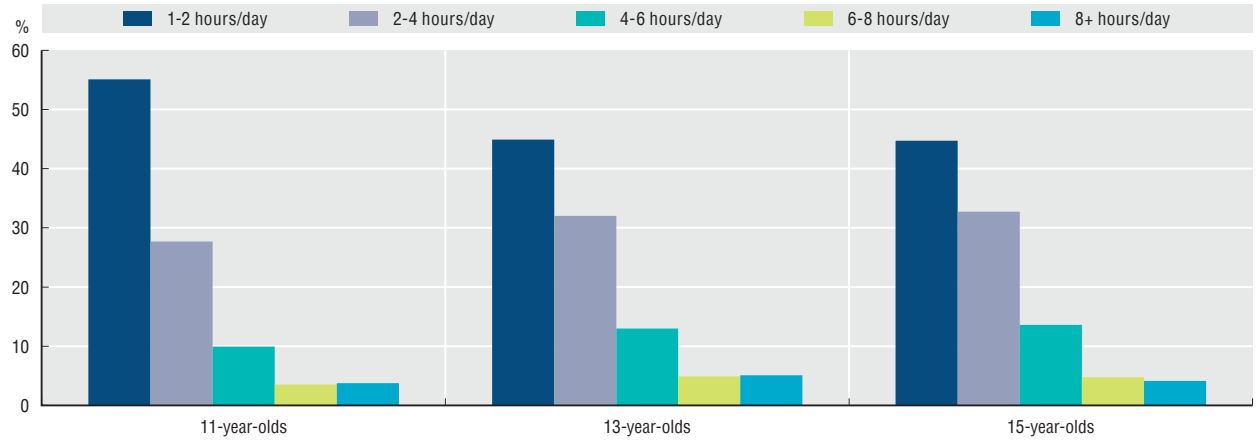
Source: OECD calculations based on Inchley et al. (2023[43]), *Health Behaviour in School-aged Children (HBSC) Study Protocol: background, methodology and mandatory items for the 2021/22 survey*, *https://www.hbsc.org/publications/survey-protocols*.

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Data show that moderate daily gaming dominates: about 55% of 11-year-olds reported playing one to two hours per day, compared with 45% of both 13- and 15-year-olds. The share playing more than four hours per day increases slightly with age, from around 17% at age 11 to over 22% among 13- and 15-year-olds, consistent with PISA evidence showing that intensive gaming is concentrated in a minority of children (Figure 4.7). Moreover, the data indicate that both daily frequency and intensive use reach a peak at age 13, followed by a gradual decline as children approach age 15. This downward trend appears to persist into late adolescence; for instance, longitudinal data from Germany's Federal Statistical Office show that average daily gaming time continues to decrease significantly as young people transition into adulthood and take on greater professional or academic responsibilities (Statistisches Bundesamt, 2025[44]).

Figure 4.7. Most 11-, 13- and 15-year-olds play one to four hours per day on average

Average distribution of time spent gaming on a typical day among children, by age, 2022



Notes: Percentages refer to the proportion of children in each age group reporting average daily gaming time. Gaming includes use of consoles, smartphones and computers, without distinction between weekdays and weekends. See also endnote 8.

Source: OECD calculations based on Inchley et al. (2023[43]), *Health Behaviour in School-aged Children (HBSC) Study Protocol: background, methodology and mandatory items for the 2021/22 survey*, *https://www.hbsc.org/publications/survey-protocols*.

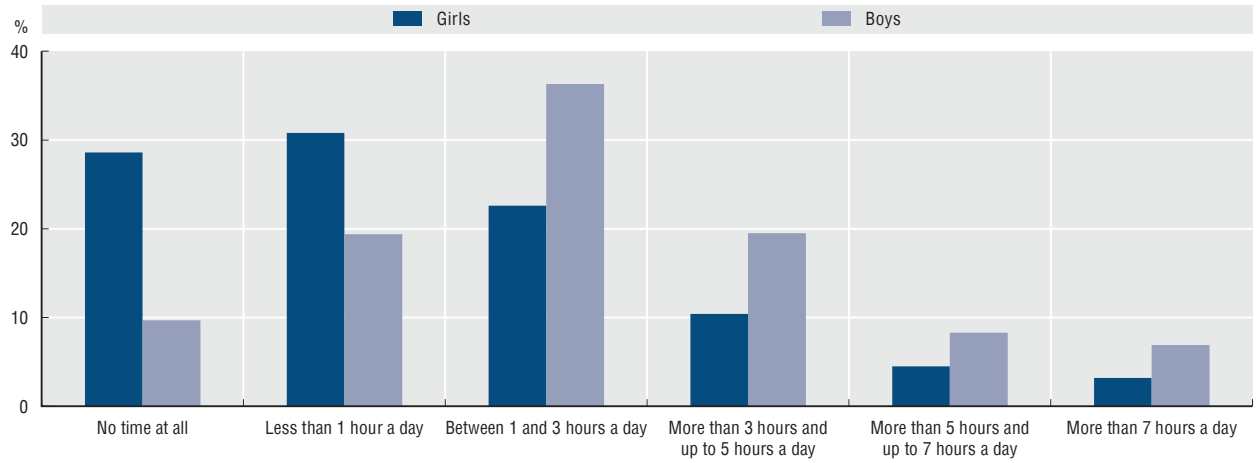
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Boys game more than girls, with intensity falling as socio-economic status rises

Digital divides are correlated not only with access and socio-economic factors, but also with a child's sex. Figure 4.8 shows that patterns of online engagement was strongly differentiated between boys and girls in 2022. Boys were more likely to participate intensively in video gaming and girls were more active social media users (OECD, 2026[45]; Boniel-Nissim et al., 2024[42]). PISA data from 2025 confirm this divide extends to the intensity of gaming: girls[9] represent the majority of non-gamers or light users, while boys dominate the higher-use categories. Among 15-year-olds, around 29% of girls and about 10% of boys reported not playing video games on weekdays. At the other end of the scale, 7% of boys and 3% of girls spent more than seven hours per weekday gaming (OECD, 2026[41]).

Figure 4.8. Boys are more likely than girls to game intensively on weekdays

Distribution of time spent playing video games on a typical weekday among 15-year-olds, by sex, OECD average, 2025 (or most recent)



Notes: Gaming includes using a smartphone, gaming console or online platform/app. See also endnotes 6 and 9.

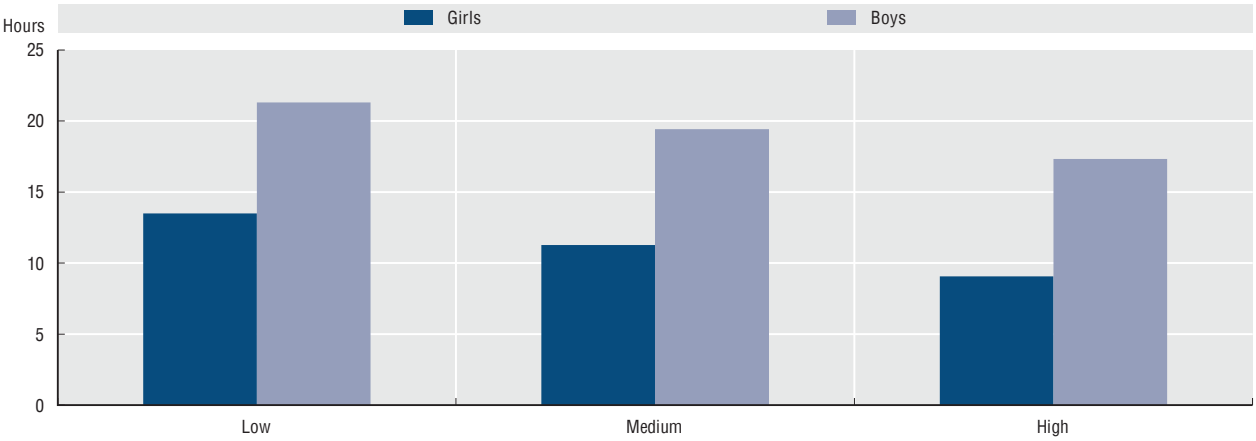
Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

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Time spent playing video games on weekdays also varies substantially by students' socio-economic background, again with differences between boys and girls.[10] In 2025, PISA data indicate that boys consistently reported more hours gaming than girls across all socio-economic groups. Among disadvantaged students, boys spent on average 21 hours gaming per week compared with around 13 hours for girls. The gap between boys and girls persists among students from medium socio-economic backgrounds, with boys gaming 19 hours versus 11 hours per week for girls. Among advantaged students, boys spent 17 hours per week gaming compared with 9 hours for girls. Overall, weekly gaming declines as socio-economic status increases, suggesting that both sex and socio-economic status shape patterns of engagement with video games (Figure 4.9).

Figure 4.9. Gaming decreases as socio-economic status rises, with boys gaming more than girls across all groups

Average weekly hours of gaming among 15-year-olds, by socio-economic status and sex, OECD average, 2025 (or most recent)



Notes: Gaming includes using a smartphone, gaming console or online platform/app. PISA does not collect direct measures of household income. Socio-economic groups are defined using the OECD Index of Economic, Social and Cultural Status (ESCS), which combines information on parental education, parental occupation and selected household possessions. Students are grouped into low (bottom quartile), medium (middle two quartiles) and high (top quartile) ESCS categories (Avvisati and Wuyts, 2024[46]). See also endnotes 6 and 9.

Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

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Gaming and school performance: Balancing potential benefits and risks

Understanding how the engagement of 15-year-olds in video gaming relates to learning requires a measured and evidence-based perspective. Gaming is now one of the most common forms of digital leisure among 15-year-olds across the OECD. Prior research has identified both potential benefits (e.g. problem solving, persistence, social interaction) and possible risks, particularly when gaming displaces other activities (OECD, 2024[47]).

Box 4.2. Gaming and academic outcomes: Non-linear patterns and cognitive pathways

Research over the past two decades consistently underscores that the relationship between video gaming, and cognitive or academic outcomes, is complex and highly context-dependent (Granic, Lobel and Rutger, 2014[48]). Cross-sectional analyses, including large-scale surveys such as PISA and national cohort studies, often reveal a broadly non-linear pattern: moderate engagement is typically associated with better school performance, while very high levels of gaming correlate with lower outcomes (OECD, 2024[49]; Drummond et al., 2020[50]). These studies emphasise heterogeneity across game type, individual characteristics and socio-economic background, and caution against interpretations based solely on total "screen time". Negative associations with academic outcomes at high levels of gaming are often interpreted through "dose-response" mechanisms, where benefits plateau and excessive use displaces time for sleep, study or physical activity (Ferguson, 2017[51]; Przybylski and Weinstein, 2019[52]). However, cross-sectional data cannot establish whether gaming drives cognitive benefits, or whether higher-performing students engage differently with gaming.

Longitudinal research provides more insight into temporal patterns and potential mechanisms. Cohort studies tracking adolescents over months or years indicate that moderate gaming can precede improvements in attention, working memory and problem-solving skills, while excessive gaming is associated with later declines in academic engagement, attention regulation, or socio-emotional adjustment (Kühn et al., 2014[53]; Gentile et al., 2011[54]; Przybylski, 2014[55]; Twenge and Campbell, 2018[56]). These findings suggest that cognitive and behavioural effects accumulate over time and that non-linear associations may reflect both beneficial stimulation at lower doses and detrimental displacement or fatigue effects at higher exposure.

Experimental and quasi-experimental studies further identify potential mechanisms. Controlled interventions show that certain types of games, particularly action or strategy games, can enhance visual attention, cognitive control and spatial reasoning (Green and Bavelier, 2003[57]; Boot et al., 2008[58]). Neuroimaging and laboratory studies confirm that such improvements correspond to measurable changes in brain activity and connectivity. However, prolonged or intensive gaming has also been associated with attentional dysregulation, increased impulsivity, and reduced grey matter density in regions linked to executive control (Yao et al., 2017[59]). This provides plausible pathways through which excessive engagement may hinder academic performance.

Collectively, research highlights a nuanced picture: gaming is neither inherently beneficial nor harmful for school performance. Outcomes depend on duration, context, game type and, individual characteristics. This suggests that the relationship follows an inverted U-shaped pattern where limited engagement may stimulate cognitive skills, but excessive use risks diminishing returns through displacement and fatigue.

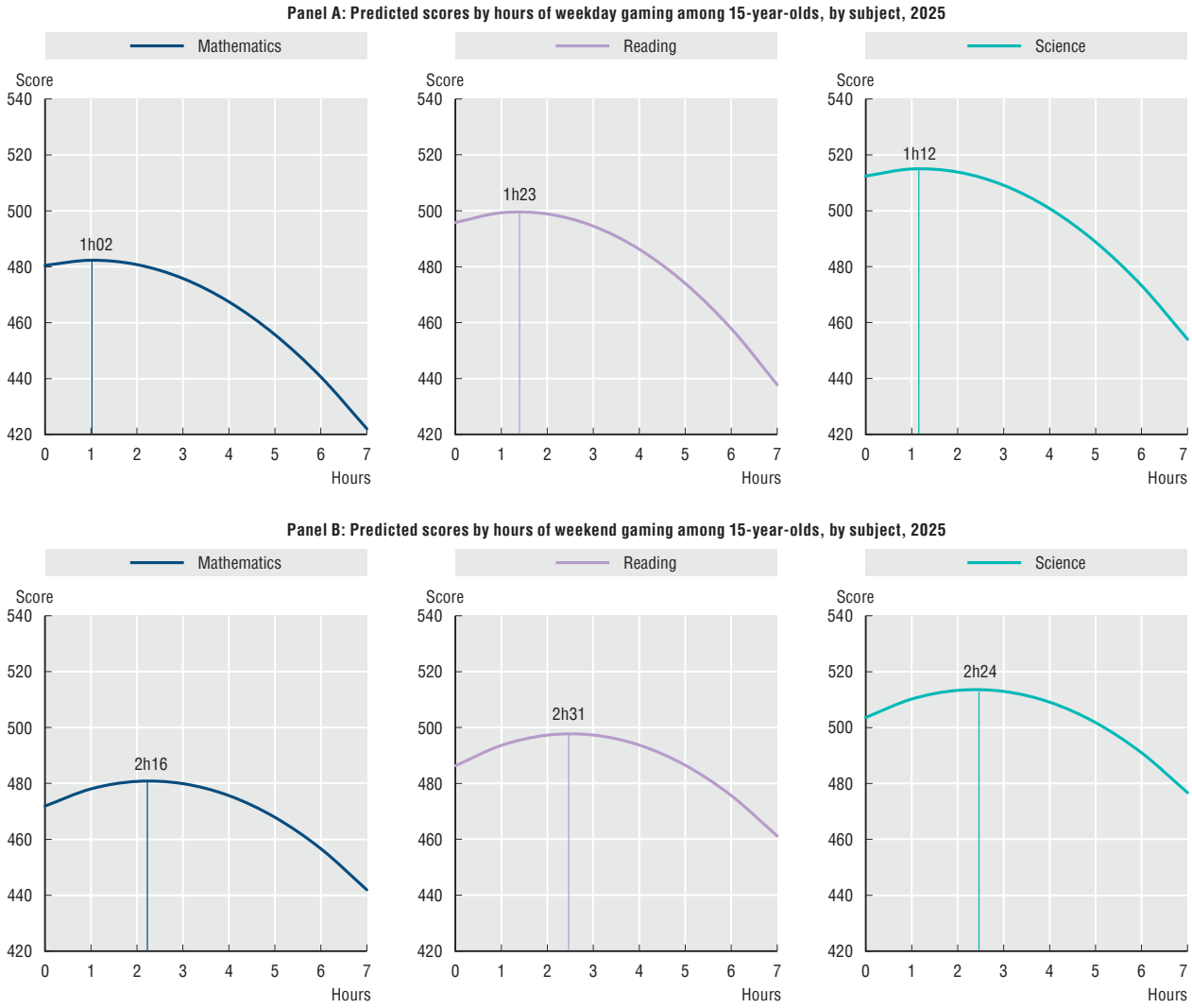
Building on these insights, PISA 2025 microdata allow a closer look at how patterns of gaming relate to achievement in mathematics, reading and science. This analysis considers variations between weekdays and weekends, as well as differences across different population groups.

The analysis provides a descriptive picture of these associations, using cross-sectional, self-reported time-use data. Observed patterns may reflect other characteristics – such as motivation, time management or parental support – rather than a causal effect of gaming itself. Two complementary approaches explore these associations: the first links gaming intensity to achievement while controlling for standard student and school characteristics. Building on this approach, the second adds accounting for time spent in other forms of digital leisure to help better isolate patterns specific to gaming. Full methodological details and results are set out in Annex 4.A.

Beyond moderate levels, gaming is linked with lower academic outcomes

The analysis confirms a non-linear association between gaming and school performance. Beyond one to two hours of weekday gaming, predicted scores begin to decline, suggesting that intensive engagement is associated with lower achievement in mathematics, reading and science compared with no gaming (Figure 4.10, panel A). This may reflect other findings that digital play supports cognitive, social or motivational engagement (UNICEF, 2024[8]). The pattern is similar for both weekdays and weekends, although the benefits from gaming are more pronounced and the decline is less steep on weekends (Figure 4.10, panel B), when students have more discretionary time. These results are consistent with earlier studies pointing out that students who report moderate, balanced digital leisure tend to perform at least as well as, or slightly better than, those who report no time spent on such activities, whereas students who report very high levels of use generally show lower average performance (OECD, 2024[49]).

Figure 4.10. School performance declines with excessive gaming, while moderate use shows no or little disadvantage



Notes: Predicted scores are estimated from pooled regression analysis of OECD Member countries, baseline specification (see Annex 4.A). Predicted scores reflect modelled associations and should be interpreted as indicative of average trends rather than causal effects at the student level. The vertical lines point to the estimated timing where the association between the academic outcome turns negative.
Source: OECD calculations based on OECD (2026[41]), PISA Database, *https://www.oecd.org/en/about/programmes/pisa.html*.

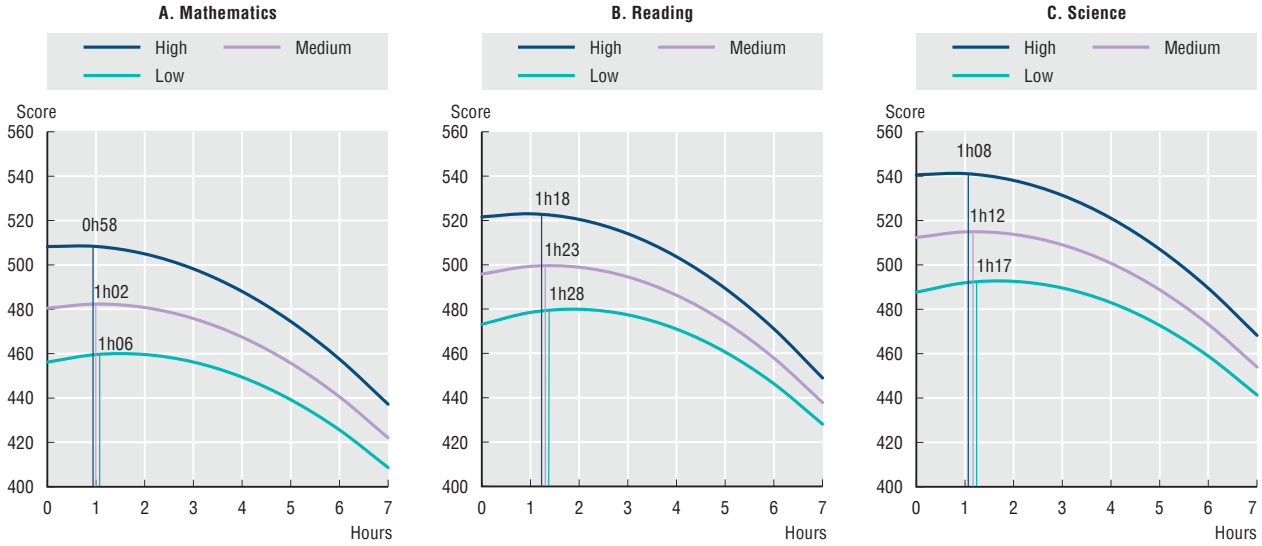
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Associations with gaming vary across socio-economic groups

The association between gaming and school performance varies systematically by students' socio-economic background. Students from advantaged families achieve higher performance across all levels of gaming, yet the positive association between gaming and performance is stronger among disadvantaged students (Figure 4.11). For instance, one to two hours of weekday gaming is associated with slightly higher mathematics, reading and science scores compared to no gaming. This is especially the case among disadvantaged students, who show the largest positive associations. Such a pattern may reflect opportunities for autonomy, competence, and social connection that are less accessible in other contexts (UNICEF, 2024[8]). Nevertheless, advantaged students continue to score higher overall, but their scores do not exhibit a positive association with moderate gaming.

Figure 4.11. Gaming relates differently to school performance across socio-economic status groups

Predicted scores by hours of weekday gaming among 15-year-olds, by subject and socio-economic status, 2025



Notes: Predicted scores estimated from pooled regression analysis of OECD Member countries, baseline specification (see Annex 4.A). Socio-economic status groups correspond to quartiles of the OECD Economic, Social and Cultural Status (ESCS) index (Avvisati and Wuyts, 2024[46]): low (bottom quartile), medium (middle two quartiles) and high (top quartile). PISA does not collect direct household income data; the ESCS index is used as a composite proxy for socio-economic background. Predicted scores reflect modelled associations and should be interpreted as indicative of average trends rather than causal effects at the student level. The vertical lines point to the estimated timing where the association between the academic outcome turns negative.

Source: OECD calculations based on OECD (2026[41]), *PISA 2025 Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

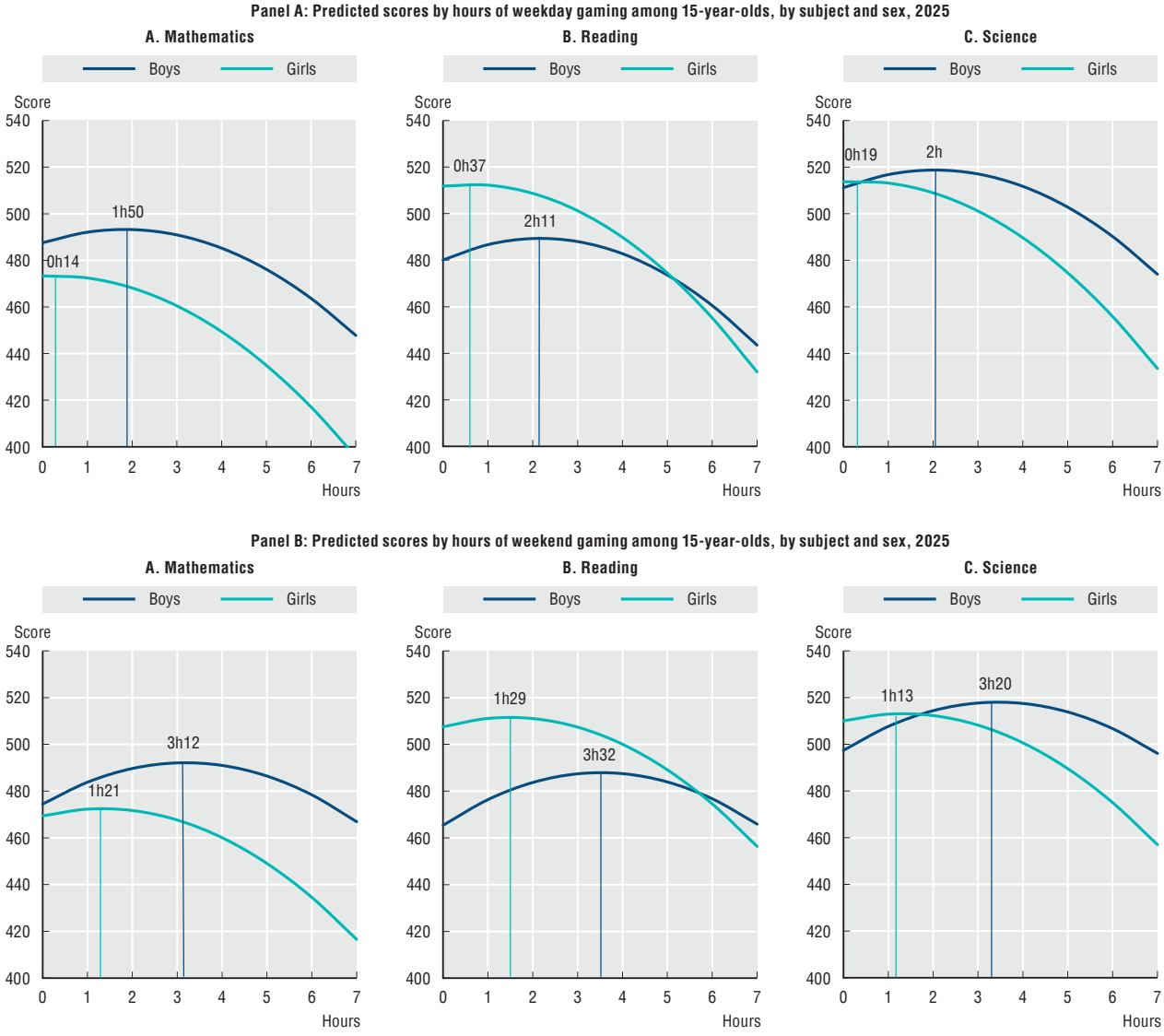
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Girls face steeper learning losses from intensive gaming

The results also highlight systematic differences in the association between gaming and school performance for boys and girls. In mathematics, girls score lower on average than boys once data are controlled for student and school characteristics. Moreover, the predicted decline in performance associated with intensive weekday gaming is steeper for girls. In reading, girls achieve substantially higher scores overall, but among the most intensive gamers, boys achieve higher predicted reading scores. In science, the gaps are narrower at low and moderate levels of gaming, but become larger as gaming intensity increases (Figure 4.12, panel A).

Weekend patterns accentuate these contrasts (Figure 4.12, panel B). High levels of weekend gaming are associated with more pronounced declines in girls' mathematics, reading and science performance, while boys' scores are little or positively impacted by weekend gaming. These differences may reflect a combination of underlying behaviour patterns – boys generally report more frequent gaming – and unobserved contextual factors shaping both gaming and learning. These results suggest that up to one or two hours of gaming is generally compatible with stable academic performance for both boys and girls. Conversely, intensive use – beyond one to two hours on weekdays and three on weekend days – is associated with larger declines for girls.

Figure 4.12. Intensive gaming is associated with steeper declines in academic performance among girls, particularly on weekdays



Notes: Predicted scores estimated from pooled regression analysis of OECD Member countries, baseline specification (see Annex 4.A). Predicted scores reflect modelled associations and should be interpreted as indicative of average trends rather than causal effects at the student level. The vertical lines point to the estimated timing where the association between the academic outcome turns negative. See also endnote 9.

Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

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These findings underscore the importance of moderation and the role of contextual factors such as sex and socio-economic background. Policies and guidance should consider these nuances when addressing digital engagement.

What are the benefits of gaming for children?

Gaming offers opportunities for children of all ages to relax, learn, socialise, entertain themselves and express their creativity. When designed well, video games can contribute to improving child well-being in various ways. For example, they can positively influence "children's sense of autonomy and competence, their ability to understand and regulate emotions, and to form and manage relationships" (UNICEF, 2024[8]). Children agree that gaming is beneficial for their development: a survey among children aged 8 to 17 in England revealed that around two-thirds viewed "video games as beneficial to (their) health and well-being" (Ofcom, 2024[60]). This section further considers some of the main benefits gaming brings for children.

Build competencies and skills

Through video games, children can build physical competencies and skills[11] (such as cognitive or motor skills), as well as softer skills like learning to overcome frustration or feeling a sense of accomplishment in completing tasks. Games featuring rewards and progress quantification such as experience points, levels or goals, enable players to receive immediate feedback on their performance. Research shows that children may demonstrate pride and more confidence when passing levels or developing expertise, such as when playing sports games (UNICEF, 2024[8]). Research by UNICEF indicates that children can develop a sense of competence when playing by "gradually improving their skills (and therefore performance) in the game, or by persevering with and overcoming challenges" (UNICEF, 2024[8]). Video games also allow opportunities to experience failure and frustration when meeting difficult obstacles, teaching emotional resilience and how to overcome challenges (UNICEF, 2025[61]). Children can also improve their competences in non-competitive games, such as puzzle games, quizzes or other educational games with no scoring systems (UNICEF, 2024[8]).

More broadly, playing video games can contribute to improving children's cognitive skills, such as problem solving, spatial awareness, attention to detail and decision making (Better Internet for Kids, 2025[62]), as well as co-ordination and multi-tasking (eSafety Commissioner, 2023[6]). Evidence suggests that action video games, such as the first-person shooter and third-person shooter genres, can lead to better cognitive abilities. Playing such games "enhances attentional control and other aspects of cognition to a greater extent than other video games" (Burns and Gottschalk, 2020[9]). A study of nearly 2 000 children found that those who reported playing video games for three hours per day or more performed better on cognitive skills tests involving faster reaction times compared to children who had never played video games (Chaarani, Ortigara and Yuan, 2022[63]).

Make social connections

Children can build social skills by playing with others online (eSafety Commissioner, 2023[6]). Multiplayer and co-operative games allow children to collaborate and develop teamwork, leadership and communication skills (Better Internet for Kids, 2025[62]). For example, young Australian gamers (ages 13–17) reported positive, prosocial gaming interactions, with 68% supporting another player while gaming in the past year and slightly fewer (61%) receiving support from another player (eSafety Commissioner, 2024[19]). Games can also provide avenues for parents to connect with their child and strengthen family relationships (eSafety Commissioner, 2023[6]).

Different game genres facilitate social connections in different ways. RPGs such as Final Fantasy XIV and Elder Scrolls Online have "cultivated tight-knit communities where players not only quest together but also build relationships" (Bycer, 2024[36]). These games encourage teamwork and communication, which can facilitate new encounters and connections. In the United States, about half of children aged 13 to 17 report making a friend online because of a video game they both play, although boys are much more likely to make friends online than girls (56% versus 35%) (Pew Research Centre, 2024[11]). Party games often emphasise friendly competition and collective strategies. For example, in Among Us, players must find the imposters hidden among them on board a spaceship: social deduction is at the core of the gameplay, which relies on real-time interactions between players and the ability to build collective strategies (Zhang, 2024[64]).

Massively multiplayer online role-playing games (MMORPGs) have opened opportunities for collaboration, social interaction, peer play and development of friendship, and hold "considerable potential for children's social participation and growth" (Shoshani and Krauskopf, 2021[65]). Player modes may also affect children's social skills differently: a study of more than 800 children (aged 9 to 12) suggests that playing MMORPGs in co-operative mode (i.e. playing on a team that needs to survive until the end of the game) is associated with greater prosocial behaviour (i.e. providing assistance to the experimenter or donating money to a charity), whether the game is neutral or violent, compared to playing alone (Shoshani and Krauskopf, 2021[65]).

Many children, especially boys, value the social features offered by gaming services and use them to stay connected with friends, often communicating orally via headsets. Some children have said they prefer playing with friends via online games rather than spending time face-to-face (Ofcom, 2024[66]).

Specific technology and game features may encourage social connections by, for example, enabling direct voice chat or by providing unique virtual socialising spaces. In many social virtual reality apps, users create an avatar and customise it, enter public rooms where they can meet new people and participate in social events such as games or dance parties (Fitz-Patrick, 2025[67]). As technology continues to advance, virtual socialising tends to become increasingly immersive with more realistic graphics, sound and even touch (haptics) (Liz Trumper, 2023[68]).

Children do not need to be remotely situated from each other to be brought together by playing video games: indeed, they also socialise by playing video games while physically in the same room, often using the same device (eSafety Commissioner, 2023[6]). Likewise, within the same household, playing in family settings can be beneficial to children in various ways. Research by Penn State University showed that older siblings and friends may play an important, and sometimes overlooked, role in helping parents keep their children safe on online gaming platforms like Roblox and Minecraft. This is because "these individuals can help children build knowledge of and avoid scams and other risky situations in online video games" (Tutella, 2025[69]). Playing with parents, or "co-play", can also help parents better understand gaming environments, while providing a common ground for parents and children to explore together (Tutella, 2025[69]).

Encourage creativity

Some video games offer players the ability to be creative, expressive and innovative (Better Internet for Kids, 2025[62]). Research shows that children develop their creativity when playing games that are open-ended, allow children to customise and design avatars, encourage role play, find multiple solutions to problems, or offer the freedom to try different game mechanics (UNICEF, 2024[8]).

Games with customisation features can encourage children to exercise different forms of creativity by inventing characters, creating art or narratives, or making customisation, design and decoration choices (UNICEF, 2024[8]). Additionally, games with non-linear, open-ended gameplay often allow greater freedom and creativity by, for example, allowing multiple paths to victory, different types of victory or optional side-quests and subplots.

Feel positive emotions and improve mental health

By providing an outlet for stress and anxiety, and by offering possibilities to improve mood and self-esteem, video games can contribute to good mental health outcomes (Better Internet for Kids, 2025[62]). Many children emphasise that gaming brings them positive emotions. For example, in Australia, 94% of young gamers described positive feelings (e.g. feeling happy, relaxed or excited) associated with their online gaming and 41% reported that it benefitted their emotional well-being (eSafety Commissioner, 2024[19]).

Video games can have a positive impact on children's mental health. Research conducted among children aged 6 to 17 in the United States concludes that "some video games created as mental health interventions can be helpful – if modest – tools in improving the mental well-being of children and teens with anxiety, depression and attention-deficit/hyperactivity disorder" (Johns Hopkins Medicine, 2024[70]). The study used different game genres to target children's specific needs. For children with attention-deficit/hyperactivity disorder, some games involved racing or splitting attention, which required players to pay attention to more than one activity to be successful. For children with depression and anxiety, some interventions taught psychotherapy-oriented concepts in a game format (Johns Hopkins Medicine, 2024[70]).

Additionally, gaming spaces can be used both as therapeutic tools to improve children's emotional well-being and for educational purposes to raise awareness of issues related to mental health. For example, role-playing and first-person educational games can help therapists and teachers to combat school bullying by allowing participants to virtually experience different roles (e.g. victim or bystander) in problematic situations. A study conducted among fourth-grade elementary school students showed that virtual role-playing nurtured empathy and considerably enhanced pupils' awareness of bullying (Yang and Lu, 2024[71]).

Develop autonomy

Gaming also supports children in developing autonomy by allowing them to experience a sense of control and agency and giving them freedom of choice. When playing, children can feel in control to make decisions about in-game behaviours and actions that have consequences for their gameplay; develop their own strategies; and make choices about how, when and what they want to build and create (UNICEF, 2024[8]). Research conducted among children in the United States and Chile suggests that feelings of autonomy acquired through digital play may be even more important for those "who lack opportunities to express autonomy, agency and choice in their everyday life" (UNICEF, 2024[8]). In addition, gaming allows children to engage in small acts of deviance and transgression, such as through games that permit "playful sabotage and mischief" (UNICEF, 2024[8]), enabling them to test the limits of social conventions.

Gaming can also contribute to children's identity building processes at different developmental stages. Character customisation allows players to create a character that represents them or their desired persona, as well as to "differentiate themselves from other players, creating a sense of uniqueness and individuality" (Ascanio, 2023[26]).

Children with disabilities and special needs can gain autonomy through video games by improving their communication, motor, organisational and social skills. For example, games that give verbal and written instructions and focus on the player's strengths can improve reading and writing skills (Common Sense Media, 2021[72]). Games designed for children with disabilities, as well as mainstream games, can boost their senses of independence and confidence, provide the ability to ask for help and let them challenge themselves.

What are the downsides of gaming for children?

Children may face varied risks online (OECD, 2021[4]). While the entire spectrum of risks is relevant to the online gaming landscape, gaming has unique characteristics that make it more susceptible to certain risks. This is due both to the functionalities that games offer and the organisation of gaming spaces. The risks within gaming environments can cause children physical, emotional, psychological or financial harm, and these risks can vary according to each game's content and functionalities, as well as who children play with and who they meet online. Therefore, this section focuses on risks that are particularly relevant for gaming: misogyny and sexualised stereotypes, violence, bullying and grooming, exposure to toxic communities, mental health risks and gaming disorder, and financial and consumer risks.

Not all games carry the same risks. Depending on the type of game, the devices and platforms children use, and whether or how they are engaged in gaming cultures, risks for children vary in nature and intensity. In addition, children may be affected differently depending on their age, sex, socio-economic background, experience, maturity or level of awareness of safety issues (Better Internet for Kids, 2025[62]). Furthermore, different risks can reinforce each other, exacerbating the negative impact on children. For instance, a game that displays hyper-sexualised female characters (content risk) may give rise to online communities promoting misogynist ideas and launch harassment campaigns against female players (conduct and contact risk).

Misogyny and sexualised stereotypes

Misogynistic narratives are common in some genres of video games. Female characters can be placed in limiting social positions and heavily sexualised (Skowronski, Busching and Krahé, 2021[73]; Lynch et al., 2024[74]). Sexualised representations of women are widespread in certain genres of popular games (Cade, 2024[75]) and can be degrading (Vilaseca, 2024[76]). This can have lasting effects on children's development and perceptions of social norms.

Bullying and grooming

When children interact in digital environments, they can experience hateful encounters and fall victim to bullying, harassment, sexual exploitation, grooming or sex trafficking (OECD, 2021[4]). Bullying is a particularly widespread phenomenon in gaming. In Australia, almost one-third (32%) of young gamers have experienced other players targeting them with bullying behaviours. These include name calling, being intentionally left out, receiving hurtful messages, or being intentionally embarrassed (eSafety Commissioner, 2024[19]). Data across OECD Member countries and partner economies show that cyberbullying is becoming more prevalent and that girls are more cyberbullied than boys (OECD, 2024[77]).

Certain features specific to gaming services, notably multiplayer modes and communication functionalities (e.g. messaging, voice chat), can facilitate dangerous encounters and inappropriate contact from strangers (OECD, 2025[16]). Three in ten children who game online in the United Kingdom, and one in four in Australia, chat to strangers while playing (eSafety Commissioner, 2024[19]; Ofcom, 2025[12]). Such encounters can lead to harm. In Australia, 9% of gamers aged 13 to 17 and 3% of those aged 8 to 12 have received or were asked to send nude images or sexual information while gaming. As a result, two in three of those who had this experience reported that it had negatively affected them (eSafety Commissioner, 2024[19]).

While similar features exist on non-gaming platforms, they "collect in gaming environments, significantly increasing a child's overall risk of exploitation" (WeProtect Global Alliance, 2023[78]). It is common for perpetrators of crimes of sexual violence against children to first establish contact on a gaming platform popular among children. Then they lure their victim to a more private, encrypted messaging app where they are less likely to be caught, a technique known as "off-platforming" (Suojellaan Lapsia, Protect Children, 2024[3]). A study among child sexual offenders found that 41% of respondents who have sought contact with a child did so through an online gaming platform (Suojellaan Lapsia, Protect Children, 2024[3]). Individuals seeking to abuse children in social gaming environments are able to "lock them into high-risk grooming conversations in as little as 19 seconds after the first message, with an average time of just 45 minutes" (WeProtect Global Alliance, 2023[78]).

Exposure to toxic communities

The wider gaming culture can expose children to online communities that promote, or let proliferate, hateful, racist, homophobic or misogynistic content and behaviours (UNICEF, 2025[61]). Violent extremists exploit gaming platforms by capitalising on "normalised toxicity, sense of community and high levels of engagement to spread harmful ideologies" (Wallner, White and Regeni, 2025[79]).

Certain games are known for problematic communities associated with misogyny, hateful ideas or bullying. As mentioned above, sexist and misogynist attitudes proliferate in some gaming communities, both in in-game chats and outside the games in forums and other spaces (Miller-Idriss, 2025[80]). In a similar vein, a study of four leading online games identified hate and harassment in about half of the multiplayer game sessions analysed (ADL, 2025[81]).

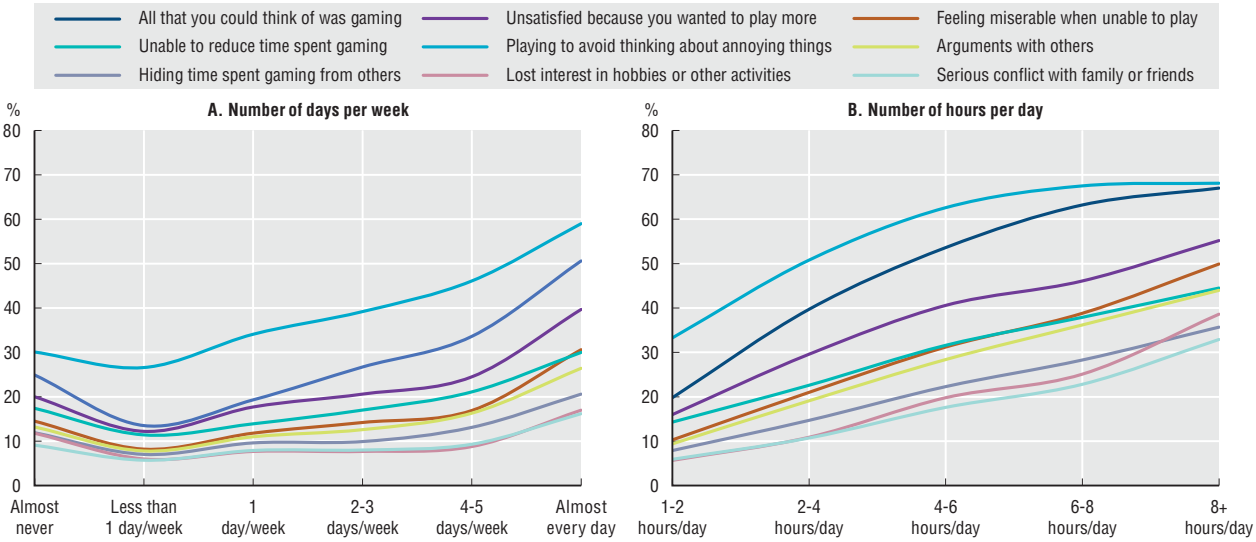
People tend to communicate and interact differently in digital environments because of anonymity, disembodiment and disinhibition (OECD, 2024[77]). In gaming spaces, these characteristics create fertile ground for toxic behaviours to surface (Bradbury, 2025[82]). Avatars, for instance, increase anonymity while enabling players to separate themselves from accountability for their in-game actions. Avatars are often used in popular sandbox and online RPGs, where the adoption of characters amplifies the degree of violent, often misogynistic, dialogue between players, especially if a female player is identified (Bradbury, 2025[82]).

Mental health risks and gaming disorder

Negative gaming experiences – like other negative experiences – can adversely affect children's mental health and well-being, as they correlate strongly with symptoms of depression, anxiety and social phobia (Jo, 2025[83]). Research suggests that children who play video games for long periods without adequate social interaction or physical activity may experience isolation and mood disturbances (Sadaf, 2025[84]). This is especially true for children who use gaming as an escape from real-life challenges and emotional issues (Sadaf, 2025[84]). Newly derived insights on children and gaming are presented in Figure 4.13.

Figure 4.13. Symptoms of gaming disorder are more common among children who play frequently and for longer daily periods

Share of children reporting each symptom of gaming disorder, by average weekly and daily gaming frequency, 2022



Notes: Data refer to children aged 11, 13 and 15. Results are averaged across all participating countries. "Gaming frequency" reflects how often children reported playing games on a typical week, while "daily gaming duration" reflects their self-reported average playtime on a typical day. See also endnote 8.

Source: OECD calculations based on Inchley et al. (2023[43]), *Health Behaviour in School-aged Children (HBSC) Study Protocol: background, methodology and mandatory items for the 2021/22 survey*, *https://www.hbsc.org/publications/survey-protocols*.

StatLink https://stat.link/f0bpol

Gaming disorder[12] is characterised by reduced control over gaming behaviour and prioritising gaming over other activities. Young gamers are especially vulnerable to gaming disorder, as it can lead to "significant impairments in life functions including academic performance, relationships, and extracurricular activities" (Jo, 2025[83]) and interfere with

their social development as they form their identity. Additionally, different types of games may not affect children in the same way. Evidence shows children who play relatively more days per week, and who play for more hours, are more likely to report symptoms of gaming disorder (Boniel-Nissim et al., 2024[42]).[13]

As indicated in Figure 4.13, among those children who played (almost) every day in 2022, around 51% reported preoccupation with gaming, about 40% reported feeling "unsatisfied" because they wanted to play more, and nearly 60% reported "playing to avoid thinking about annoying things". An even higher share of children report "preoccupation", from about 20% among those playing 1 to 2 hours a day up to 67% among those playing more than 8 hours a day. Feelings of unsatisfaction rose from around 16% from 1 to 2 hours per day to above 55% for those playing 8 hours or more. Other problematic behaviours – using gaming to avoid unpleasant thoughts, arguing with others, gaming in secret, losing interest in other activities, and serious conflicts – show a similar trajectory with respect to hours of video gaming per day.

The survey results further highlight that most adolescents do not show symptoms of gaming disorder, while around one in eight are at risk, with boys consistently reporting higher levels than girls (Boniel-Nissim et al., 2024[42]).[14] Younger adolescents are more likely to play digital games frequently and to show symptoms of gaming disorder, suggesting greater vulnerability at earlier ages. These findings underscore that interventions may need to be age- and sex-sensitive, focusing on children who exhibit frequent or intensive gaming behaviours and addressing the underlying causes.

Selected consumer risks

Children are particularly vulnerable consumers online. Depending on their age, maturity and digital skills, and level of parental supervision, children engaging in video games may lack the necessary judgement, self-control or awareness to recognise and manage financial risks. For instance, children can face such risks in situations where gaming services inadequately advertise or hide in-game purchases. Whether knowingly or not, children are susceptible to financial harm through gambling-style mechanics, misleading or unfair practices, and scams or frauds.

The gaming economy is increasingly based on a free-to-play model where "revenue is generated through the sale of in-game virtual items acquired through microtransactions rather than of game products" (OECD, 2023[85]). This way, players can buy additional game content or in-game currency (e.g. virtual coins, gems or tokens) that can be used to purchase virtual items and/or improve the player's performance (eSafety Commissioner, 2023[6]). However, game providers do not always disclose sufficient or adequate information for children and parents to understand the costs associated with free-to-play games, particularly given that in-game currencies often cannot be converted back into real money (BEUC, 2024[86]). Additionally, microtransactions in games may encourage excessive or ill-considered spending. For example, in the United Kingdom, of the 58% of children surveyed who had spent money online in the previous month, 32% regretted purchases made in games. Additionally, 42% were not sure what they were buying and 41% reported overspending (Ofcom, 2025[87]). Manipulative marketing techniques include currency bundles, where players must purchase more in-game currency than they need to afford items; dual-currency systems, which create confusion and push players towards purchasing the premium option; and artificial scarcity, where players are encouraged to buy premium currency with real money to acquire artificially made rare items (Better Internet for Kids, 2026[88]). Other monetisation features, such as battle passes, may promote excessive gaming by creating time-limited incentives for players to complete challenges and level up to unlock rewards (e.g. skins, weapons or in-game currency) (Better Internet for Kids, 2026[89]).

Children may be especially at risk of financial harm when game developers use techniques drawn directly from gambling to make them play for longer and spend more money (Ash, Gordon and Mills, 2023[5]). Gambling-like elements can include rewards in the form of loot boxes to incentivise children to "spend real money to unlock unknown virtual rewards" (Ofcom, 2024[60]). Loot boxes are chance-based "treasure-chests that contain virtual rewards of varying value, such as clothing, weapons, or game advantages" (Victorian Responsible Gambling Foundation, 2025[23]), which players can purchase using in-game currency or real money. However, the information available on app stores does not always clearly state that a game contains such elements: a BBC investigation, for example, concluded that most popular mobile games are advertised without disclosing that they contain loot boxes (Gerken, 2024[90]). Other games simulate gambling activities, such as poker, slot machines, blackjack or roulette, which can contribute to normalising gambling environments for children (eSafety Commissioner, 2023[6]).

Labour exploitation risks

Gaming can also lead to child labour concerns. While there is no internationally agreed legal definition of digital child labour, it can be understood as "work or services performed that meet internationally recognised definitions of child labour and that are enabled, organised, mediated, or amplified by the digital environment" (UNICEF, 2026[91]). In relation to gaming, one example is the growing phenomenon of child streamers and gaming influencers, sometimes referred to as "kidfluencing", in which enterprises are built (often by parents) around the likability of a child (Clark and Jno-Charles, 2025[92]).

Because it allows parents to monetise the labour of their children, this phenomenon raises complex legal and ethical challenges, and can lead to the infringement of children's rights. An analysis of four child influencers identified five rights at risk: freedom from harm, freedom from economic exploitation, privacy, freedom of expression and the right to consent. Two of these rights (privacy and expression) are disproportionately represented and costly compared to other child labour activities (Clark and Jno-Charles, 2025[92]).

Some video games, namely those that encourage users to create or build the worlds that other players inhabit, may provide a fertile space for child labour. For instance, a gaming service itself may be encouraging young developers to create virtual worlds or items with little or no redistribution of revenue. In addition, other users may seek to recruit children to collaborate with them on projects to create spaces for these gaming platforms. There are documented cases of seasoned content creators recruiting young developers to collaborate on work projects without contracts or any age restrictions. Children are often recruited to work for free (not necessarily understanding that what they are doing is work). Alternatively, they may be paid in a premium in-game currency. They are then encouraged to reinvest this currency in the platform rather than convert it into real money (Defer, 2022[93]) or retain it until they reach an arbitrary threshold amount.

Challenges for ensuring safe gaming spaces for children now and in the future

The gaming landscape is dynamic, with new games and devices being released on the market regularly. A range of stakeholders work together to support safer online gaming experiences for children.

Building safe gaming spaces

In recent years, many OECD Member countries and partner economies have passed, or are considering, online safety laws. Several focus on the protection of children in the digital environment, placing new obligations on online service providers. These can require some services to assure the age of their users before allowing them to register or access certain features (OECD, 2025[16]). In addition to laws, other public policies can provide valuable support for children, families and educators. Such policies can help enhance children's digital literacy skills, and promote awareness-raising campaigns to help the public better understand potential online safety issues and available remedies.

Most online safety laws and policies do not target video games, but the scope of their provisions may encompass them (OECD, 2025[94]). Such provisions may concern, for example, companies' policies and practices regarding the detection and removal of illegal content, the use of algorithms, advertising practices or commercial transactions. A challenge for policymaking is to ensure that online gaming services are captured within the scope of online safety laws and policies when relevant. However, gaming services have individual traits that may call for a tailored approach. Video games vary dramatically in nature and offer a range of in-game features, as well as numerous opportunities and risks linked to the characteristics of each game. Laws and other public policies should take those specificities into account.

The gaming industry also plays a prominent role in keeping children safe on their services. Commonly, gaming services set rules and policies in their governing documents (e.g. terms of service, community guidelines, privacy policies), outlining prohibited content and behaviours. Certain rules and practices, such as minimum age policies, age assurance mechanisms, age-tiered safeguards, report and appeal mechanisms, and transparency reporting, often apply specifically to children. In practice, children may benefit from varying levels of protection, depending on their age and the country where they are based (OECD, 2025[16]).

Moreover, app stores and age rating agencies usually provide an age recommendation indicating the age group for which a game is suitable. However, age ratings sometimes conflict with each other, or with the age requirement set by the service itself. As a result, parents and children face multiple age recommendations from multiple sources (OECD, 2025[16]). In the European Union, where games are rated according to the Pan-European Game Information (PEGI) framework, 79% of parents with children who play video games are aware of the PEGI age rating labels, against 67% of all parents. Despite that, 27% of parents who are aware of the PEGI rating labels report using them but not always following the advice (Video Games Europe, 2023[39]).

Lastly, policymakers and digital service providers could promote digital safety by design for children, which aims at integrating safety considerations at the outset of product or service development. Such initiatives can contribute to a safer digital environment for children while allowing them to seize opportunities to enjoy its benefits (OECD, 2024[95]). The OECD identifies eight components of digital safety by design: employing age assurance mechanisms, implementing child-centred design, detecting and preventing harm, protecting children's privacy and personal data, ensuring child-friendly information provision, facilitating complaints and redress, encouraging child participation and putting children at the centre of decision making and promoting a culture of safety and well-being (OECD, 2024[95]).

Promoting balanced gaming to support learning

Evidence from PISA 2025 shows that moderate gaming – generally one to two hours on weekdays and up to three hours on weekend days – is associated with higher academic performance. Intensive engagement, in contrast, is consistently linked to lower performance across mathematics, reading and science, highlighting the need for guidance that encourages balanced digital leisure.

Policy responses should consider the uneven effects of gaming across socio-economic groups. Students from disadvantaged backgrounds have lower predicted scores at all levels of gaming, with gaps largest at moderate levels of engagement – up to around two hours on weekdays and three hours on weekend days – where moderate gaming appears relatively more beneficial. At high levels of gaming, predicted scores decline most sharply for advantaged students.

Differences between boys and girls also warrant attention. Moderate gaming is associated with slightly better performance for both boys and girls, but the association drops more rapidly for girls as gaming time increases. Policies should recognise these subject- and sex-specific patterns, providing guidance that supports moderate gaming while mitigating excessive use.

By combining guidance on safe and moderate gaming with targeted support for students, policymakers can help ensure that digital leisure is a positive part of adolescents' learning experiences.

The future of gaming

What does the future of gaming look like? What will gaming mean for younger and future generations? The global gaming industry may have a promising future. It generated USD 183.9 billion in 2023 (Newzoo, 2024[96]). Playing video games is an activity that many people integrate into their leisure time in one form or another. Gaming spaces increasingly attract players of all age groups around the world, building strong links with other platforms and growing communities that directly influence gaming cultures (Entertainment Software Association, 2024[97]) (Video Games Europe, 2024[98]).

Emerging technologies and innovation are shaping the future of video games. Some trends are already transforming what is possible in gaming, including:

- **Immersive gaming:** immersive technologies (e.g. augmented, mixed and virtual reality) increasingly feature sound, haptics (touch feedback) or the incorporation of other senses (OECD, 2024[77]). The global virtual reality and augmented reality market size is projected to grow from USD 11.5 billion in 2024 to USD 370 billion by 2034 (Gartner, 2024[99]). The rising demand for immersive gaming experiences and advancements in virtual reality and augmented reality hardware, such as improved headsets and controllers, are driving significant growth in the global virtual reality gaming market (Grand View Research, 2024[100]).
- **Generative AI:** game developers are using generative AI to create new content faster and build "living games" (Buser, 2025[101]) that adapt to each player. These can create unique characters and storylines, adjusting game controls to make them more intuitive for the player (Hyzy and Greene, 2024[102]), or dynamically adjusting the difficulty setting according to the player's performance (Carson, 2024[103]). Additionally, AI-powered conversational agents can participate in games' scenarios and adapt their behaviour to the user's choices, reaching a new level of realism and customisation (Hyzy and Greene, 2024[102]).

Other technologies, while still at an early stage of development, could transform game features profoundly:

- **Neurotech gaming:** neurotech gaming allows players to control games using their brainwaves (e.g. using an electroencephalography headset), merging neuroscience and interactive entertainment. Brain-computer interfaces are opening the possibility to move virtual objects or control avatars with just a thought. The intersection of neurotech with other technology, such as virtual reality, opens new dimensions of interactivity and immersion in gaming (Pedersen, 2024[104]).
- **Quantum computing:** while quantum computing is still at a nascent stage, recent developments suggest it is moving towards commercialisation (OECD, 2025[105]). The aim is to create game levels in real time, using quantum machine-learning algorithms. This technology could be used to build dynamic, unique and endlessly playable gaming experiences (Senior, 2025[106]).

It is crucial for policymakers, regulators and other stakeholders to keep pace with technological developments so that they understand and anticipate gaming trends and capitalise on what these spaces can offer children while keeping them safe. In doing so, more evidence is necessary to analyse technological advances in gaming environments, assess their impact on child well-being, and mitigate potential adverse effects on children from different ages, countries or backgrounds. As gaming is likely to remain a key part of children's play and leisure in the coming years, societies should ensure that children are well-equipped to thrive and stay safe in gaming environments.

Annex 4.A. Methodology and results: Gaming and school performance

This annex presents the technical details underlying the analysis of video gaming and student performance in PISA 2025. The analysis uses microdata covering over 110 000 students across OECD Member countries. Student outcomes are measured using plausible values in mathematics, reading and science and, video gaming is self-reported separately for weekdays and weekends. The aim is to examine the association between gaming and school performance, considering potential non-linear effects and heterogeneity by sex and socio-economic status.

Modelling approach

To capture potential non-linear effects, all models include both a linear and a squared term for gaming hours, allowing for curvilinear relationships between gaming and academic outcomes consistent with prior findings (OECD, 2024[49]). All regressions control for students' socio-economic status, measured using the Index of Economic, Social and Cultural Status (ESCS) (Avvisati and Wuyts, 2024[46]), sex, immigrant background, availability of information and communication technologies (ICTs) at home and at school and country fixed effects.

Heterogeneity is examined through interaction terms between gaming and socio-economic status, and between gaming and sex. Standard errors are robust and clustered at the school level, and results are pooled across the ten plausible values for each subject using Rubin's rules (Rubin, 1987[107]). While the models provide insights into associations, they do not establish causal effects. Predicted scores illustrate average trends across groups, but individual outcomes may vary depending on unobserved factors.

Baseline specification: time spent on other digital leisure uncontrolled

The baseline specification captures the association between gaming and student outcomes in the context of broader student and school characteristics. It includes linear and quadratic terms for gaming, socio-economic status, sex and their interactions, alongside standard controls:

$$Y_{isc} = \beta_0 + \beta_1 Gaming_{isc} + \beta_2 Gaming_{isc}^2 + \beta_3 ESCS_{isc} + \beta_4 (Gaming_{isc} \cdot ESCS_{isc}) + \beta_5 Girl_{isc} + \beta_6 (Gaming_{isc} \cdot Girl_{isc}) + \beta_7 X_{isc} + \delta_c + \epsilon_i$$

Where Y_{isc} is student i's score in subject s at school c, X_{isc} is a vector of additional controls (immigrant status and ICT availability at home and school), and δ_c are country fixed effects.

Table 4.A.1. Association between time spent on gaming and school performance: Baseline specification

Pooled regressions, by school performance indicator and gaming period, not controlling for other forms of digital leisure, 2025

	Weekday gaming			Weekend gaming		
	Mathematics score	Reading score	Science score	Mathematics score	Reading score	Science score
Gaming	6.364***	8.713***	7.558***	11.215***	12.919***	12.141***
	(0.641)	(0.630)	(0.605)	(0.611)	(0.599)	(0.625)
Gaming squared	-1.697***	-1.964***	-1.812***	-1.739***	-1.814***	-1.741***
	(0.084)	(0.080)	(0.082)	(0.075)	(0.076)	(0.078)
ESCS	36.311***	33.791***	36.886***	36.609***	34.155***	37.353***
	(0.544)	(0.759)	(0.823)	(0.540)	(0.739)	(0.785)
Gaming x ESCS	-2.345***	-2.757***	-2.592***	-1.794***	-2.160***	-2.061***
	(0.191)	(0.193)	(0.193)	(0.166)	(0.172)	(0.171)
Girl	-14.232***	31.733***	2.482**	-5.077***	42.119***	12.628***
	(0.922)	(0.966)	(0.936)	(1.004)	(0.964)	(0.964)
Gaming x Girl	-5.397***	-6.168***	-6.133***	-6.461***	-7.386***	-7.387***
	(0.385)	(0.435)	(0.399)	(0.344)	(0.365)	(0.348)
Observations	117,534	117,534	117,534	107,009	107,009	107,009
R-squared	0.1900	0.1573	0.1642	0.1866	0.1614	0.1634

Notes: Coefficients are from pooled regression analyses of OECD Member countries across ten plausible values according to Rubin's rules (1987[107]). Controls include sex, immigrant status, ICT availability at home and school and, country fixed effects. Standard errors are robust and clustered at the school level. *** indicates significance at the 1% level. See also endnote 9.

Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

Adjusted specification: controlling for other digital leisure

The adjusted specification builds on the baseline by additionally controlling for time spent on other digital leisure activities, including browsing social media, online browsing for fun and sharing content digitally. Both linear and quadratic terms for these activities are included. This specification isolates the contribution of gaming itself from broader patterns of digital engagement, helping to clarify whether observed associations are unique to gaming or reflect general digital activity.

$$Y_{isc} = \beta_0 + \beta_1 Gaming_{isc} + \beta_2 Gaming^2_{isc} + \beta_3 ESCS_{isc} + \beta_4 (Gaming_{isc} \cdot ESCS_{isc}) + \beta_5 Girl_{isc} + \beta_6 (Gaming_{isc} \cdot Girl_{isc}) + \beta_7 OtherDigitalLeisure_{isc} + \beta_8 OtherDigitalLeisure^2_{isc} + \beta_9 X_{isc} + \delta_c + \in_i$$

Where $OtherDigitalLeisure_{isc}$ includes time spent browsing for fun, using social media and, sharing content online, separately for weekdays and weekends.

Table 4.A.2. Association between gaming and school performance: Sex in focus

Pooled regressions, by school performance indicator and gaming period, 2025

	Weekday gaming			Weekend gaming		
	Mathematics score	Reading score	Science score	Mathematics score	Reading score	Science score
Gaming	3.908*** (0.841)	5.396*** (0.783)	5.369*** (0.786)	7.995*** (0.803)	9.441*** (0.797)	9.214*** (0.796)
Gaming squared	-0.651*** (0.120)	-0.829*** (0.121)	-0.745*** (0.117)	-0.776*** (0.107)	-0.891*** (0.108)	-0.799*** (0.107)
ESCS	36.668*** (0.617)	34.357*** (0.784)	37.226*** (0.831)	37.387*** (0.619)	34.973*** (0.775)	38.072*** (0.818)
Gaming x ESCS	-2.429*** (0.241)	-2.964*** (0.248)	-2.714*** (0.239)	-2.116*** (0.205)	-2.448*** (0.216)	-2.390*** (0.203)
Girl	-12.544*** (1.111)	31.197*** (1.110)	4.295*** (1.065)	-6.986*** (1.166)	37.723*** (1.162)	10.725*** (1.140)
Gaming x Girl	-4.774*** (0.522)	-5.350*** (0.544)	-5.575*** (0.523)	-4.768*** (0.449)	-5.306*** (0.483)	-5.599*** (0.465)
Observations	73,903	73,903	73,903	64,791	64,791	64,791
R-squared	0.2258	0.1955	0.2039	0.2258	0.1951	0.2031

Notes: Coefficients are from pooled regression analyses of OECD Member countries across ten plausible values according to Rubin's rules (1987[107]). Controls include sex, immigrant status, ICT availability at home and school, and country fixed effects. Additional controls include browsing social media, browsing for fun and sharing content online, each entered with both linear and quadratic terms. Standard errors are robust and clustered at the school level. *** indicates significance at the 1% level. See also endnote 9.

Source: OECD calculations based on OECD (2026[41]), *PISA Database*, *https://www.oecd.org/en/about/programmes/pisa.html*.

Analysis of the results

Accounting for students' engagement in other digital leisure slightly reduces the strength of the association between gaming and school performance but does not fundamentally change its general pattern. Light-to-moderate gaming appears largely compatible with average outcomes, while heavier gaming tends to coincide with lower performance. Controlling for broader digital activity may shift the point at which declines are observed to somewhat higher levels, particularly on weekends, although the overall pattern remains broadly similar – roughly two to three hours on weekdays and three to four hours on weekends.

Differences persist between the sexes: boys show little change at moderate levels of gaming (i.e. three hours per weekday and four hours per weekend day), while girls appear to exhibit somewhat steeper declines at higher levels of engagement. These patterns indicate that associations between gaming and school performance are not fully explained by broader digital leisure. Therefore, they should be interpreted as indicative of trends rather than causal effects.

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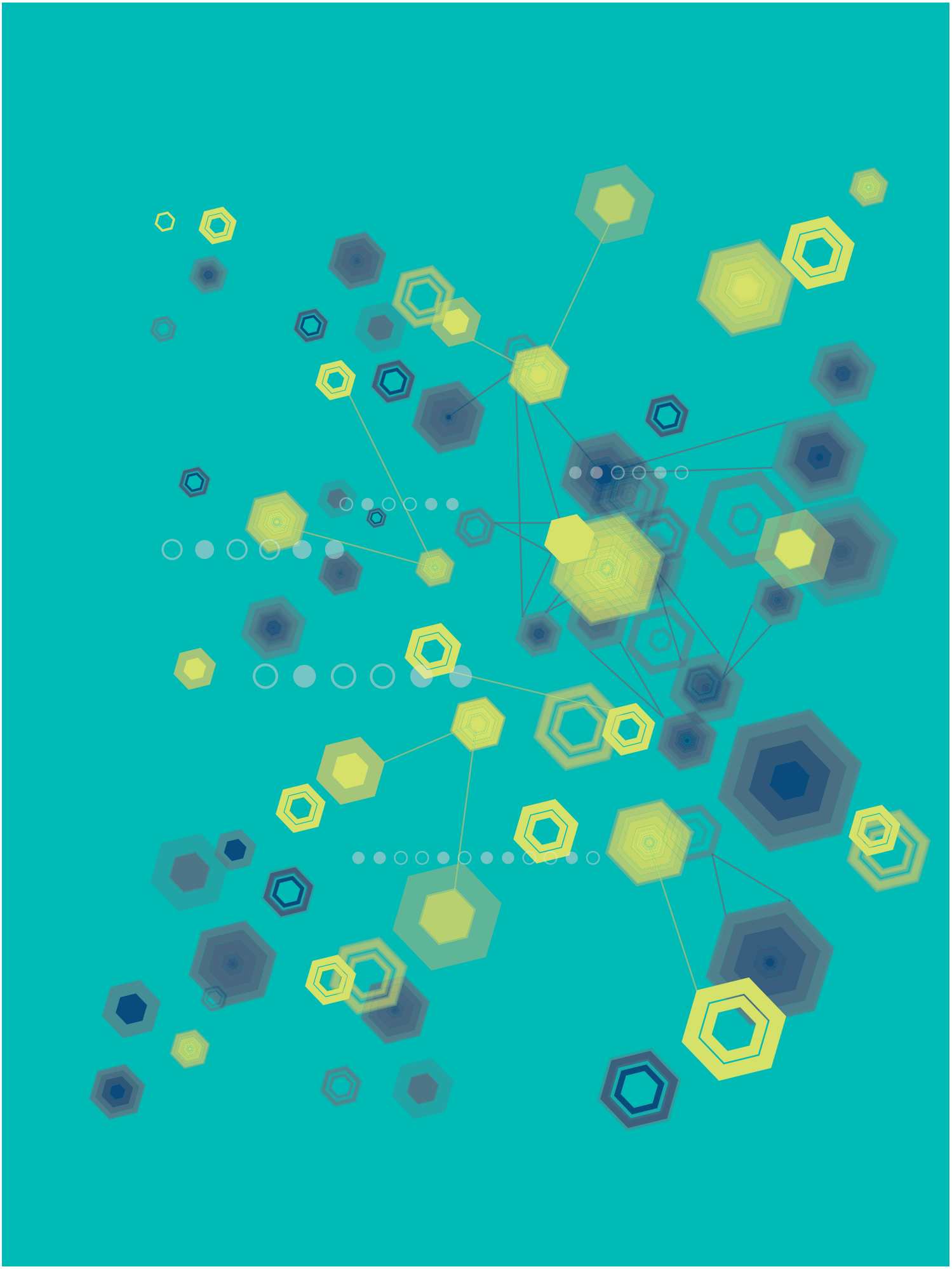
Yang, K. and Y. Lu (2024), "Combating school bullying through multi-role experience-based virtual scenario learning model: Assessing empathy, problem-solving, and self-efficacy from a multi-stakeholder perspective", *Heliyon*, Vol. 10/10, p. e31044, *https://doi.org/10.1016/j.heliyon.2024.e31044*. [71]

Yao, Y. et al. (2017), "Functional and structural neural alterations in Internet gaming disorder: A systematic review and meta-analysis", *Neuroscience & Biobehavioral Reviews*, Vol. 83, pp. 313-324, *https://doi.org/10.1016/j.neubiorev.2017.10.029*. [59]

Zhang, B. (2024), "Among Us: Critical play of social deduction", *https://mechanicsofmagic.com/2024/04/06/among-us-critical-play-of-social-deduction* (accessed on 11 May 2026). [64]

Notes

1. A virtual currency is a type of in-game money or credits that players can earn, purchase with real money, or win, and use to buy virtual goods, upgrades, or services within a video game (Uke, 2024[113]).
2. Age-tiered safeguards refer to protective settings used by online services for specific age groups, such as those related to functionalities, content or privacy. They can be applied by default or require users to set them up manually, and can be mandatorily applied or customisable (OECD, 2025[16]).
3. An emoji is a digital image that is added to a message in electronic communication to express a particular idea or feeling (Cambridge Dictionary, 2025[112]).
4. France, Germany, Italy, Spain, and the United Kingdom.
5 The indicators of time spent gaming are based on students' self-reported answers to the questions: "On a typical weekday, how much time do you spend playing video games (using your smartphone, a gaming console or an online platform or apps)?" and "On a typical weekend day, how much time do you spend playing video games (using your smartphone, a gaming console or an online platform or apps)?" (OECD, 2025[40]).
6. OECD average for 2025 includes data for Chile, Costa Rica, Czechia, Denmark, Latvia, Lithuania, the Slovak Republic and Sweden from 2022.
7. The 2025 assessment surveyed more than 760 000 students in 91 countries and economies, representing about 33 million 15-year-olds. Some caution is required when interpreting estimates in this chapter for Denmark, Latvia, the Netherlands, New Zealand and the United States because one or more PISA sampling standards were not met (OECD, 2026[110]; OECD, 2023[109]).
8. The 2021/2022 HBSC survey covers the following countries and regions: Albania, Armenia, Austria, Belgium (Flemish speaking), Belgium (French speaking), Bulgaria, Canada, Croatia, Cyprus, Czechia, Denmark, Denmark (Greenland), Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, North Macedonia, Norway, Poland, Portugal, Republic of Moldova, Romania, Serbia, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Tajikistan, the United Kingdom (England), the United Kingdom (Scotland) and the United Kingdom (Wales). Although the 2021/2022 HBSC survey encompasses 44 countries and regions, gaming data were collected in Cyprus, Czechia, Germany, Estonia, Iceland, Malta, the Netherlands, North Macedonia, Serbia, the Slovak Republic, Slovenia, and the United Kingdom (England and Scotland). Results are pooled across individual respondents, with each observation contributing equally. The problematic gaming questions were not administered in Germany and to 11-year-olds in the Slovak Republic and the United Kingdom (Scotland). Questions on gaming frequency were not administered in North Macedonia. See Inchley et al. (2023[43]) and Boniel-Nissim et al. (2024[42]) for details.
9. In Australia, Belgium, Germany, Iceland, Ireland, the Netherlands, New Zealand and Spain, the "girls" breakdown comprises students responding "girls" and "other", the latter of which represents less than 0.5% of students except in Ireland and New Zealand (around 1%) and Iceland (around 2%).
10. PISA does not collect information on household income. Instead, socio-economic background is measured using the OECD Index of Economic, Social and Cultural Status (ESCS). PISA's ESCS combines information on students' family background to provide a composite measure of socio-economic status. It includes: (i) parental educational attainment (highest level completed by each parent); (ii) parental occupational status, based on the International Socio-Economic Index of occupational status (ISEI); and (iii) household possessions, which capture material resources and access to educational and cultural capital. Students are grouped into low, medium, and high socio-economic categories for analysis, reflecting differences in access to opportunities and resources that may influence learning outcomes. For full details, see Avvisati and Wuyts (2024[46]).
11. As this chapter looks at gaming from a leisure perspective, gamified learning and other forms of gaming in formal educational settings are not included in its scope.
12. See (Stevens et al., 2021[108]).
13. Adolescents reported on their symptoms of problematic (addictive-like) gaming by answering the dichotomous nine-item Internet Gaming Disorder Scale, based on the nine criteria for Internet gaming disorder described in section III of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5®) (APA, 2013[111]). For more details, please refer to (Boniel-Nissim et al., 2024[42]).
14. In Boniel-Nissim et al. (2024[42]), problematic gaming was assessed using the nine-item Internet Gaming Disorder Scale, based on the nine DSM-5 criteria for Internet Gaming Disorder (APA, 2013[111]). Children responded to each item dichotomously (yes/no). Those reporting five or more symptoms were classified as "at risk of problematic gaming," while those with fewer than five symptoms were classified as "non-problematic gamers". Non-gamers were identified as adolescents reporting that they never or almost never play digital games.



Spotlight

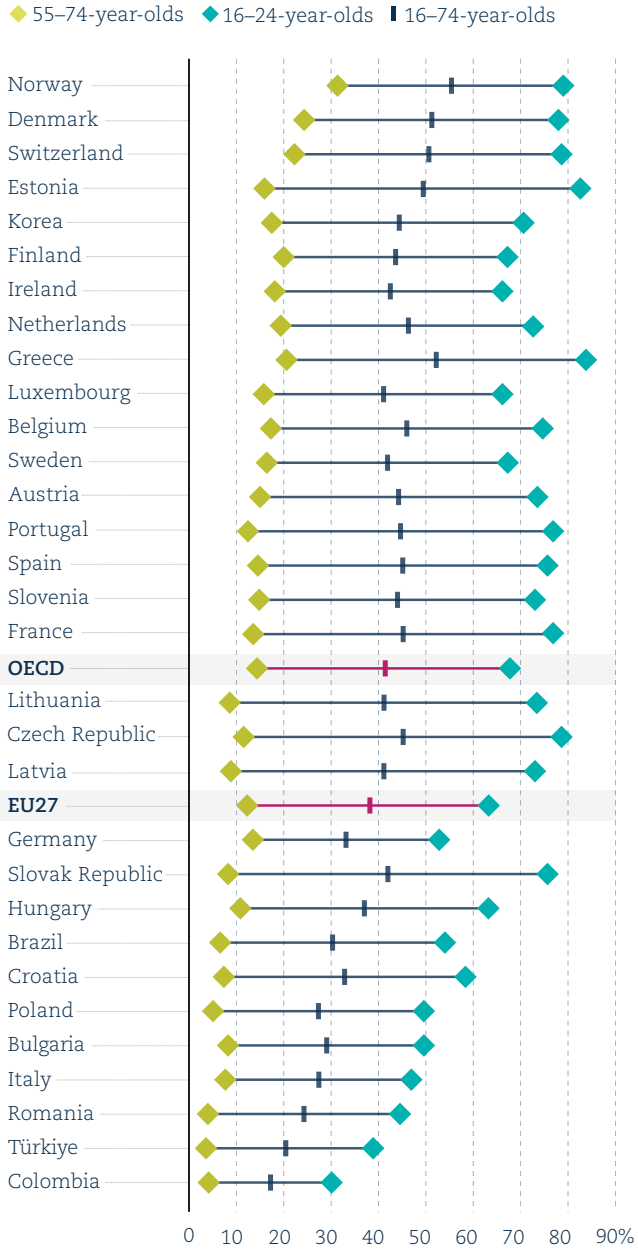
Growing older in the AI age

Societies are ageing across the OECD, due to both longer life expectancy and declining fertility rates. At the same time, digital technologies are developing fast, reshaping how people learn, work and interact with each other and society. This Spotlight presents trends in the use of digital technologies by older adults for essential everyday activities that can support independence, strengthen social connections and improve quality of life in older age. It presents evidence showing that age differences in digital technology use are gradually narrowing, although uptake of frontier digital technologies like generative artificial intelligence (GenAI) remains highly concentrated among younger users. At the same time, it highlights barriers to AI adoption, such as mistrust, and physical and cognitive limitations, that can deter use. This Spotlight explores the potential of AI to enhance accessibility to digital tools and support for older adults when engaging with essential online services. It also explores practical strategies for improving information and communication technology (ICT) skills, accessible service design and evidence-based policymaking for effective digital participation in the AI age.

Despite AI's promise, older adults are wary

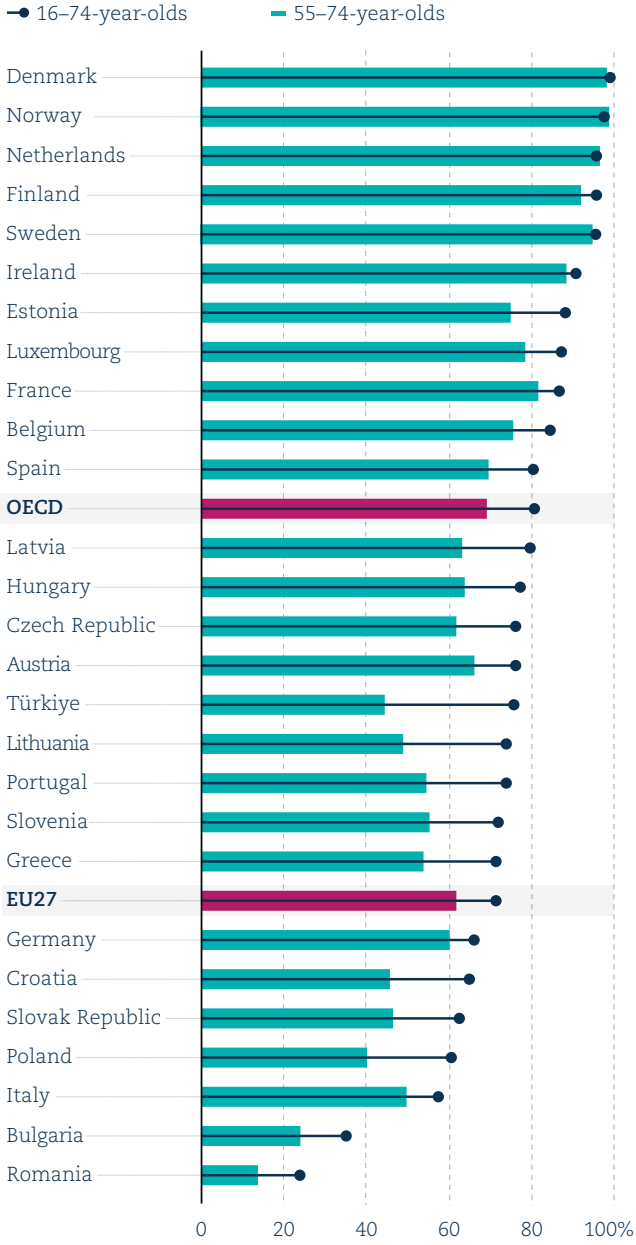
Older adults use generative AI at just one-fifth the rate of younger people.

Inter-generational gap in generative AI use in the last 3 months, 2025 (or latest)



AI is transforming public services, but uptake by older adults lags.

Share of individuals using the Internet for public services during the last year by age group, 2025 (or latest)





In 2024, nearly **1/3** of older adults did not feel that AI would have a positive impact on their lives.

Introduction

Across the OECD, societies are ageing as longer life expectancy combines with low fertility rates to reshape demographic structures (André, Gal and Schief, 2024[1]). At the same time, digital technologies are transforming how people learn, work, communicate and access essential services at a pace unprecedented in previous technological shifts, bringing new opportunities but also potential risks. Demographic ageing places pressure on labour markets, productivity and public finances. However, digital technologies can help mitigate some of these effects by boosting innovation, enhancing productivity and supporting economic growth in the context of a shrinking workforce.

The benefits of digital transformation are unevenly distributed with some older adults accessing or benefitting from digital opportunities differently. This lack of balance has implications not only for individual well-being and social participation but also for society's ability to draw on the experience and capabilities of older adults (Mubarak and Suomi, 2022[2]). Digital technologies, including artificial intelligence (AI), hold considerable promise for supporting independence, strengthening social connections and improving quality of life in older age (OECD, 2024[3]). As societies become more digital, understanding how older adults engage with digital technologies – along with the barriers they may face – is essential for designing policies that ensure that governments seize the benefits of digital technologies, including AI, for people of all ages.

AI is increasingly embedded in economic and social activities, including essential services. This Spotlight explores trends in the access and use of essential online services among older adults (aged 55 to 74). These services include online public services, health information seeking, Internet banking and e-commerce, as well as generative artificial intelligence (GenAI) use. Alongside the substantial opportunities offered by AI to older adults, the Spotlight looks at the multifaceted barriers older adults may face to embrace technology and AI such as physical limitations, data-driven age-based biases and trust-eroding practices. The Spotlight concludes with a discussion of the role of policy in supporting effective and safe use by older adults of digital technologies in general and AI in particular and ensuring that emerging innovations benefit people as they age.

Older adults are increasingly adopting digital technologies, including those with AI capabilities

As digital technologies – and increasingly AI – have become essential for participating in modern society, it is increasingly important that both the tools themselves and the skills required to use them are widely accessible to prevent the risk of deepening the gap in technology access (Lynn et al., 2022[4]). Essential public and private services are moving online to improve accessibility and efficiency, requiring users of all ages to adapt to these changes. Without adequate support, however, some groups risk falling behind in this transformation, potentially exacerbating age-related disparities.

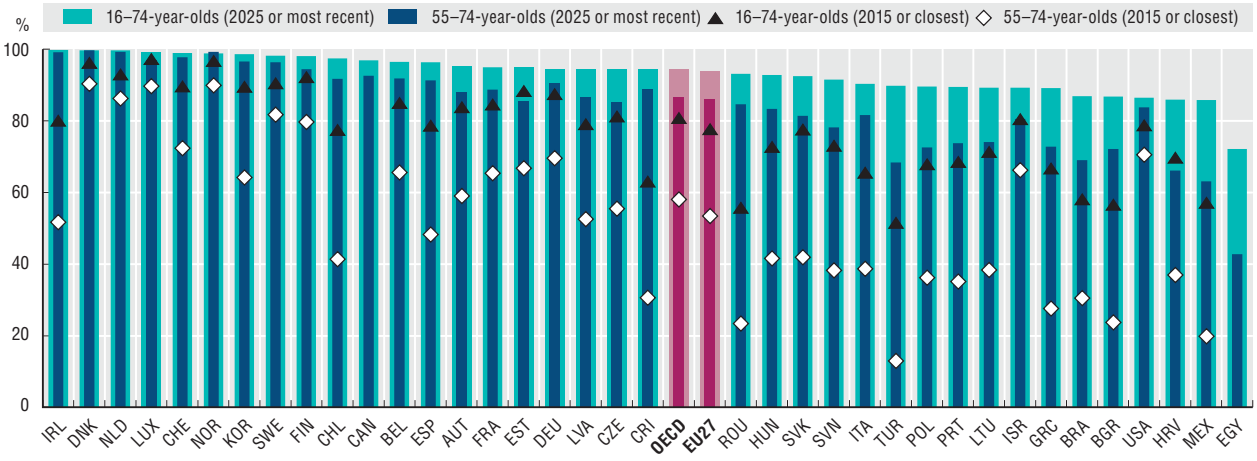
Recent data indicate that differences in the use of digital technologies across age groups are gradually narrowing (OECD, 2026[5]). Adults now entering their 60s and 70s experienced digital technologies during much of their working lives, leading to a higher baseline of digital familiarity than previous generations. As a result, current cohorts of older adults tend to have greater exposure to information and communication technologies (ICTs) and correspondingly stronger ICT skills than earlier generations. Yet this does not guarantee that disparities will naturally decline; rapid and continuous technological innovation introduces new tools, interfaces and competencies that require ongoing adaptation. This means that even digitally experienced older adults may encounter new barriers as the technological frontier evolves.

Accessing the Internet is becoming universal for people of all ages across the OECD

AI tools are increasingly prevalent on the Internet – from search engines to e-commerce platforms. Expanding access to and use of the Internet is essential for narrowing differences in digital technology usage across age groups. Over the past decade, the average share of people across the OECD who used the Internet within the previous three months rose from 81% in 2015 to 94% in 2025 (Figure 3.S.1). Although Internet use increased across all age groups, the rise has been particularly steep among older adults. In 2015, fewer than six out of ten (58%) older adults were online. By 2025, this figure had increased to nearly nine out of ten (87%), demonstrating that gaps related to basic access are narrowing rapidly across cohorts.

Figure 3.S.1. Age gaps in Internet use are closing fast as nine out of ten older adults are now online

Percentage of individuals using the Internet in the last three months, by age group, 2015 (or closest) and 2025 (or latest)



Notes: For Canada and Egypt, data refer to 2022. For Israel and the United States, data refer to 2015 and 2023. For Mexico, data refer to 2015 and 2024. For Switzerland, data refer to 2014 and 2025.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink *https://stat.link/lovjip*

Internet use is also becoming more intensive. By 2025, 90% of individuals accessed the Internet daily or almost daily, up from 70% ten years earlier. This trend also includes older adults: daily Internet users increased by almost 80% over the decade, reaching 78% in 2025 (OECD, 2026[5]). Evidence from the United States complements this pattern, with smartphone ownership among adults aged 65 and over rising from 13% in 2012 to 61% in 2021 (Faverio, 2022[6]). Greater smartphone penetration provides older adults with increased opportunities to connect, both through traditional web browsing and via app-based services.

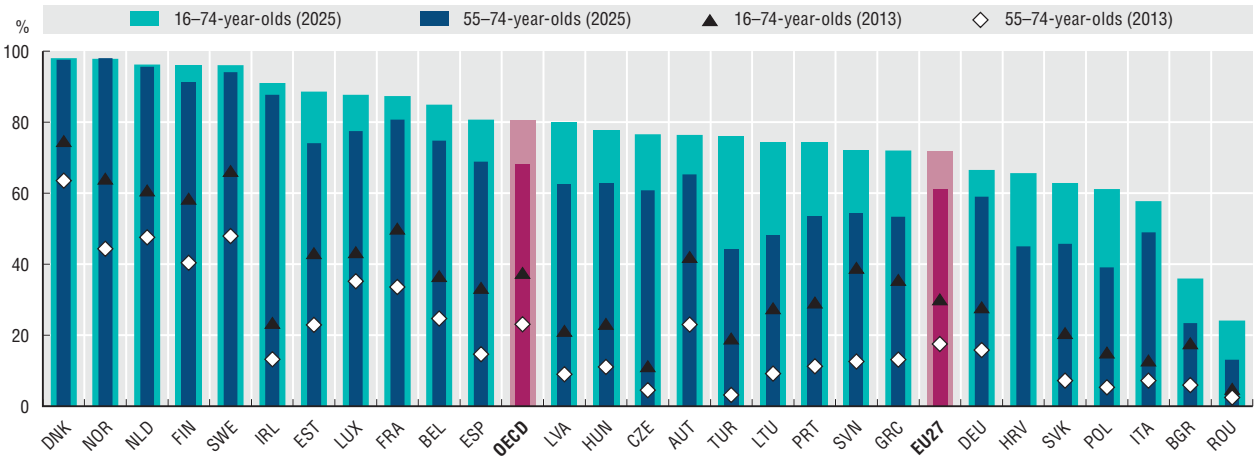
Uptake of online public services varies among older adults

Increased Internet use is expanding opportunities for accessing a wider range of essential services online that incorporate a range of digital technologies, notably AI (OECD, 2025[68]). Although overall use of online public services is increasing and age gaps are narrowing, fewer older adults use these services than people in general. In 2025, 68% of older adults used the Internet to interact with public services, compared with 81% across all age groups. While this represents a significant uplift for both groups, the gap widened rather than narrowed in half of the countries with data available, highlighting uneven progress (Figure 3.S.2). Usage rates are highest – and age gaps the narrowest – in countries such as Norway, Denmark and the Netherlands, compared to Türkiye, which continues to exhibit wide gaps of more than 30 percentage points (p.p.). Beyond age itself, these disparities may also reflect variation in the availability, usability and user friendliness of online public services.

Delivering online public services that are accessible and user-centred begins with understanding the needs of diverse user groups and involving them throughout service design (OECD, 2022[7]). Such an approach can strengthen trust in digital government services by ensuring they respond effectively to users' varied expectations and capabilities (OECD, 2021[8]; OECD, 2025[9]; OECD, 2024[10]). This is especially important when transitioning from in-person to digital channels, as factors such as age, educational attainment and ICT skills strongly influence use of online public services (Garín-Muñoz et al., 2019[11]).

Figure 3.S.2. Use of online public services has increased, but age gaps persist

Percentage of individuals using the Internet to access public authorities' services during the last 12 months, by age group, 2013 and 2025



Notes: No data for this indicator were collected for 2015, leaving 2013 as the closest year for comparison.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Searches for health information online are increasing as digital health services expand

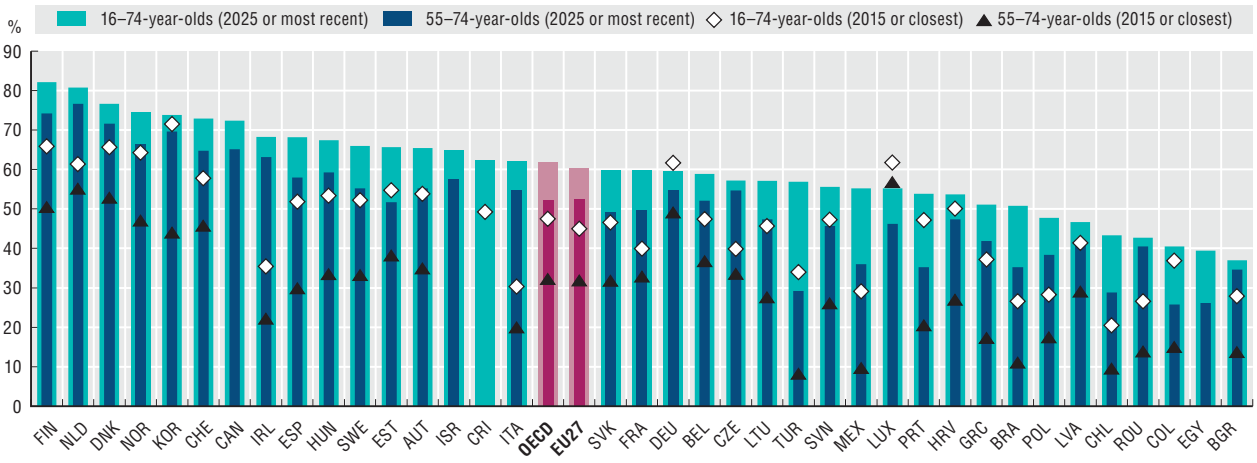
The age gap in online health information seekers is smaller than that observed for the use of online public services. Across the OECD, 52% of older adults searched for health information online in 2025, compared to 62% of the total population. Mirroring general trends in digitalisation, some countries also report the highest shares of older adults seeking health information online. However, people in other countries are catching up, including in Croatia, Bulgaria and Hungary with age gaps narrowing most notably in Korea (Figure 3.S.3).

Between 2015 and 2025, the share of individuals seeking health information online increased by 14 p.p. across all ages. Among older adults, the share rose by 20 p.p., indicating that age gaps are narrowing over time (Figure 3.S.3). This shift also coincides with the expansion of telemedicine, which grew significantly during the COVID-19 pandemic as digital technologies and more flexible telehealth legislation enabled broader patient outreach and offered benefits for both patients and healthcare providers (Saigí-Rubió et al., 2022[12]).

Yet even as gaps narrow for basic activities like online information seeking, the continual evolution of digital health tools means that new gaps may emerge. This is especially the case for more advanced applications such as telemedicine. In addition, AI-based services, such as symptom checkers and personalised recommendations, are increasingly deployed (Kopka, He and Feufel, 2026[13]). Controlling for other factors, a person over 50 years old may still be up to 30% less likely to use telemedicine (Haddad and Bhat, 2025[14]).

Figure 3.S.3. Older adults are increasingly seeking health information online, narrowing the age gap

Percentage of individuals using the Internet for seeking health information over the last three months, by age group, 2015 (or closest) and 2025 (or latest)



Notes: For Canada and Egypt, data refer to 2022. For Colombia and Mexico, data refer to 2015 and 2024. For Costa Rica, data refer to 2017 and 2025. For Israel, data refer to 2023. For Switzerland, data refer to 2014 and 2025.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Internet banking is rising rapidly across all age groups

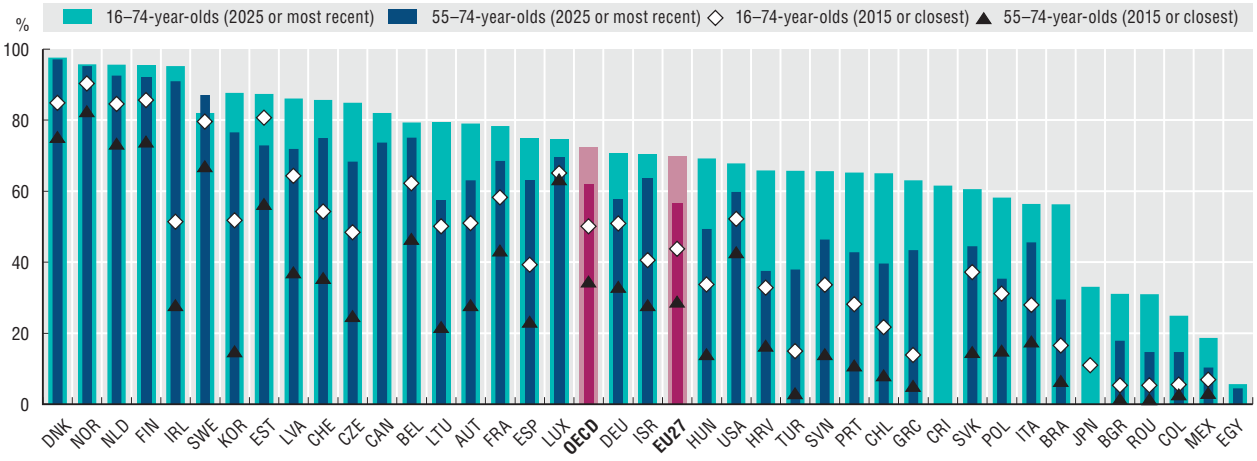
AI tools, including AI chatbots, have become increasingly prevalent in the financial services sector, including for use in Internet banking (Graham et al., 2025[15]). The use of Internet banking is growing rapidly across the OECD. In 2025, 72% of individuals used online banking services, up from 50% in 2015 (Figure 3.S.4). Importantly, the age gaps in usage are narrowing. Among older adults, usage nearly doubled over the same period – from 35% in 2015 to 62% in 2025. This trend is particularly pronounced in Northern European countries, where Internet banking is fully mainstreamed and integrated into public and private payment systems.

The growing use of Internet banking is a key component of the broader shift towards increasingly digital payment ecosystems. As the costs of digital transactions decline, maintaining cash infrastructures becomes more expensive, prompting financial institutions to expand online service delivery (OECD, 2025[16]). At the same time, opportunities to withdraw cash and access in-person banking services are diminishing (IMF, 2025[17]). Ensuring that digital financial services remain accessible, reliable and secure for all users is therefore essential, as digital banking services increasingly also integrate AI-based functionalities.

Without appropriate safeguards and support, people who prefer cash payments or have lower levels of ICT skills – both more common among older adults – risk being unable to fully benefit from the digital transformation. These groups may face increasing difficulties in managing everyday financial tasks, particularly as financial decision making and customer interactions are increasingly mediated by AI-driven tools and automated systems (OECD, 2024[18]).

Figure 3.S.4. Internet banking is gaining ground rapidly in many OECD Member countries

Percentage of individuals using the Internet for banking over the last three months, by age group, 2015 (or closest) and 2025 (or latest)



Notes: For Canada and Egypt, data refer to 2022. For Colombia, Japan and Mexico, data refer to 2015 and 2024. For Israel and the United States, data refer to 2015 and 2023. For Switzerland, data refer to 2014 and 2025.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*. StatLink https://stat.link/1gkovy

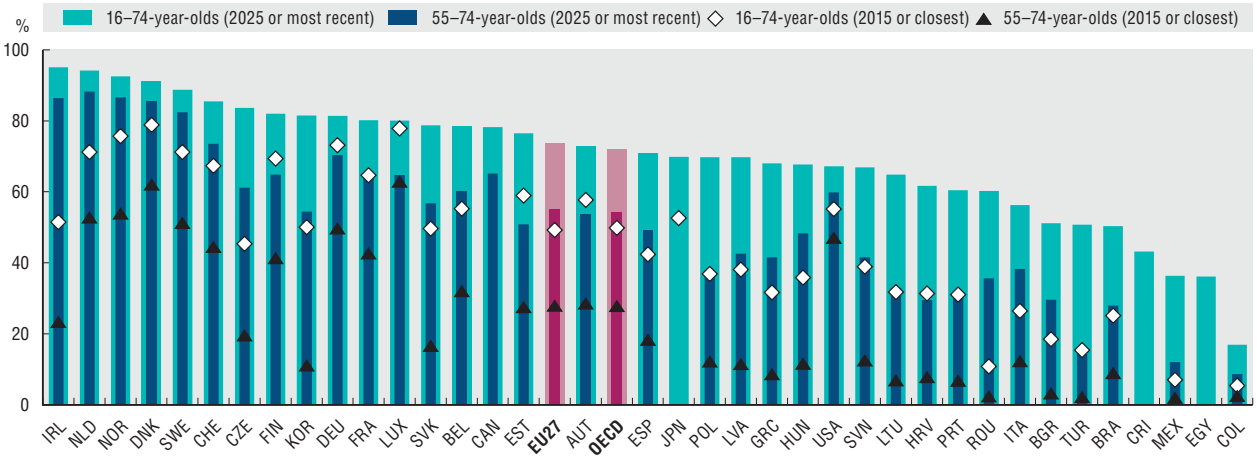
E-commerce remains primarily a one-way activity for many older adults

The popularity of purchasing products (goods and services) online – whether through e-commerce retailers or digital intermediation platforms (DIPs) – continues to rise across the OECD, with AI features increasingly present on e-commerce websites. Between 2015 and 2025, the share of individuals who made online purchases within the past year increased by 22 p.p., reaching 72% by the end of the period (Figure 3.S.5). Older adults are also increasingly engaging in online shopping, with 54% making at least one online purchase in 2025 – almost double the share recorded in 2015 (28%).

Part of the growth in online purchases can be attributed to behavioural shifts during the COVID-19 pandemic, when many consumers turned to online retail out of necessity. However, the persistence of age gaps in shopping behaviour may point to long-standing preferences for local, in-person purchasing among older adults. These preferences continue to influence behaviour even as overall e-commerce use expands (Cano-Leiva et al., 2024[19]; Chun, Kwon and Yang, 2024[20]).

Figure 3.S.5. More than half of older adults are now making purchases online

Percentage of individuals making online purchases over the last 12 months, by age group, 2015 (or closest) and 2025 (or latest)



Notes: For Canada and Egypt, data refer to 2022. For Colombia, Japan and Mexico, data refer to 2015 and 2024. For Switzerland, data refer to 2014 and 2025. For the United States, data refer to 2015 and 2023.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*. StatLink https://stat.link/l9s86c

The number of individuals selling products online via DIPs has also increased. However, participation in circular economy activities such as selling second-hand items continues to lag far behind online purchasing. In 2025, on average 25% of individuals across the OECD sold products online, compared with only 14% of older adults. Growth since 2015 has been modest for both groups, rising from 17% and 8%, respectively (OECD, 2026[5]).

Growth patterns suggest that e-commerce remains largely a one-way activity for many users, particularly for older adults. This pattern persists despite the expanded opportunities offered by DIPs and AI-driven platforms to sell personal production, refurbished goods or unwanted items to both local and international audiences. These opportunities are facilitated through personalised recommendations, dynamic pricing and automated listing tools.

Older adults and AI: Adoption, opportunities, barriers and risks

As age gaps in online access and use of online essential services continue to diminish, important challenges remain and require careful attention. To enable all to benefit from digital transformation, it is crucial to understand the varied needs and concerns that may influence the engagement of older adults with digital technologies and services. Research shows that older adults face more challenges than younger people when adopting digital technologies. As a consequence, older adults risk being left behind in an increasingly digital society (Neves, Waycott and Malta, 2018[21]; Reneland-Forsman, 2018[22]; Rojo-Pérez, Fernández-Mayoralas and Rodríguez-Rodríguez, 2021[23]).

With AI becoming increasingly embedded in digital solutions, patterns of AI adoption must be better understood. A stronger evidence base could enable policymakers to help older adults maximise the opportunities AI brings. Such evidence would include identifying barriers to adoption and how they can be overcome.

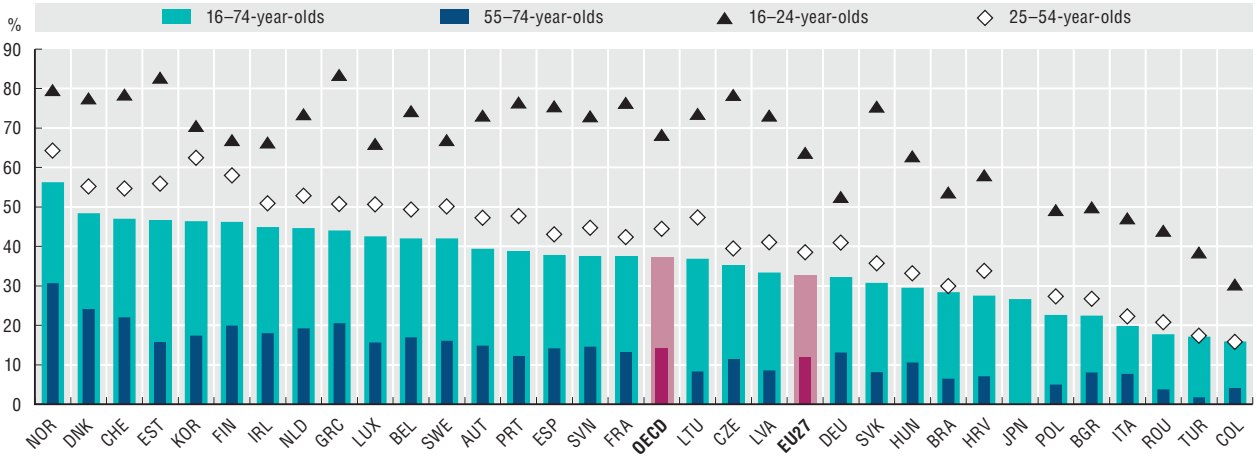
Identifying and reducing barriers to adoption is challenging because different generations have lived through different social, cultural and historical contexts that shape their relationships with digital technologies (Lissitsa, Zychlinski and Kagan, 2022[24]; Chee, 2023[25]). There are also differences within age cohorts: within the 55–74-year-old age group, some are fully engaged in their careers; others are approaching retirement; and some are already retired. This leads to vastly different patterns of digital engagement and levels of reliance on technology. Moreover, digital technologies are rapidly transforming, introducing new forms of interaction that require continual adaptation and placing additional demands on users who may already face barriers to digital engagement.

Older adults lag their younger counterparts in AI adoption, presenting opportunities for older adults to reap more AI-related benefits

Over time, cohort replacement leads to a natural closing of age gaps in ICT use as established digital habits are carried into older age. However, age gaps will not disappear entirely as the digital technology frontier and its applications are constantly evolving. The latest leap in digital technology for personal use is GenAI. Across the OECD, 37% of people used GenAI tools in 2025 (Figure 3.S.6). Usage rates are heavily skewed towards younger people, with 16- to 24-year-olds almost five times as likely to use GenAI than those aged 55–74. As few as 1% of those 75 or older use the technology in OECD Member countries with available data.

Figure 3.S.6. Older adults are less likely to adopt GenAI, which is concentrated among younger users

Percentage of individuals using any GenAI tools in the last three months, by age group, 2025 (or latest)



Notes: The indicator on GenAI captures individual-level use of tools such as ChatGPT, Copilot, Gemini, LLaMA, Midjourney or DALL-E to create new content – including text, images, programming code or videos – over the past three months. For Colombia, data refer to 2024 with a reference period of 12 months. For Japan, data refer to 2024 and no reference period is specified. In addition, data relate to individuals aged 20 to 69.

Source: OECD calculations based on OECD (2026[5]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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AI provides a range of opportunities for older adults

Despite low uptake, AI offers significant opportunities to enhance older adults' access to services and support everyday activities. The many capabilities offered by AI illustrate why closing the age gap matters for the everyday lives of older adults. AI could significantly enhance older adults' access to essential online services by reshaping interactions around their capabilities and preferences. Through adaptive interfaces that adjust text size, layout and complexity, AI can reduce demands on cognitive and fine motor skills that may deter older users. Proactive, context-aware guidance can further help by anticipating needs, offering step-by-step assistance and preventing errors before they occur. Natural language technologies, particularly conversational agents such as chatbots, can enable older adults to engage with online platforms intuitively and without the anxiety associated with navigating menus or remembering procedures. Coupled with features like voice control, personalised recommendations and multimodal feedback, AI-driven systems can simplify tasks that previously may have felt overwhelming. In so doing, they can support greater independence, confidence and participation in digital environments (Leite et al., 2024[26]).

AI also offers concrete opportunities to improve the physical health of older adults, in some cases compensating for age-related decline (Osei-Asiamah et al., 2025[28]). AI-enabled assistive technologies such as speech-to-text and text-to-speech tools, cognitive support systems, adaptive reminders and continuous health monitoring can help offset sensory loss, while reducing cognitive load and supporting independent living among older adults (Chae et al., 2025[28]; Gursoy et al., 2025[29]). In healthcare and long-term care contexts, AI-enabled telemonitoring and decision-making tools can complement human care. To that end, it can enable earlier detection of risk and reduce the physical burden associated with travel or frequent in-person visits, especially when paired with support for older adults to use and understand the technology. Thus, AI holds potential not only to accommodate physical and cognitive limitations but to actively mitigate their impact on older adults' autonomy and well-being.

Beyond digital interactions, AI may play an important role in maintaining independence and reducing isolation. By extending access to transport and services, AI offers opportunities to support older adults in their physical environments and mobility, thus improving overall mental health. Assistive robotics, smart home systems and connected devices can help with everyday tasks, monitor health conditions and support independent living (Ghorbani et al., 2023[30]; Gamble, Chami and Nancoo, 2024[31]; Scott, 2026[32]). In the mobility domain, advances in autonomous vehicle technologies may further expand independence by enabling older adults to maintain access to transport even as driving ability declines. By reducing reliance on physical, cognitive or sensory capacities associated with driving, such systems could support continued participation in social and economic life, provided they are designed to be accessible, reliable and aligned with users' needs (Zandieh and Acheampong, 2021[33]; Kim, 2024[34]).

Overcoming barriers to AI use is needed to improve quality of life for some older adults

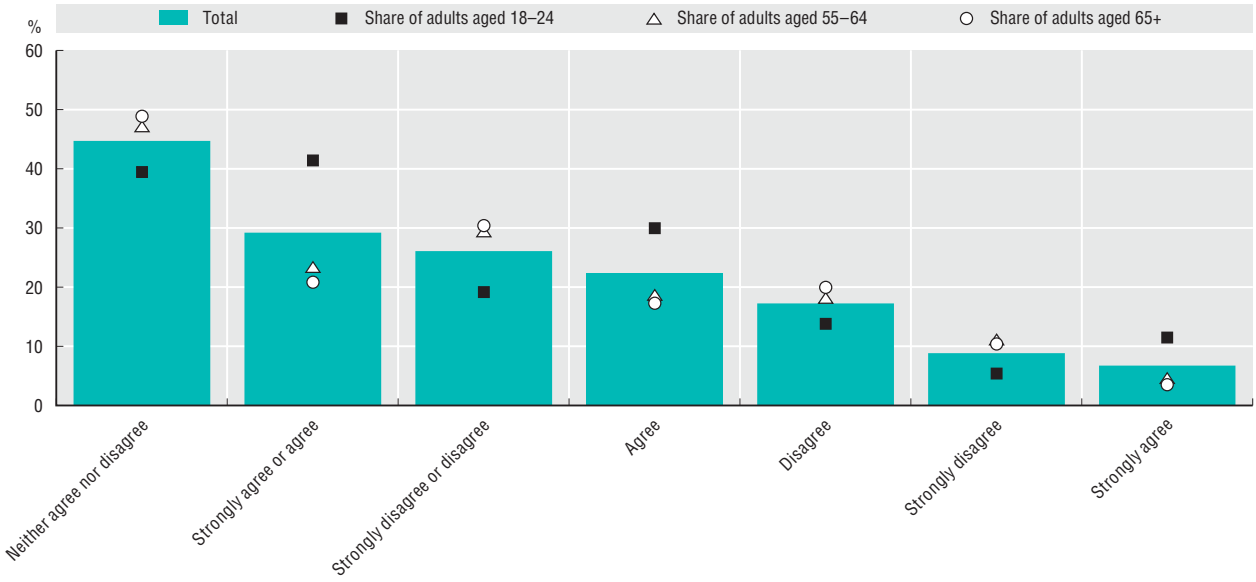
Despite these opportunities, several barriers may limit the adoption and effective use of AI among older adults. As AI becomes increasingly embedded in everyday life, barriers include negative perceptions about AI, low ICT skills, and physical and cognitive limitations. The growing use of voice-first interfaces, AI chatbots and AI companions requires users to adapt to new modes of interaction. These can be challenging for older adults with limited ICT skills or reduced confidence in their own abilities to use emerging technologies (Sacar et al., 2024[35]). At the same time, the personalised and persuasive nature of AI systems raises concerns about trust and vulnerability, particularly in contexts shaped by loneliness or cognitive decline. These dynamics highlight how skill gaps, scepticism, lack of trust, and physical and cognitive limitations interact to shape older adults' engagement with AI. Some of these factors may be mitigated through the design of AI-enabled solutions.

Older adults tend to have more negative perceptions about AI than younger people

Perceptions and attitudes towards AI constitute an important barrier as older adults tend to perceive AI more sceptically than younger people, reflecting lower exposure, knowledge gaps and more limited perceived usefulness. In 2025, 43% of older adults perceived no need for it, almost double the rate of 16–24-year-olds, at 25%. Furthermore, 12%, lacked the necessary skills and 9% were unaware of the technology (OECD, 2026[5]). These perceptions are mirrored in broader attitudes towards the impact of AI on society. Results from the *OECD Truth Quest Survey* in 2024 (Figure 3.S.7) show that those aged 55–64, and 65 and over, are significantly more likely than young adults to disagree that AI will have a positive impact on their lives. The net disagreement rates of -10.3 and -11.2 p.p., respectively, highlight an age gradient in perceived benefits from AI.

Figure 3.S.7. Older adults are more negative about the impact of AI on their lives

Percentage of adults who feel AI will have a positive impact on their life by age, 2024



Source: OECD (2026[69]), "Share of adults who feel AI will have a positive impact on their life", *OECD Going Digital Toolkit*, *https://goingdigital.oecd.org/indicator/82* based on OECD (2024[37]), *The OECD Truth Quest Survey: Methodology and findings*, *https://doi.org/10.1787/92a94c0f-en*.

StatLink https://stat.link/irzo7e

The perception of older adults about AI's usability, privacy and security affect adoption and can act as barriers. Concerns are particularly prominent in high-stakes contexts such as healthcare and banking. Here, AI is perceived as lacking empathy, being insufficiently explainable or posing risks to personal data, which contribute to resistance even when potential benefits are acknowledged (Nawaz et al., 2025[38]; Rony et al., 2025[39]). At the same time, negative perceptions of AI among older adults are also shaped by overall anxiety and low self-confidence. Technology anxiety manifesting as fear, hesitation or apprehension remains a widespread psychological barrier among older adults and is closely associated with lower perceived ease of use and usefulness of AI-enabled technologies (Kim, Freddolino and Greenhow, 2023[40]). A lack of awareness and insufficient access to tailored learning opportunities further reinforce scepticism.

This leaves some older adults unconvinced of AI's value in everyday life or uncertain about their ability to use it safely and effectively (Shandilya and Fan, 2022[41]; Hutton, 2024[42]).

Trust in digital and AI-enabled systems also shapes adoption decisions and links to how technology is perceived. For instance, older adults with chronic illnesses are often less likely to use digital health solutions, primarily because they place greater trust in face-to-face medical care (Győrffy et al., 2023[43]). The disembodied nature of digital interactions can undermine the sense of reassurance and personal connection many patients associate with in-person care. Evidence from healthcare settings shows that older adults frequently express concerns that AI-supported decision making lacks human judgement; may not fully account for individual circumstances; and offers limited opportunities to question or contextualise recommendations (Rony et al., 2025[39]). Trust is further weakened by worries about data privacy and security, particularly when sensitive health information is processed by opaque AI systems (Wong et al., 2025[44]). For those already managing complex health conditions, this perceived loss of personal attention can deter engagement with otherwise beneficial digital health services (Veras et al., 2025[45]).

Older adults tend to have lower ICT skills than younger people

Limited ICT skills remain a key barrier. While many stand to benefit from the rapid rollout of AI-enabled features, a significant number of older adults lack the necessary basic ICT skills to take advantage of them (Vercruyssen et al., 2023[46]). The effective use of AI builds on a broad set of foundational and generic ICT skills, including the ability to navigate digital interfaces, manage information, communicate online and assess digital risks. Thus, AI does not eliminate the need for ICT skills but may raise the threshold required for meaningful and capable use. At the same time, not all interactions with AI rely on traditional interfaces. Emerging interaction modes – such as voice-based systems and assistive technologies – may reduce some of these skills requirements, as previously discussed.

Although access to the Internet has expanded across age groups in OECD Member countries, pronounced skill gaps persist. Older adults are disproportionately represented among those with low or only task-specific digital proficiency. These gaps reflect cumulative differences in digital exposure over the course of life and are compounded by lower participation in adult learning at older ages. As AI-enabled functionalities become increasingly embedded in online essential services, from online public services to health and e-commerce, insufficient ICT and learning skills risk translating into new barriers for older adults. This, in turn, risks shifting the age gaps from technology access to effective technology use (OECD, 2024[47]).

Physical and cognitive limitations can reduce AI uptake for older adults

For some older adults, physical and cognitive limitations may further constrain engagement with AI technologies. Ageing is sometimes framed through a lens of deficit, historically associated with dependence, decline and withdrawal from economic life (Boudiny, 2013[48]). While not true for all, older adults often have physical and cognitive limitations that come naturally with ageing. As such, they experience a decline in mobility, cognition, hearing and vision that can make it difficult to navigate evolving digital interfaces (Hong et al., 2013[49]). Further, reduced fine motor control and dexterity can, for example, make it difficult to use touchscreens. Meanwhile, declining vision can impair the ability to read on-screen text and interpret visual content. This cognitive decline constrains the ability to learn new skills, retain information across interfaces and troubleshoot technical issues independently.

While AI offers immense opportunities, mitigating risks in AI-enabled essential services is needed

The growing use of AI also introduces new risks. Recent technological advances in GenAI have led to new and expanded forms of online scams targeting older adults (Herrera, Van Sickle and Podhradsky, 2024[50]). AI is also allowing scammers to extend their reach beyond traditional online interfaces where awareness may generally be higher and expand their attacks through unfamiliar means. Most notably, this includes voice cloning and deepfakes, amplifying existing fraud risks through greater personalisation, realism and scale (Napal, 2024[51]).

Older adults – who on average have lower ICT skills, higher emotional vulnerability and cognitive limitations – may find attempts at fraud through voice cloning and personalised scams harder to resist. This, in turn, may erode their trust in digital environments, particularly where AI enables more convincing and scalable forms of manipulation (Sima et al., 2026[54]). Loneliness, isolation and fear of abandonment play an important part, making older adults more likely to continue engaging with individuals that may harbour ill intent (Napal, 2024[51]). In 2022, 31% of individuals aged 65 and over across the OECD lived alone (OECD, 2025[53]). This context is often associated with fewer social interactions and reduced access to informal help and support, exacerbating risks in the face of potentially fraudulent behaviours.

Beyond individual exposure, risks also emerge from the design and deployment of AI systems in essential services. AI-enabled decision-making systems are increasingly embedded in essential services that many older adults rely on – including healthcare, long-term care, pensions, social benefits and finance (OECD, 2019[54]; OECD, 2025[55]). Lower digital engagement among older adults means their experiences and data may be underrepresented in the datasets used to train AI models, increasing the potential for misclassifications (Shumailov et al., 2024[56]; OECD, 2025[57]; Ramadan et al., 2026[58]).

Taken together, these risks illustrate how AI can amplify challenges related to data quality, decision-making assumptions and user vulnerabilities when deployed at scale. The risks, in turn, highlight the importance of designing online services that function reliably across user groups of all ages. Evaluating AI systems to detect unexpected outcomes; ensuring datasets reflect a broad range of experiences; and testing tools under realistic conditions can help older adults benefit from digital technologies without encountering unnecessary barriers.

Policy approaches to support older adults in the AI age

Beyond skills development, policy can help support more effective digital technology use among older adults. Older adults can face multifaceted barriers when using digital technologies – including AI enabled services and tools. Consequently, effective interventions require co-ordinated efforts involving the private sector, local governments and civil society to scale impact and respond directly to the needs of older adults. This Spotlight points to four interrelated areas where targeted policy can help address persistent barriers to digital technology use and AI adoption among older adults, while supporting digital participation for all: strengthened skill use; greater awareness of opportunities associated with AI; more accessible online services; and a stronger evidence base.

Strengthen ICT skills beyond basic use

Several governments have developed programmes to enhance ICT skills, including AI, and to support lifelong learning among older adults. These programmes aim to equip older adults with AI solutions that help them navigate digital and non-digital environments more effectively, including online essential services, app use and frontier tools such as GenAI. Programmes often address common risks, such as privacy and cybercrime, alongside practical ICT competencies. For greater impact, programmes should be tailored to specific user needs, be accessible across different contexts and build confidence, as well as competence in interacting with AI-driven systems. They should strengthen both practical ICT skills and resilience in an increasingly complex digital environment.

Examples in the OECD include:

- **Austria**: the programme for AI Literacy and Skills is a national initiative aligned with Austria's existing AI strategy. It explicitly targets groups with lower digital literacy, including older adults. The programme aims to strengthen understanding of AI concepts and practical interactions with AI-enabled tools, bridging gaps between basic ICT skills and more advanced AI-enabled applications (OECD, 2025[59]).
- **Korea**: the Ministry of Education's "Hangeul Sunshine Bus" delivers mobile media and information literacy education in venues such as senior centres, auditoriums and community centres, supporting older adults with low ICT skills or mobility challenges. Curricula extend beyond basic ICT skills to include app-based ordering, Internet banking and creating social media content (Ministry News, 2024[60]; MSIT, 2025[61]).
- **Ireland**: Age-Friendly AI is a national AI literacy initiative targeting older adults to ensure they can understand, question and engage with AI-enabled technologies through a combination of public dialogue, co-creation workshops and community-based training. Covering topics such as automation, data use, privacy, bias and everyday AI applications, the programme delivers AI-focussed ICT skills training in libraries and community organisations, enabling large-scale reach (Age-Friendly Ireland, 2025[62]).
- **Israel**: digital literacy initiatives under Israel's National Digital Programme support older adults with limited digital skills through community-based training delivered across 169 local authorities. Programmes cover practical topics such as digital government services, online banking, e-commerce and cyber safety. They increasingly include AI-related applications for everyday use, information access and interaction with digital services. Training is primarily delivered through blended learning models combining in-person support with digital platforms, such as Campus IL (Mendels and Weiner, 2025[63]).

Raise awareness of the opportunities of AI

Awareness-raising initiatives and community-based support can empower older adults to benefit more fully from digital technologies and to enhance their social connections. Such campaigns can inform older adults about the potential benefits of digital technologies, including AI-enabled services in healthcare, finance and public services, as well as support initiatives. Outreach can target individuals experiencing social isolation or living in underserved areas through diverse channels, community events and local networks. Public libraries can also play a role as trusted local hubs supporting access to online services and the development of ICT skills, helping older adults engage with digital technologies more confidently (Labo Société Numérique, 2024[64]). Hands-on demonstrations and interactive sessions can help demystify complex technologies, including AI systems, and make them easier to understand (Matisola, 2024[65]). Peer-led workshops and community ambassadors can also provide practical guidance, leveraging familiar networks to build confidence and familiarity with AI-enabled tools.

Design accessible online services while maintaining offline options

Online services can be made more accessible by incorporating design principles that consider vision, cognition and physical limitations when deploying AI-enabled interfaces such as chatbots, voice systems and automated decision-making tools (Trischler and Westman Trischler, 2022[66]). Overly complex interfaces, technical language or excessive information can create barriers for older adults, making smart devices and online services harder to use. AI systems can provide powerful solutions to these challenges. Involving older adults in the design and testing process could enable service providers to better understand their diverse needs and everyday practices and to assess how AI systems perform under real-world conditions (Fischer, Peine and Östlund, 2020[67]; OECD, 2024[3]). The participation of older adults in prototyping and testing could help ensure services remain intuitive and aligned with practical user needs.

Maintaining offline alternatives is important, as some older adults may prefer or require in-person services even when online options are available. Lower digital engagement of older adults is often linked to functional constraints, health conditions or reduced confidence rather than a lack of interest, making exclusive reliance on online or AI-mediated services potentially exclusionary (Kim, Freddolino and Greenhow, 2023[40]). Maintaining offline or hybrid service options can therefore act as an important safeguard as AI-enabled automation expands across essential services, ensuring continuity of access for those with limited ICT skills or health constraints. Providing parallel in-person services can also reduce pressure on older adults to adopt technologies. This, in turn, allows ICT skills and confidence to develop at a pace aligned with individual needs and circumstances, while preserving access in increasingly automated services (Shandilya and Fan, 2022[41]).

Expand the evidence base

As people age and societies become progressively older, high-quality data on digital technology use among older adults are essential to track trends over time and identify potential barriers. Such data are especially critical for those aged 75 and older, for whom evidence remains limited. Comparable indicators across countries can support cross-national learning and provide insight into effective approaches for different contexts. Expanding the evidence base also enables evaluation of the impact of media and information literacy programmes; helps anticipate emerging challenges; and informs the design of strategies to support sustained engagement with digital technologies. More disaggregated data on usage patterns, skills and service preferences can guide development of interventions that better align with older adults' capabilities and everyday practices.

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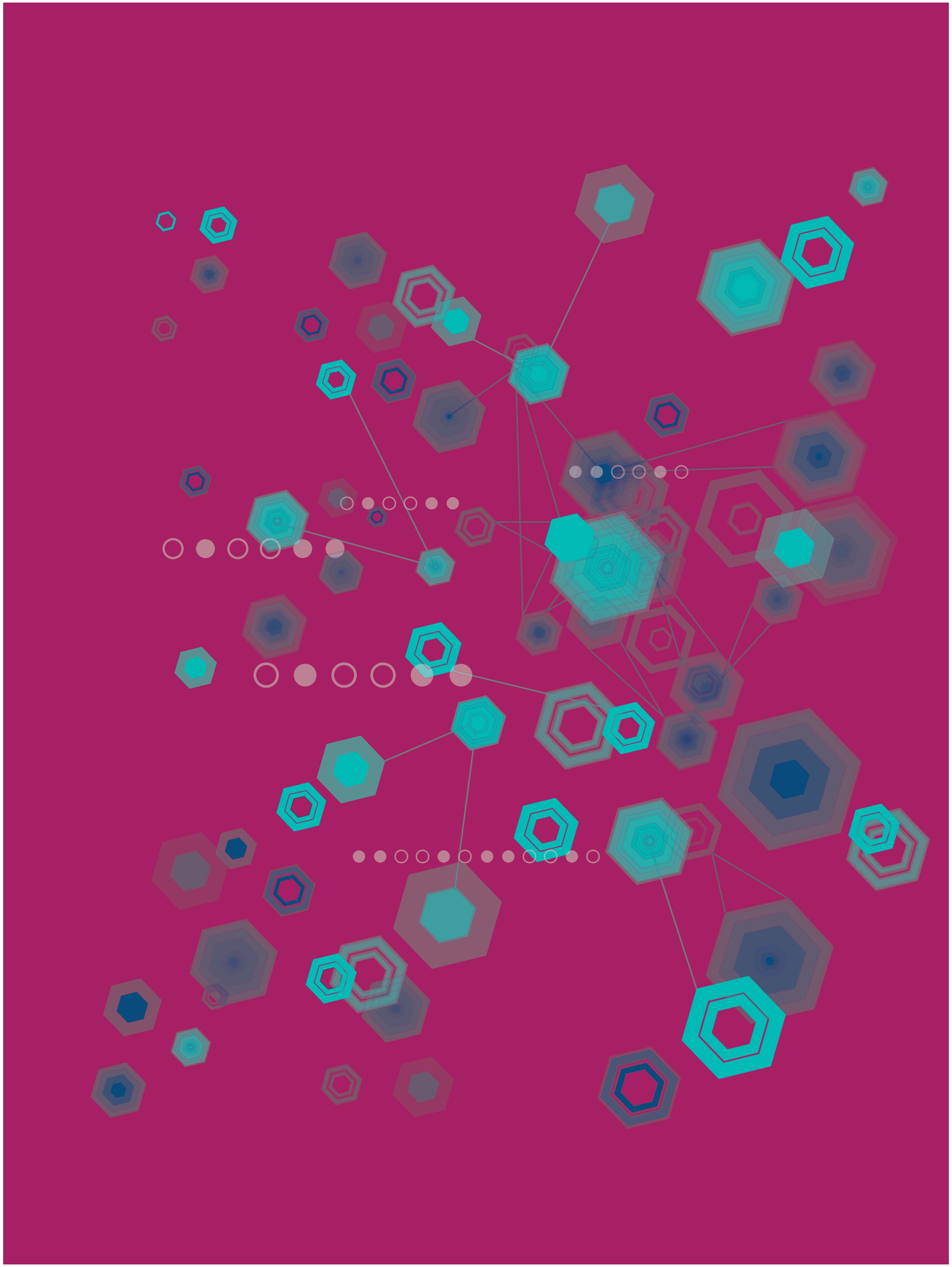
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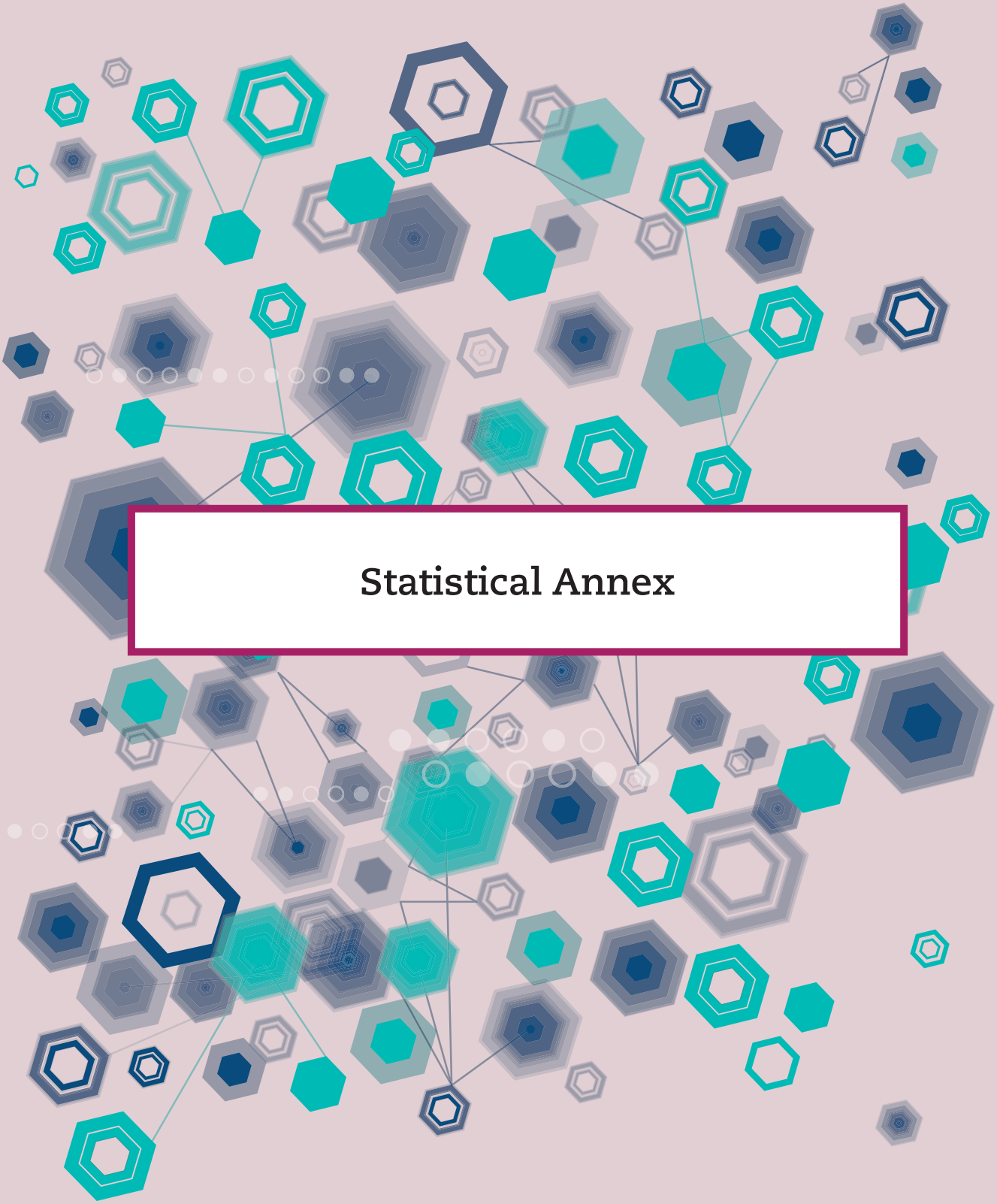
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Statistical Annex

STATISTICAL ANNEX

The Statistical Annex of the *OECD Digital Economy and Society Outlook (DESO) 2026* aims to provide official statistics and quantitative data that have been otherwise endorsed by an OECD statistical body. It is designed to primarily contain data tables with StatLinks, which allow users to access the data in Excel format. The time-stamped data in the Statistical Annex are complemented as appropriate by links to relevant OECD Digital Policy Committee (DPC) platforms to allow users to easily explore the most updated version of the data post-publication.

This Statistical Annex is organised by theme under three main headings as follows: "ICT access and usage indicators"; "Experimental estimates of economic activity" produced by the Working Party on Digital Economics, Measurement and Analysis (WPDEMA); and "Communication markets indicators: Communication price baskets" produced by the Working Party on Connectivity Services and Infrastructures (WPCSI).

ICT access and usage indicators

The indicators shown in this section are based on the OECD ICT Access and Usage Database (OECD, 2026[1]), which provides a selection of indicators on diffusion and use of information and communication technologies (ICTs). The database comprises 108 indicators related to individuals and households. These include computer and Internet access and usage, activities, e-commerce, e-government, ICT skills, and security and privacy. The data are presented by demographic group when feasible. The database also comprises 60 indicators related to businesses, covering connectivity, uptake of ICT tools, e-commerce, digital government, ICT skills, and security and privacy. Data are also organised by size and industry class.

The indicators originate from three sources:

a. An OECD data collection on the following OECD Member countries, accession countries, and Key Partners: Australia, Brazil, Canada, Chile, Colombia, Costa Rica, Israel, Japan, Korea, Mexico, New Zealand, Switzerland and the United States. The data collection methodology followed by these countries is available in each respective country metadata file available in the ICT Access and Usage database (OECD, 2026[1]).
b. Eurostat data on households and individuals and on businesses for the OECD Member countries and accession countries or Key Partners that are part of the European statistical system (26 OECD Members, Bulgaria, Croatia and Romania). For those countries, indicators refer to those published by Eurostat in the Digital Economy and Society Comprehensive Database (Eurostat, 2025[2]).
c. The OECD Secretariat led an ad hoc data collection on artificial intelligence (AI) adoption to underpin the analysis undertaken in Chapter 3. Unlike the previous sources, this exercise was designed to gather comparable information on AI diffusion among both businesses and individuals across OECD Member countries, complementing official statistics available through Eurostat and national statistical offices. Additional details on the surveys used by country are available in the metadata of the OECD Access and Usage database.

Table 1. Technology adoption, by size, 2025 (or most recent)

As a percentage of enterprises in each group

Country	A. Cloud computing				
	Year	Small	Medium	Large	All (10+)
Australia	2022	70.4	82.7	83.2	72.4
Austria	2025	48.1	68.4	88.7	52.1
Belgium	2025	57.1	77.6	93.5	61.6
Brazil	2025	68.2	87.1	90.6	70.6
Bulgaria	2025	14.7	30.1	49.1	17.8
Canada	2023	52.5	58.9	78.8	54.2
Croatia	2025	42.3	65.8	84.6	46.6
Czech Republic	2025	50.6	67.9	85.9	54.9
Denmark	2025	65.4	81.4	92.4	68.9
Estonia	2025	55.7	82.2	92.9	60.7
European Union	2025	49.3	66.8	84.7	52.7
Finland	2025	76.0	91.8	98.0	79.2
France	2025	35.8	62.7	84.7	40.4
Germany	2025	50.7	65.2	85.6	53.9
Greece	2025	21.2	37.6	72.5	24.3
Hungary	2025	44.0	66.2	88.0	48.0
Ireland	2025	70.7	81.9	94.2	73.0
Italy	2025	74.1	84.9	90.9	75.6
Japan	2023	23.2	43.4	63.4	28.3
Korea	2024	76.0	87.3	94.8	77.8
Latvia	2025	40.1	59.2	83.4	44.1
Lithuania	2025	52.7	76.4	91.0	58.1
Luxembourg	2025	44.7	57.3	71.0	47.7
Netherlands	2025	64.5	82.5	90.8	68.5
New Zealand	2022	54.9	62.5	74.8	56.3
Norway	2025	63.5	81.7	87.3	66.5
OECD	2025	51.1	68.8	84.1	54.6
Poland	2025	50.2	73.0	89.8	54.7
Portugal	2025	34.5	..	80.1	38.7
Romania	2025	23.1	30.2	48.2	24.9
Slovak Republic	2025	31.5	52.4	66.3	36.4
Slovenia	2025	43.4	65.8	90.2	48.0
Spain	2025	37.0	60.0	80.9	41.6
Sweden	2025	68.2	87.2	94.4	72.0
Switzerland	2023	57.9	64.9	80.1	58.5
Türkiye	2025	17.2	31.7	54.4	20.3

Table 1. Technology adoption, by size, 2025 (or most recent) *(cont.)*

Country	B. Big data analytics				
	Year	Small	Medium	Large	All (10+)
Australia	2022	7.6	15.5	39.5	9.5
Austria	2025	22.1	42.8	68.8	26.3
Belgium	2025	46.0	74.6	90.9	52.1
Brazil	2025	4.5	15.3	25.4	6.1
Bulgaria	2025	23.8	39.3	63.4	27.1
Canada	..	..	..	..	..
Croatia	2025	35.6	72.1	87.5	41.9
Czech Republic	2025	37.9	67.7	79.5	44.6
Denmark	2025	54.2	81.4	96.4	60.0
Estonia	2025	52.6	68.7	91.6	56.0
European Union	2025	35.1	59.8	82.0	39.8
Finland	2025	39.5	64.7	90.4	45.1
France	2025	34.5	61.5	88.2	39.3
Germany	2025	32.5	57.5	81.3	37.7
Greece	2025	27.8	47.6	74.2	31.4
Hungary	2025	37.0	57.0	75.0	40.6
Ireland	2025	35.8	60.7	83.0	40.8
Italy	2025	38.9	66.1	83.6	42.7
Japan	2023	4.1	8.5	23.1	5.6
Korea	2024	39.5	46.0	59.7	40.7
Latvia	2025	31.1	57.0	84.8	36.4
Lithuania	2025	47.3	78.3	92.3	54.1
Luxembourg	2025	33.8	53.0	69.7	38.2
Netherlands	2025	50.2	76.1	88.6	56.0
New Zealand	..	..	..	..	..
Norway	2025	29.5	53.5	80.6	34.0
OECD	2025	33.2	54.6	76.1	37.7
Poland	2025	18.9	44.7	80.1	24.5
Portugal	2025	40.9	..	81.9	45.0
Romania	2025	32.0	45.5	66.0	35.1
Slovak Republic	2025	33.4	55.5	73.6	38.7
Slovenia	2025	25.1	52.4	86.3	30.9
Spain	2025	42.5	65.2	83.2	47.1
Sweden	2025	33.0	59.0	82.9	38.6
Switzerland	2022	19.8	33.9	54.5	22.2
Türkiye	2025	13.8	25.4	47.9	16.3

Table 1. Technology adoption, by size, 2025 (or most recent) *(cont.)*

Country	C. Artificial intelligence				
	Year	Small	Medium	Large	All (10+)
Australia	2022	3.1	3.7	11.0	3.4
Austria	2025	26.2	44.6	68.3	29.9
Belgium	2025	28.8	54.5	76.4	34.5
Brazil	2025	14.9	32.3	49.6	17.5
Bulgaria	2025	7.2	13.3	26.2	8.5
Canada	2023	7.5	9.5	25.8	8.3
Croatia	2025	12.8	25.5	39.6	15.2
Czech Republic	2025	13.4	28.8	54.1	17.6
Denmark	2025	37.5	58.3	74.5	42.0
Estonia	2025	20.7	33.1	52.9	23.4
European Union	2025	17.0	30.4	55.0	19.9
Finland	2025	33.5	51.4	79.4	37.8
France	2025	15.0	30.8	58.0	18.2
Germany	2025	23.1	35.6	57.0	26.0
Greece	2025	7.3	15.2	37.6	8.9
Hungary	2025	8.7	15.3	40.0	10.4
Ireland	2025	16.7	28.0	57.3	19.6
Italy	2025	14.2	27.6	53.1	16.4
Japan	2023	6.8	14.2	34.6	9.2
Korea	2024	30.6	43.1	66.9	32.9
Latvia	2025	9.8	19.8	47.1	12.2
Lithuania	2025	18.1	30.4	51.8	21.3
Luxembourg	2025	30.5	43.7	58.0	33.6
Netherlands	2025	28.8	46.6	67.6	33.2
New Zealand	2022	7.7	14.7	28.0	9.0
Norway	2025	25.2	45.3	66.0	28.9
OECD	2025	17.5	29.5	52.1	20.3
Poland	2025	5.8	14.8	45.8	8.4
Portugal	2025	9.4	18.2	49.1	11.5
Romania	2025	4.1	7.8	20.8	5.2
Slovak Republic	2025	15.6	23.1	43.7	18.0
Slovenia	2025	18.3	30.6	71.7	21.6
Spain	2025	17.2	30.1	57.5	20.3
Sweden	2025	30.7	49.6	71.9	35.0
Switzerland	2023	8.3	15.6	34.0	9.9
Türkiye	2025	6.6	9.4	23.5	7.4

Notes: For cloud computing and artificial intelligence, the most recent observation refers to 2025, except for Korea (2024), Canada, Japan and Switzerland (2023), and Australia and New Zealand (2022). For big data analytics, the most recent observation refers to 2025 except for Korea (2024), Japan (2023), and Australia and Switzerland (2022). "European Union" refers to 27 countries. For countries in the European Statistical System, data for "big data analytics" relate to "data analytics". For Australia, data are for the financial year 2021/2022 ending 30 June 2022. For Brazil, retail trade (ISIC Rev.4 Section G Division 47), and administrative and support service activities (ISIC Rev.4 Section N), are not collected. For Canada, the North American Industry Classification System is used instead of ISIC Rev.4. For Japan, data originate from the Japan National Innovation Survey 2024 and refer to the three-year period 2021-2023. For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC Rev. 4 Section G Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC Rev. 4 Section G Division 47). For Switzerland, data refer to businesses with five or more employees (instead of ten or more); for cloud computing, data refer to proportion of total businesses using (rather than buying) cloud computing services.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/m31qj0

Table 2. Technology adoption, by industry, 2025 (or most recent)

As a percentage of enterprises in each group

Country	Year	A. Cloud computing										
		Manufacturing (ISIC C)	Construction (ISIC F)	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	Retail trade, except of motor vehicles and motorcycles (ISIC G. Division 47)	Transportation and storage (ISIC H)	Accommodation and food service activities (ISIC I)	Information and communication (ISIC J)	Financial and insurance activities (ISIC K)	Real estate activities (ISIC L)	Professional, scientific and technical activities (ISIC M)	Administrative and support service activities (ISIC N)
Australia	2022	67.8	73.9	73.4	78.2	71.7	53.8	86.4	88.7	87.9	90.7	74.1
Austria	2025	56.5	43.2	61.8	37.9	41.4	42.0	89.7	..	..	68.9	56.1
Belgium	2025	67.7	55.5	68.3	49.1	..	..	86.4	..	..	75.1	57.8
Brazil	2025	71.1	70.2	68.1	..	71.5	56.9	87.8	..	81.8	70.9	..
Bulgaria	2025	14.1	8.9	25.6	15.5	9.2	12.2	56.2	..	..	30.0	13.6
Canada	2023	56.1	68.5	53.8	47.0	50.4	39.4	81.5	60.8	58.4	76.1	60.4
Croatia	2025	48.7	29.9	57.6	39.0	70.3	16.8	90.2	..	..	61.4	..
Czech Republic	2025	55.7	53.7	64.3	45.9	42.1	43.0	83.5	..	60.8	67.1	41.5
Denmark	2025	68.1	62.7	78.6	61.2	59.2	52.9	90.5	..	..	78.3	60.6
Estonia	2025	63.7	56.3	70.7	58.5	54.8	33.2	82.8	..	69.0	81.4	44.6
European Union	2025	54.0	47.5	60.4	43.1	46.6	39.5	82.9	..	61.6	67.4	52.0
Finland	2025	..	79.2	..	55.4	66.9	62.7	97.3	..	90.6	93.9	75.9
France	2025	39.7	37.7	45.8	27.6	34.1	30.0	76.2	..	48.5	52.7	44.3
Germany	2025	50.8	47.3	59.6	47.9	43.0	44.9	88.0	..	65.3	71.7	53.1
Greece	2025	26.9	33.4	35.5	..	30.8	9.4	63.9	..	..	54.0	36.0
Hungary	2025	47.4	40.3	55.4	34.8	45.6	39.9	77.0	..	43.7	66.2	49.4
Ireland	2025	77.2	80.1	70.4	65.6	72.5	53.8	90.2	..	80.9	88.0	75.0
Italy	2025	75.8	75.6	..	73.0	74.1	66.6	89.9	..	76.5	85.3	73.6
Japan	2023	28.1	21.2	28.5	24.1	23.1	21.1	66.4	51.5	31.8	53.2	32.5
Korea	2024	85.1	70.2	84.1	..	75.2	57.4	85.6	90.5	61.2	75.7	63.2
Latvia	2025	42.3	37.1	59.4	34.7	33.1	26.3	81.6	..	35.0	71.4	42.1
Lithuania	2025	60.6	56.5	63.9	53.0	54.1	41.9	86.0	..	59.1	72.7	..
Luxembourg	2025	51.3	41.5	52.1	34.6	42.6	23.1	82.1	..	..	66.6	48.2
Netherlands	2025	69.6	63.4	74.1	53.0	66.7	46.1	91.0	..	93.7	82.9	64.5
New Zealand	2022	59.8	58.2	54.7	47.2	64.8	39.5	77.4	73.9	71.0	79.4	56.8
Norway	2025	71.4	71.6	74.9	47.0	55.2	45.1	90.1	..	73.0	89.0	67.6
OECD	2025	56.0	51.1	59.4	45.7	48.6	39.2	82.1	..	62.0	70.8	52.4
Poland	2025	58.2	43.2	66.1	41.9	41.5	55.2	80.1	..	68.7	65.3	52.2
Portugal	2025	34.5	29.8	43.5	29.4	..	28.5	78.0	..	..	60.3	52.6
Romania	2025	21.2	20.7	33.8	17.1	18.0	16.5	59.7	..	..	44.6	23.8
Slovak Republic	2025	36.5	30.8	41.7	..	24.0	16.6	65.7	..	33.9	53.2	32.5
Slovenia	2025	46.6	28.1	62.2	70.5	34.0	39.1	81.9	..	30.3	63.9	44.9
Spain	2025	39.7	34.8	54.7	33.3	37.5	26.2	77.4	..	60.5	57.1	35.2
Sweden	2025	77.8	75.5	80.4	54.2	58.5	46.1	92.6	..	89.5	88.7	72.7
Türkiye	2025	22.1	11.8	24.6	23.2	14.2	15.3	60.7	..	25.0	23.4	16.2

Table 2. Technology adoption, by industry, 2025 (or most recent) *(cont.)*

Country	B. Big data analytics											
	Year	Manufacturing (ISIC C)	Construction (ISIC F)	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	Retail trade, except of motor vehicles and motorcycles (ISIC G. Division 47)	Transportation and storage (ISIC H)	Accommodation and food service activities (ISIC I)	Information and communication (ISIC J)	Financial and insurance activities (ISIC K)	Real estate activities (ISIC L)	Professional, scientific and technical activities (ISIC M)	Administrative and support service activities (ISIC N)
Australia	2022	12.7	2.9	14.5	8.1	10.2	4.8	29.2	14.7	17.4	7.9	12.0
Austria	2025	25.5	10.9	36.4	32.9	15.3	26.5	59.1	..	21.7	27.3	26.4
Belgium	2025	54.9	39.0	65.2	56.0	..	..	..	..	..	60.9	55.4
Brazil	2025	4.8	3.8	6.8	..	7.4	4.6	18.2	..	5.5	4.5	..
Bulgaria	2025	23.0	14.6	38.6	28.3	27.6	18.9	50.9	..	..	36.5	19.6
Croatia	2025	40.7	19.9	70.2	49.7	34.0	21.6	76.6	..	64.0	48.4	63.4
Czech Republic	2025	51.6	30.5	67.8	33.9	29.4	27.9	68.0	..	37.7	50.6	31.0
Denmark	2025	59.1	33.9	81.6	64.8	49.9	43.2	88.9	..	..	68.8	54.1
Estonia	2025	54.5	50.7	66.0	64.9	48.1	50.5	62.8	..	57.3	62.2	46.8
European Union	2025	42.2	25.0	57.6	43.7	33.3	30.2	63.9	..	40.2	43.5	36.0
Finland	2025	..	17.2	..	65.5	26.8	34.3	72.8	..	44.6	57.4	46.3
France	2025	42.5	28.6	61.1	45.4	35.3	31.2	53.0	..	35.3	41.5	32.8
Germany	2025	43.3	18.0	60.0	47.0	27.1	25.9	69.6	..	40.8	36.6	32.6
Greece	2025	34.6	22.2	48.3	40.3	33.5	21.9	42.0	..	42.7	38.7	32.0
Hungary	2025	41.5	28.3	56.8	39.2	39.2	39.7	47.7	..	36.9	43.6	33.9
Ireland	2025	41.6	25.3	51.6	46.4	28.2	31.5	68.5	..	40.2	41.5	40.3
Italy	2025	45.9	28.4	..	47.5	42.4	32.4	52.7	..	48.7	46.2	42.5
Japan	2023	5.2	3.8	4.4	5.5	1.1	8.1	18.9	22.0	7.5	13.1	3.7
Korea	2024	46.3	27.3	49.8	..	18.8	37.2	57.9	57.4	23.8	42.5	34.8
Latvia	2025	36.6	22.2	55.1	35.2	31.4	20.7	67.1	..	26.6	50.9	32.6
Lithuania	2025	54.0	45.3	60.9	51.4	55.7	36.2	79.7	..	45.3	62.8	69.0
Luxembourg	2025	48.5	25.5	48.9	41.7	44.0	22.1	56.3	..	..	39.1	46.3
Netherlands	2025	57.9	39.2	71.8	53.0	51.5	35.1	78.4	..	73.0	63.4	49.6
Norway	2025	32.3	16.1	49.1	45.2	28.8	25.0	65.0	..	37.9	35.9	29.6
OECD	2025	39.7	24.3	51.6	42.7	30.9	28.2	60.1	..	37.6	43.2	35.1
Poland	2025	23.1	14.0	35.9	22.5	16.3	20.9	56.5	..	28.0	32.5	24.1
Portugal	2025	46.9	25.8	54.8	..	..	37.1	64.2	..	41.8	49.4	39.6
Romania	2025	33.6	32.3	46.3	28.1	32.8	25.7	53.1	..	26.6	42.3	32.7
Slovak Republic	2025	38.5	31.0	52.2	51.2	32.5	22.0	54.1	..	29.7	42.2	30.7
Slovenia	2025	32.9	8.5	53.9	65.6	20.8	18.8	58.5	..	14.2	33.6	20.1
Spain	2025	47.5	33.5	66.9	43.1	41.5	46.6	73.2	..	53.9	48.0	37.0
Sweden	2025	41.6	19.0	58.3	43.4	25.4	20.6	71.8	..	52.6	54.0	29.8
Türkiye	2025	17.8	9.4	18.6	17.9	12.6	15.8	46.2	..	18.5	14.9	13.6

Table 2. Technology adoption, by industry, 2025 (or most recent) *(cont.)*

Country	C. Artificial intelligence											
	Year	Manufacturing (ISIC C)	Construction (ISIC F)	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	Retail trade, except of motor vehicles and motorcycles (ISIC G. Division 47)	Transportation and storage (ISIC H)	Accommodation and food service activities (ISIC I)	Information and communication (ISIC J)	Financial and insurance activities (ISIC K)	Real estate activities (ISIC L)	Professional, scientific and technical activities (ISIC M)	Administrative and support service activities (ISIC N)
Australia	2022	5.1	0.1	2.7	6.8	0.6	1.0	19.2	2.0	10.8	1.3	2.0
Austria	2025	32.5	14.9	38.2	20.9	19.4	23.7	79.9	..	..	52.8	25.7
Belgium	2025	39.8	20.2	41.1	24.5	22.4	18.5	78.1	..	..	57.1	29.0
Brazil	2025	14.2	14.3	16.6	..	16.5	9.8	48.9	..	24.3	18.7	..
Bulgaria	2025	5.2	3.0	8.9	6.0	5.7	4.0	42.0	..	10.6	26.4	7.8
Canada	2023	8.3	1.7	3.7	6.5	5.0	4.8	23.9	16.2	12.2	15.7	11.8
Croatia	2025	12.9	3.5	20.9	10.9	4.8	6.2	69.0	..	27.5	35.3	16.4
Czech Republic	2025	16.7	7.8	24.2	14.4	6.1	10.1	60.5	..	15.9	33.3	13.0
Denmark	2025	38.6	23.9	54.9	32.1	26.9	25.2	79.1	..	..	63.7	33.1
Estonia	2025	22.7	17.4	21.3	19.3	14.0	16.3	56.6	..	23.2	52.2	19.1
European Union	2025	17.3	10.8	23.4	15.5	11.1	12.0	62.5	..	24.8	40.4	19.9
Finland	2025	..	24.0	..	27.1	12.9	23.5	79.8	..	50.9	74.8	38.7
France	2025	16.9	9.5	18.8	9.9	9.0	11.8	59.0	..	26.3	32.5	19.3
Germany	2025	24.4	14.3	32.4	23.4	12.2	14.6	75.4	..	29.1	48.3	22.1
Greece	2025	7.8	7.0	11.6	7.2	9.6	3.4	43.9	..	12.9	30.8	14.8
Hungary	2025	7.8	4.5	14.2	7.2	5.9	5.2	46.0	..	4.7	22.9	8.7
Ireland	2025	17.7	9.2	19.2	9.9	16.8	13.5	59.8	..	18.5	31.8	25.6
Italy	2025	14.7	10.4	..	15.0	11.6	11.7	51.3	..	14.0	35.7	16.0
Japan	2023	9.7	2.5	7.9	9.7	2.0	7.4	43.4	25.2	11.4	20.6	9.1
Korea	2024	36.4	15.9	41.1	..	25.1	30.4	56.0	63.1	16.1	29.6	20.8
Latvia	2025	12.4	4.9	13.1	8.4	5.9	4.5	49.8	..	11.5	29.0	12.3
Lithuania	2025	19.2	16.8	21.4	17.9	20.0	8.0	60.2	..	19.0	37.7	29.8
Luxembourg	2025	37.6	24.0	34.3	20.6	27.9	17.0	73.5	..	..	51.6	31.9
Netherlands	2025	28.6	21.3	34.5	27.5	19.6	16.0	70.0	..	..	55.0	30.8
New Zealand	2022	7.8	4.6	9.5	7.8	9.5	5.7	20.3	18.7	16.2	19.2	9.4
Norway	2025	26.0	19.0	35.9	19.7	20.5	12.4	78.3	..	36.2	55.2	32.1
OECD	2025	19.5	11.2	23.2	16.0	13.0	12.6	57.5	..	20.1	36.9	19.8
Poland	2025	7.7	2.4	11.2	7.0	3.0	5.6	38.1	..	4.1	22.2	10.5
Portugal	2025	9.9	4.7	8.6	8.6	14.8	8.3	52.8	..	14.8	25.7	11.1
Romania	2025	3.2	2.7	6.7	1.7	3.1	1.7	32.1	..	0.6	15.6	5.0
Slovak Republic	2025	15.8	8.6	17.2	24.5	15.8	9.8	50.2	..	8.6	28.5	19.8
Slovenia	2025	22.7	5.6	35.1	28.3	8.5	12.6	67.1	..	23.2	28.3	20.2
Spain	2025	17.1	11.3	20.9	14.0	14.7	15.2	60.6	..	34.4	38.3	18.8
Sweden	2025	32.9	14.9	46.9	23.6	12.2	23.7	87.9	..	56.4	64.9	31.6
Türkiye	2025	7.0	3.9	5.7	7.6	5.0	6.1	47.1	..	6.5	11.5	8.5

Table 2. Technology adoption, by industry, 2025 (or most recent) *(cont.)*

Notes: Data relate to firms with ten or more employees.

For cloud computing and artificial intelligence, the most recent observation refers to 2025, except for Korea (2024), Canada and Japan (2023), and Australia and New Zealand (2022).

For big data analytics, the most recent observation refers to 2025, except for Korea (2024), Japan (2023) and Australia (2022).

"European Union" refers to 27 countries. For countries in the European Statistical System, data for "big data analytics" relate to "data analytics".

For Australia, data are for the financial year 2021/2022 ending 30 June 2022.

For Canada, the North American Industry Classification System is used instead of ISIC Rev.4.

For Japan, data originate from the Japan National Innovation Survey 2024 and refer to the three-year period 2021-2023.

For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC Rev. 4 Section G Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC Rev. 4 Section G Division 47).

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/m31qj0

Table 3. Co-occurrences of technologies, by size, 2025 (or most recent)

As a percentage of enterprises in each group, distinct combinations of the adoption of cloud computing services, big data analytics and AI by enterprise size

Country	Year	Enterprise size	Combination						
			Cloud computing services only	Cloud computing and big data analytics (no AI)	Big data analytics only	All three	Cloud computing and AI (no big data analytics)	Big data analytics and AI (no cloud computing)	AI only
Australia	2022	Small	62.4	5.4	0.6	1.2	1.4	..	..
Australia	2022	Medium	65.7	14.1	..	1.4	1.6	..	..
Australia	2022	Large	44.7	28.0	1.9	9.0	1.5	0.6	..
Australia	2022	All (10+)	62.4	7.2	0.5	1.4	1.4	0.4	..
Austria	2025	Small	16.2	4.9	6.7	8.1	8.5	2.5	7.1
Austria	2025	Medium	15.3	9.0	7.4	21.1	12.0	5.2	6.2
Austria	2025	Large	8.4	11.3	3.8	48.5	11.5	5.3	3.0
Austria	2025	All (10+)	15.9	5.6	6.7	11.1	9.1	2.9	6.8
Belgium	2025	Small	16.2	15.5	10.3	16.6	5.6	3.6	3.0
Belgium	2025	Medium	7.9	19.5	6.6	43.7	4.0	4.8	2.0
Belgium	2025	Large	4.2	14.5	3.0	69.9	2.5	3.5	0.6
Belgium	2025	All (10+)	14.5	16.1	9.5	22.8	5.2	3.8	2.8
Brazil	2025	Small	64.1	1.0	0.0	3.5	11.2	0.0	0.1
Brazil	2025	Medium	54.1	4.8	0.0	10.5	21.4	0.0	0.4
Brazil	2025	Large	40.5	6.4	0.0	19.0	30.5	0.0	0.1
Brazil	2025	All (10+)	62.5	1.5	0.0	4.6	12.7	0.0	0.1
Bulgaria	2025	Small	4.1	5.0	14.4	2.7	1.3	1.7	1.5
Bulgaria	2025	Medium	7.5	10.3	18.8	6.5	1.5	3.6	1.6
Bulgaria	2025	Large	6.2	17.2	23.4	18.1	2.1	4.6	1.5
Bulgaria	2025	All (10+)	4.7	6.1	15.3	3.6	1.3	2.0	1.5
Canada	2023	Small	1.4	1.7	14.7	1.2	0.5	1.6	2.7
Canada	2023	Medium	3.0	5.1	21.0	3.1	0.3	3.3	1.3
Canada	2023	Large	2.7	16.3	21.6	15.2	0.2	6.0	1.0
Canada	2023	All (10+)	1.7	2.6	15.9	1.8	0.4	1.9	2.5
Croatia	2025	Small	16.9	13.4	12.8	7.3	2.0	2.2	1.3
Croatia	2025	Medium	10.5	29.4	19.7	18.5	1.6	4.5	0.9
Croatia	2025	Large	6.4	35.5	14.7	35.3	0.8	2.1	1.4
Croatia	2025	All (10+)	15.7	16.1	13.8	9.5	1.9	2.5	1.2
Czech Republic	2025	Small	14.3	14.8	13.0	7.8	2.4	2.3	0.9
Czech Republic	2025	Medium	9.1	23.1	18.6	19.3	2.0	6.7	0.8
Czech Republic	2025	Large	7.3	18.9	11.8	40.5	3.7	8.3	1.6
Czech Republic	2025	All (10+)	13.1	16.4	13.9	11.0	2.4	3.2	0.9
Denmark	2025	Small	16.2	17.1	8.4	24.9	6.0	3.8	2.7
Denmark	2025	Medium	7.4	21.2	7.6	46.6	4.1	6.0	1.6
Denmark	2025	Large	1.4	18.4	4.8	70.5	1.2	2.8	0.0
Denmark	2025	All (10+)	14.3	17.8	8.2	29.9	5.6	4.1	2.4
Estonia	2025	Small	15.2	20.0	15.9	13.4	3.2	3.3	0.9
Estonia	2025	Medium	15.1	30.8	9.7	25.9	4.4	2.4	0.5
Estonia	2025	Large	3.9	29.0	9.7	49.7	0.0	3.2	0.0
Estonia	2025	All (10+)	14.9	21.9	14.8	16.1	3.3	3.1	0.8
European Union	2025	Small	18.2	12.8	11.5	8.3	4.1	2.5	2.1
European Union	2025	Medium	13.2	22.0	13.3	20.5	4.0	4.0	1.8

Table 3. Co-occurrences of technologies, by size, 2025 (or most recent) *(cont.)*

Country	Year	Enterprise size	Combination						
			Cloud computing services only	Cloud computing and big data analytics (no AI)	Big data analytics only	All three	Cloud computing and AI (no big data analytics)	Big data analytics and AI (no cloud computing)	AI only
European Union	2025	Large	6.6	22.4	8.7	46.2	3.1	4.6	1.0
European Union	2025	All (10+)	17.2	14.3	11.7	11.1	4.0	2.8	2.0
Finland	2025	Small	26.5	12.5	5.2	20.5	10.1	1.2	1.6
Finland	2025	Medium	20.9	17.8	3.9	40.6	7.0	2.4	1.3
Finland	2025	Large	4.8	12.8	1.1	74.7	2.7	1.8	0.2
Finland	2025	All (10+)	24.9	13.3	4.9	25.5	9.4	1.4	1.5
France	2025	Small	13.2	9.3	16.2	5.4	4.0	3.7	2.0
France	2025	Medium	8.7	24.8	14.7	18.6	6.7	3.4	2.1
France	2025	Large	4.3	22.6	9.3	53.5	1.5	2.8	0.2
France	2025	All (10+)	12.4	11.5	15.8	8.3	4.2	3.6	2.0
Germany	2025	Small	16.9	9.7	9.2	10.1	6.0	3.3	3.5
Germany	2025	Medium	12.6	15.9	13.6	21.9	4.5	5.9	3.1
Germany	2025	Large	6.8	20.4	8.8	44.8	3.6	6.9	1.4
Germany	2025	All (10+)	16.0	11.0	9.8	12.9	5.7	3.8	3.3
Greece	2025	Small	6.9	6.9	16.2	3.3	1.3	1.5	1.2
Greece	2025	Medium	6.0	15.8	19.6	10.1	1.6	2.2	1.3
Greece	2025	Large	4.9	27.8	13.1	29.7	4.1	3.6	0.2
Greece	2025	All (10+)	6.7	8.5	16.6	4.7	1.4	1.7	1.2
Hungary	2025	Small	15.6	14.8	17.1	4.2	2.4	1.0	1.1
Hungary	2025	Medium	15.9	29.4	15.5	10.1	2.6	1.9	0.7
Hungary	2025	Large	12.9	28.9	10.4	32.6	4.2	3.1	0.1
Hungary	2025	All (10+)	15.6	17.0	16.7	5.7	2.5	1.1	1.0
Ireland	2025	Small	27.8	17.4	6.8	10.5	4.4	1.2	0.7
Ireland	2025	Medium	19.5	30.6	6.7	22.3	2.6	1.2	2.0
Ireland	2025	Large	6.5	27.1	3.8	50.0	4.3	2.1	0.9
Ireland	2025	All (10+)	26.0	19.5	6.7	13.5	4.1	1.2	0.9
Italy	2025	Small	32.0	22.1	7.5	8.2	4.0	1.1	0.9
Italy	2025	Medium	19.4	35.0	8.4	19.9	4.1	2.8	0.7
Italy	2025	Large	8.4	28.9	5.3	46.4	3.4	3.0	0.3
Italy	2025	All (10+)	30.2	23.6	7.6	10.2	4.0	1.3	0.9
Japan	2023	Small	16.7	1.4	0.5	1.9	3.3	0.3	1.3
Japan	2023	Medium	28.4	2.7	0.6	4.8	7.4	0.4	1.6
Japan	2023	Large	26.4	5.2	0.8	16.3	15.2	0.7	2.3
Japan	2023	All (10+)	19.1	1.7	0.6	2.9	4.4	0.4	1.4
Korea	2024	Small	30.5	15.9	4.1	18.8	10.8	0.7	0.3
Korea	2024	Medium	32.6	12.5	2.4	30.4	11.7	0.6	0.3
Korea	2024	Large	20.5	8.7	0.6	49.7	16.0	0.7	0.5
Korea	2024	All (10+)	30.6	15.3	3.8	20.9	11.0	0.7	0.3
Latvia	2025	Small	13.6	12.7	11.0	6.1	1.7	1.3	0.6
Latvia	2025	Medium	13.2	22.7	17.8	14.5	2.0	2.1	1.2
Latvia	2025	Large	4.9	24.2	16.1	38.1	2.2	6.3	0.4
Latvia	2025	All (10+)	13.4	14.5	12.1	8.2	1.8	1.6	0.7
Lithuania	2025	Small	14.7	21.4	12.1	10.9	2.7	3.0	1.6

Table 3. Co-occurrences of technologies, by size, 2025 (or most recent) *(cont.)*

Country	Year	Enterprise size	Combination						
			Cloud computing services only	Cloud computing and big data analytics (no AI)	Big data analytics only	All three	Cloud computing and AI (no big data analytics)	Big data analytics and AI (no cloud computing)	AI only
Lithuania	2025	Medium	9.8	36.4	13.7	25.8	1.3	2.4	0.8
Lithuania	2025	Large	3.1	36.0	7.9	45.8	2.6	2.6	0.4
Lithuania	2025	All (10+)	13.4	24.4	12.2	14.6	2.4	2.9	1.4
Luxembourg	2025	Small	12.8	8.5	9.0	11.8	8.0	4.5	6.3
Luxembourg	2025	Medium	9.0	13.1	10.7	21.7	8.7	7.5	5.8
Luxembourg	2025	Large	6.9	12.5	10.5	36.8	6.7	9.9	4.5
Luxembourg	2025	All (10+)	11.9	9.4	9.4	14.3	8.0	5.1	6.1
Netherlands	2025	Small	19.4	18.4	9.8	18.8	5.2	3.2	1.6
Netherlands	2025	Medium	11.0	26.2	7.8	38.7	3.7	3.5	0.7
Netherlands	2025	Large	4.2	20.4	4.1	61.2	2.6	2.8	1.0
Netherlands	2025	All (10+)	17.4	19.8	9.2	23.7	4.8	3.2	1.4
Norway	2025	Small	29.6	10.4	4.8	12.6	9.2	1.6	1.7
Norway	2025	Medium	21.6	17.2	3.8	30.8	10.3	1.8	2.5
Norway	2025	Large	7.1	16.8	5.7	56.2	5.8	2.0	2.0
Norway	2025	All (10+)	27.9	11.5	4.7	16.1	9.3	1.7	1.8
OECD	2025	Small	19.0	11.7	9.8	9.5	4.4	2.3	2.1
OECD	2025	Medium	16.6	19.5	11.1	21.0	4.5	3.4	1.8
OECD	2025	Large	8.9	20.4	7.7	44.0	4.2	4.1	1.2
OECD	2025	All (10+)	18.3	13.1	9.9	12.2	4.4	2.4	2.0
Poland	2025	Small	26.6	10.3	5.0	3.1	1.7	0.5	0.5
Poland	2025	Medium	25.9	23.4	9.0	10.3	1.8	2.0	0.7
Poland	2025	Large	10.4	29.7	7.4	39.2	1.9	3.8	0.9
Poland	2025	All (10+)	26.0	12.8	5.6	5.3	1.7	0.8	0.5
Portugal	2025	Small	11.4	12.6	21.6	5.2	1.0	1.4	1.7
Portugal	2025	Medium	8.1	..	20.0	13.9	1.5	2.3	0.5
Portugal	2025	Large	6.3	26.3	9.9	39.5	2.0	6.2	1.5
Portugal	2025	All (10+)	10.8	15.0	21.1	7.2	1.1	1.7	1.6
Romania	2025	Small	7.0	10.7	18.5	2.1	0.8	0.8	0.5
Romania	2025	Medium	7.9	13.4	26.0	4.6	0.9	1.6	0.7
Romania	2025	Large	6.6	20.4	27.8	13.4	2.0	4.4	0.9
Romania	2025	All (10+)	7.1	11.4	19.9	2.8	0.8	1.0	0.6
Slovak Republic	2025	Small	10.7	8.4	14.8	6.5	2.6	3.6	2.9
Slovak Republic	2025	Medium	14.4	18.4	17.4	14.0	1.8	5.6	1.6
Slovak Republic	2025	Large	7.8	20.1	16.3	27.7	3.6	9.5	2.9
Slovak Republic	2025	All (10+)	11.2	10.6	15.3	8.6	2.5	4.2	2.7
Slovenia	2025	Small	16.4	8.7	6.0	7.9	5.4	2.5	2.5
Slovenia	2025	Medium	20.7	17.2	11.9	18.4	4.0	4.8	3.3
Slovenia	2025	Large	4.9	14.4	4.5	60.9	3.5	6.6	..
Slovenia	2025	All (10+)	16.8	10.1	6.9	10.9	5.2	3.0	2.6
Spain	2025	Small	10.5	13.0	17.6	7.7	2.3	4.3	2.8
Spain	2025	Medium	10.3	21.7	18.2	19.8	3.1	5.5	1.7
Spain	2025	Large	4.7	21.1	8.0	49.1	2.5	5.0	0.9
Spain	2025	All (10+)	10.3	14.5	17.4	10.7	2.4	4.5	2.6

Table 3. Co-occurrences of technologies, by size, 2025 (or most recent) *(cont.)*

Country	Year	Enterprise size	Combination						
			Cloud computing services only	Cloud computing and big data analytics (no AI)	Big data analytics only	All three	Cloud computing and AI (no big data analytics)	Big data analytics and AI (no cloud computing)	AI only
Sweden	2025	Small	28.2	10.3	4.3	16.1	9.7	2.3	2.6
Sweden	2025	Medium	18.9	15.7	3.7	36.8	8.6	2.8	1.4
Sweden	2025	Large	7.7	15.3	2.8	63.1	6.2	1.8	0.8
Sweden	2025	All (10+)	26.0	11.3	4.2	20.9	9.4	2.3	2.4
Türkiye	2025	Small	8.9	3.4	6.6	2.1	1.0	1.6	1.9
Türkiye	2025	Medium	13.7	8.4	10.8	4.4	1.4	1.8	1.8
Türkiye	2025	Large	13.3	15.2	13.5	14.1	2.1	5.1	2.1
Türkiye	2025	All (10+)	9.7	4.4	7.4	2.8	1.1	1.7	1.9

How to read the table? The use of data-dependent technologies increasingly occurs in combination rather than in isolation. This table illustrates these co-occurrences, showing how the integration of multiple technologies has become a defining feature of digital transformation across firm sizes and industry classes.

Notes: The most recent observation refers to 2025 except Korea (2024), Canada and Japan (2023), and Australia (2022).

"European Union" refers to 27 countries. For countries in the European Statistical System, data for "big data analytics" relate to "data analytics".

Data for "cloud computing services" relate to the purchase of sophisticated or intermediate cloud computing services. Sophisticated or intermediate cloud computing services are defined as the purchase of one or more of the following as a cloud computing service:

– Finance or accounting software applications;

– ERP software applications;

– Customer Relationship Management (CRM) software;

– Security software applications;

– Hosting for the enterprise's database; and

– Computing platform providing a hosted environment for application development, testing or deployment.

For Australia, data are for the financial year 2021/2022 ending 30 June 2022.

For Brazil, retail trade (ISIC Rev.4 Section G Division 47), and administrative and support service activities (ISIC Rev.4 Section N), are not collected.

For Canada, the North American Industry Classification System is used instead of ISIC Rev.4. Moreover, the Canadian survey only asks about one cloud computing services use-case that is considered sophisticated: "Cloud-based environment for application development, testing or deployment".

For Japan, data originate from the Japan National Innovation Survey 2024 and refer to the three-year period 2021-2023.

For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC Section G Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC Section G Division 47).

Sources: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*; Eurostat (2025[2]), *Digital Economy and Society Comprehensive Database*, *https://ec.europa.eu/eurostat/web/digital-economy-and-society/database/comprehensive-database*.

StatLink *https://stat.link/m31qj0*

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent)

As a percentage of enterprises in each group, distinct combinations of the adoption of cloud computing services, big data analytics and AI by economic activity

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Australia	2022	Accommodation and food service activities (ISIC I)	49.0	4.4	..	..	..	..	..
Australia	2022	Administrative and support service activities (ISIC N)	62.6	9.5	2.3	0.3	1.7	..	..
Australia	2022	Construction (ISIC F)	71.0	2.8	..	0.1	..	..	..
Australia	2022	Information and communication (ISIC J)	57.3	9.9	..	19.1	0.1	..	..
Australia	2022	Manufacturing (ISIC C)	56.1	9.6	..	0.2	2.0	2.9	..
Australia	2022	Professional, scientific and technical activities (ISIC M)	83.0	6.4	1.1	0.5	..	..	..
Australia	2022	Real estate activities (ISIC L)	67.3	9.8	..	7.7	..	..	..
Australia	2022	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	64.6	6.9	..	1.1	5.6	..	..
Australia	2022	Transportation and storage (ISIC H)	61.7	9.5	0.3	0.5	0.1	..	..
Australia	2022	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	59.3	12.8	..	0.2	..	0.1	..
Austria	2025	Accommodation and food service activities (ISIC I)	13.3	7.4	8.3	7.0	4.6	3.8	8.3
Austria	2025	Administrative and support service activities (ISIC N)	20.8	6.5	7.8	10.3	8.0	1.8	5.6
Austria	2025	Construction (ISIC F)	19.2	4.0	3.6	1.8	6.2	1.5	5.4
Austria	2025	Information and communication (ISIC J)	7.0	5.8	2.0	48.0	22.8	3.3	5.8
Austria	2025	Manufacturing (ISIC C)	16.4	4.8	5.0	12.7	10.1	3.0	6.8
Austria	2025	Professional, scientific and technical activities (ISIC M)	15.9	4.6	2.7	16.5	20.9	3.5	11.9
Austria	2025	Real estate activities (ISIC L)	21.0	4.2	5.3	10.5	11.4	1.7	15.6
Austria	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	10.1	6.6	15.8	7.3	5.7	3.2	4.6
Austria	2025	Transportation and storage (ISIC H)	16.0	1.2	4.7	8.1	6.8	1.2	3.2
Austria	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	17.2	7.7	7.2	17.2	10.3	4.3	6.3
Belgium	2025	Accommodation and food service activities (ISIC I)	13.5	11.4	9.3	10.1	1.9	2.0	4.5
Belgium	2025	Administrative and support service activities (ISIC N)	11.2	19.7	11.5	19.8	3.1	4.4	1.6
Belgium	2025	Construction (ISIC F)	20.4	15.1	10.8	12.2	3.8	0.9	3.4
Belgium	2025	Information and communication (ISIC J)	5.3	11.4	0.9	..	13.4	7.5	1.6
Belgium	2025	Manufacturing (ISIC C)	17.6	16.3	9.2	24.1	7.0	5.3	3.3
Belgium	2025	Professional, scientific and technical activities (ISIC M)	10.5	14.1	2.6	39.8	10.3	4.3	2.7
Belgium	2025	Real estate activities (ISIC L)	..	10.8	3.5	..	6.9	..	3.5
Belgium	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	8.7	18.3	18.8	15.4	3.3	3.5	2.3
Belgium	2025	Transportation and storage (ISIC H)	25.8	13.3	10.5	16.4	2.0	0.7	3.2
Belgium	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	9.2	21.0	8.1	30.2	4.3	5.9	0.6
Brazil	2025	Accommodation and food service activities (ISIC I)	62.1	2.2	0.0	2.4	7.2	0.0	0.2
Brazil	2025	Construction (ISIC F)	62.4	0.8	0.0	3.0	11.0	0.0	0.2
Brazil	2025	Information and communication (ISIC J)	44.8	0.9	0.0	17.3	31.4	0.0	0.3
Brazil	2025	Manufacturing (ISIC C)	67.1	1.6	0.0	3.3	10.8	0.0	0.2
Brazil	2025	Professional, scientific and technical activities (ISIC M)	63.6	1.2	0.0	3.2	15.0	0.0	0.4
Brazil	2025	Real estate activities (ISIC L)	61.7	1.0	0.0	4.3	19.8	0.2	0.0
Brazil	2025	Transportation and storage (ISIC H)	58.5	1.8	0.0	5.6	10.7	0.0	0.1

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Brazil	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	62.4	1.7	0.0	5.2	11.4	0.0	0.1
Bulgaria	2025	Accommodation and food service activities (ISIC I)	2.2	6.1	9.9	1.2	..	..	..
Bulgaria	2025	Administrative and support service activities (ISIC N)	6.1	4.7	11.9	1.2	..	1.8	3.7
Bulgaria	2025	Construction (ISIC F)	4.0	2.6	10.8	..	..	..	..
Bulgaria	2025	Information and communication (ISIC J)	11.5	10.3	10.9	22.4	9.0	7.3	3.3
Bulgaria	2025	Manufacturing (ISIC C)	4.1	5.7	13.5	2.1	0.3	1.7	1.2
Bulgaria	2025	Professional, scientific and technical activities (ISIC M)	6.7	3.5	19.1	9.6	5.5	4.3	7.0
Bulgaria	2025	Real estate activities (ISIC L)	..	..	7.0	..	..	0.0	..
Bulgaria	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	4.7	6.1	18.0	2.6	..	1.6	..
Bulgaria	2025	Transportation and storage (ISIC H)	2.1	3.3	19.8	1.6	0.0	3.0	..
Bulgaria	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	6.8	9.9	21.8	4.6	1.1	2.3	..
Canada	2023	Accommodation and food service activities (ISIC I)	2.1	0.0	7.1	0.3	0.0	2.8	1.6
Canada	2023	Administrative and support service activities (ISIC N)	5.2	6.4	11.7	4.1	0.0	1.2	5.4
Canada	2023	Construction (ISIC F)	1.2	1.0	15.1	0.2	0.0	0.8	0.3
Canada	2023	Information and communication (ISIC J)	5.0	12.1	19.9	9.3	1.9	5.7	5.3
Canada	2023	Manufacturing (ISIC C)	1.9	3.6	20.2	2.5	0.0	2.4	2.4
Canada	2023	Professional, scientific and technical activities (ISIC M)	3.2	3.7	18.0	3.7	2.0	1.2	2.7
Canada	2023	Real estate activities (ISIC L)	0.2	4.0	9.3	3.8	0.6	2.2	3.0
Canada	2023	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	0.3	0.6	19.5	1.0	0.7	1.6	1.7
Canada	2023	Transportation and storage (ISIC H)	1.2	4.7	7.9	1.0	0.7	1.6	1.3
Canada	2023	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	0.0	5.6	17.1	1.2	0.3	1.4	0.0
Croatia	2025	Accommodation and food service activities (ISIC I)	5.4	6.5	9.5	4.5	..	1.1	0.5
Croatia	2025	Administrative and support service activities (ISIC N)	10.0	34.4	17.6	7.2	2.7	4.1	2.4
Croatia	2025	Construction (ISIC F)	16.9	8.1	9.9	1.6	0.7	0.3	0.7
Croatia	2025	Information and communication (ISIC J)	9.3	15.8	1.9	55.7	8.9	3.1	1.2
Croatia	2025	Manufacturing (ISIC C)	16.0	18.2	13.1	6.9	1.7	2.4	1.9
Croatia	2025	Professional, scientific and technical activities (ISIC M)	27.4	7.2	13.1	18.4	6.2	9.7	1.0
Croatia	2025	Real estate activities (ISIC L)	17.6	9.8	35.2	19.0	0.0	0.0	8.5
Croatia	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	7.7	20.5	19.0	7.5	0.4	2.7	..
Croatia	2025	Transportation and storage (ISIC H)	47.3	16.9	12.5	4.4	..	..	0.0
Croatia	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	8.7	28.5	25.8	11.1	2.5	4.7	2.5
Czech Republic	2025	Accommodation and food service activities (ISIC I)	13.5	11.7	8.7	6.5	1.7	1.0	1.0
Czech Republic	2025	Administrative and support service activities (ISIC N)	11.6	11.0	11.0	7.8	2.5	1.2	1.5
Czech Republic	2025	Construction (ISIC F)	18.9	16.0	8.7	5.1	1.3	0.7	0.8
Czech Republic	2025	Information and communication (ISIC J)	8.3	13.4	6.7	42.0	10.1	5.9	2.5
Czech Republic	2025	Manufacturing (ISIC C)	11.8	17.9	19.4	10.3	1.4	4.0	1.0
Czech Republic	2025	Professional, scientific and technical activities (ISIC M)	13.2	15.7	10.4	16.9	7.2	7.7	1.6

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Czech Republic	2025	Real estate activities (ISIC L)	21.2	14.7	9.2	11.7	2.1	2.1	0.0
Czech Republic	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	11.3	14.8	8.0	10.4	2.1	0.8	1.1
Czech Republic	2025	Transportation and storage (ISIC H)	16.9	12.1	12.7	3.7	1.5	0.8	0.1
Czech Republic	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	7.5	25.9	19.2	15.5	1.0	7.2	0.4
Denmark	2025	Accommodation and food service activities (ISIC I)	18.9	14.4	9.9	15.4	2.7	3.4	3.7
Denmark	2025	Administrative and support service activities (ISIC N)	15.0	18.3	9.2	22.1	3.9	4.4	2.6
Denmark	2025	Construction (ISIC F)	31.9	12.1	6.5	11.4	6.4	3.9	2.2
Denmark	2025	Information and communication (ISIC J)	2.8	12.5	3.2	69.5	5.0	3.8	0.8
Denmark	2025	Manufacturing (ISIC C)	14.5	21.4	7.9	24.9	5.6	4.9	3.1
Denmark	2025	Professional, scientific and technical activities (ISIC M)	6.0	12.2	7.4	46.7	11.2	2.4	3.4
Denmark	2025	Real estate activities (ISIC L)	..	..	1.9	..	7.0	5.3	0.0
Denmark	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	6.3	25.7	11.8	23.9	3.0	3.4	1.8
Denmark	2025	Transportation and storage (ISIC H)	17.9	18.3	10.4	18.1	4.7	3.0	1.1
Denmark	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	7.4	23.1	10.0	42.5	4.8	5.9	1.7
Estonia	2025	Accommodation and food service activities (ISIC I)	8.8	12.3	25.4	9.1	1.9	3.8	1.5
Estonia	2025	Administrative and support service activities (ISIC N)	8.5	20.9	11.3	9.1	4.4	5.6	0.0
Estonia	2025	Construction (ISIC F)	16.6	22.8	12.8	10.7	2.3	4.3	0.0
Estonia	2025	Information and communication (ISIC J)	12.8	11.9	6.3	41.3	10.7	3.3	1.2
Estonia	2025	Manufacturing (ISIC C)	19.3	20.9	15.6	14.5	3.0	3.5	1.6
Estonia	2025	Professional, scientific and technical activities (ISIC M)	13.0	13.2	5.9	40.3	8.7	2.7	0.6
Estonia	2025	Real estate activities (ISIC L)	17.1	27.9	6.2	15.5	0.0	7.7	0.0
Estonia	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	9.7	27.3	21.9	15.7	2.9	0.0	0.7
Estonia	2025	Transportation and storage (ISIC H)	17.6	20.7	14.9	9.5	1.6	2.9	0.0
Estonia	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	16.0	33.2	14.1	17.2	1.7	1.5	0.9
European Union	2025	Accommodation and food service activities (ISIC I)	14.3	11.1	12.0	5.1	3.1	1.9	2.3
European Union	2025	Administrative and support service activities (ISIC N)	18.7	13.4	9.7	10.1	4.6	2.8	2.2
European Union	2025	Construction (ISIC F)	23.3	10.5	8.6	4.5	3.1	1.4	1.7
European Union	2025	Information and communication (ISIC J)	10.3	12.3	4.8	42.3	13.1	4.5	2.6
European Union	2025	Manufacturing (ISIC C)	18.3	16.3	13.1	9.7	2.7	2.9	1.9
European Union	2025	Professional, scientific and technical activities (ISIC M)	18.0	12.0	6.6	20.2	10.8	4.7	4.7
European Union	2025	Real estate activities (ISIC L)	20.5	15.4	8.5	13.2	6.2	3.1	2.4
European Union	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	11.0	15.3	16.5	9.3	2.4	2.5	1.7
European Union	2025	Transportation and storage (ISIC H)	18.6	14.0	11.8	5.9	2.4	1.6	1.3
European Union	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	14.3	21.5	16.7	15.5	2.7	3.9	1.3
Finland	2025	Accommodation and food service activities (ISIC I)	19.6	17.2	3.1	12.9	7.2	1.2	2.3
Finland	2025	Administrative and support service activities (ISIC N)	24.0	12.6	2.3	30.6	6.3	0.8	1.0
Finland	2025	Construction (ISIC F)	39.7	7.4	0.0	9.6	13.4	0.2	0.8

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Finland	2025	Information and communication (ISIC J)	5.4	12.1	0.1	59.9	17.3	0.7	1.9
Finland	2023	Manufacturing (ISIC C)	42.6	22.9	3.2	9.1	2.4	0.8	0.6
Finland	2025	Professional, scientific and technical activities (ISIC M)	13.9	6.3	0.0	50.8	21.3	0.2	2.4
Finland	2025	Real estate activities (ISIC L)	33.0	8.8	0.0	34.1	13.0	1.6	2.2
Finland	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	11.2	16.0	25.5	18.7	1.2	5.4	1.8
Finland	2025	Transportation and storage (ISIC H)	34.2	12.5	4.7	8.2	2.8	1.4	0.6
France	2025	Accommodation and food service activities (ISIC I)	9.9	8.8	16.1	3.3	2.8	2.9	2.8
France	2025	Administrative and support service activities (ISIC N)	18.0	9.6	13.3	5.3	7.6	4.6	1.8
France	2025	Construction (ISIC F)	16.6	12.0	11.1	4.3	2.9	1.1	1.1
France	2025	Information and communication (ISIC J)	10.2	9.3	6.1	34.2	17.8	3.5	3.5
France	2025	Manufacturing (ISIC C)	11.7	13.6	17.1	8.7	2.4	3.0	2.8
France	2025	Professional, scientific and technical activities (ISIC M)	17.8	9.5	10.7	12.1	7.5	9.3	3.5
France	2025	Real estate activities (ISIC L)	15.6	10.8	8.4	11.0	7.9	5.2	2.1
France	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	6.5	11.9	24.6	6.0	..	2.9	0.8
France	2025	Transportation and storage (ISIC H)	7.3	14.1	16.8	3.7	4.5	0.7	..
France	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	7.9	17.4	27.5	12.3	2.3	3.9	0.2
Germany	2025	Accommodation and food service activities (ISIC I)	17.8	10.6	7.6	6.0	4.5	1.4	2.7
Germany	2025	Administrative and support service activities (ISIC N)	18.6	12.5	6.3	10.4	5.1	3.2	3.2
Germany	2025	Construction (ISIC F)	23.4	5.4	5.3	4.8	4.2	2.4	2.3
Germany	2025	Information and communication (ISIC J)	6.8	9.7	1.8	51.8	14.0	6.2	3.2
Germany	2025	Manufacturing (ISIC C)	13.6	11.9	13.8	11.9	3.3	5.6	3.2
Germany	2025	Professional, scientific and technical activities (ISIC M)	16.6	9.2	3.4	20.1	16.4	3.8	7.6
Germany	2025	Real estate activities (ISIC L)	21.4	16.0	7.8	12.1	8.1	4.4	4.0
Germany	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	10.2	14.2	15.9	13.4	3.7	3.1	3.2
Germany	2025	Transportation and storage (ISIC H)	17.9	9.3	10.5	5.0	3.2	2.3	1.7
Germany	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	11.7	15.9	17.7	20.0	3.2	6.4	2.8
Greece	2025	Accommodation and food service activities (ISIC I)	1.5	5.2	14.2	2.0	0.0	0.5	0.8
Greece	2025	Administrative and support service activities (ISIC N)	12.2	9.4	12.4	7.6	3.6	2.7	0.9
Greece	2025	Construction (ISIC F)	13.6	9.3	10.1	2.5	2.3	0.3	1.9
Greece	2025	Information and communication (ISIC J)	13.0	11.1	5.7	21.4	13.8	3.8	5.0
Greece	2025	Manufacturing (ISIC C)	8.0	8.3	19.8	4.0	0.6	2.4	0.7
Greece	2025	Professional, scientific and technical activities (ISIC M)	17.1	10.5	9.3	12.0	7.7	6.8	4.3
Greece	2025	Real estate activities (ISIC L)	13.3	13.4	18.5	8.4	2.1	2.4	0.0
Greece	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	7.5	9.1	24.0	6.7	0.0	0.5	0.0
Greece	2025	Transportation and storage (ISIC H)	6.9	9.8	16.6	6.2	2.1	0.9	0.4
Greece	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	10.7	14.1	26.0	4.5	0.9	3.6	2.6
Hungary	2025	Accommodation and food service activities (ISIC I)	9.5	17.0	20.2	1.5	1.3	1.0	1.4

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Hungary	2025	Administrative and support service activities (ISIC N)	19.9	15.9	12.9	4.8	2.5	0.3	1.1
Hungary	2025	Construction (ISIC F)	17.8	10.9	15.6	1.6	1.6	0.2	1.1
Hungary	2025	Information and communication (ISIC J)	17.3	13.0	7.0	24.7	14.3	2.9	4.1
Hungary	2025	Manufacturing (ISIC C)	16.5	17.6	18.4	4.7	1.8	0.9	0.4
Hungary	2025	Professional, scientific and technical activities (ISIC M)	23.6	19.0	11.4	10.5	8.5	2.7	1.2
Hungary	2025	Real estate activities (ISIC L)	15.7	13.7	20.1	2.9	0.1	0.1	1.5
Hungary	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	8.7	17.0	17.2	3.5	0.8	1.4	1.4
Hungary	2025	Transportation and storage (ISIC H)	17.0	18.6	16.8	3.3	1.3	0.5	0.8
Hungary	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	11.9	24.0	19.4	11.4	0.5	1.9	0.3
Ireland	2025	Accommodation and food service activities (ISIC I)	19.5	12.7	9.1	7.4	3.3	2.3	0.6
Ireland	2025	Administrative and support service activities (ISIC N)	31.0	13.6	7.4	19.2	5.0	0.1	1.3
Ireland	2025	Construction (ISIC F)	49.4	13.1	5.2	7.1	0.4	0.0	1.7
Ireland	2025	Information and communication (ISIC J)	12.0	15.2	3.7	47.5	9.3	2.2	0.8
Ireland	2025	Manufacturing (ISIC C)	29.9	19.9	7.6	13.0	2.6	1.2	0.9
Ireland	2025	Professional, scientific and technical activities (ISIC M)	34.1	16.4	3.7	20.7	9.6	0.8	0.8
Ireland	2025	Real estate activities (ISIC L)	33.0	23.0	3.8	13.4	5.1	0.0	0.0
Ireland	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	9.0	33.5	7.5	5.2	4.5	0.2	0.0
Ireland	2025	Transportation and storage (ISIC H)	29.5	15.4	1.7	8.3	4.0	2.7	1.7
Ireland	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	23.1	24.8	10.1	14.9	1.2	1.9	1.2
Italy	2025	Accommodation and food service activities (ISIC I)	26.6	17.2	7.9	6.5	4.4	0.8	..
Italy	2025	Administrative and support service activities (ISIC N)	34.2	21.8	8.4	10.2	2.7	2.1	1.1
Italy	2025	Construction (ISIC F)	42.1	18.3	5.1	4.2	4.0	0.8	1.4
Italy	2025	Information and communication (ISIC J)	18.9	17.6	3.4	29.1	17.5	2.5	2.1
Italy	2025	Manufacturing (ISIC C)	30.6	25.7	9.1	9.6	2.7	1.5	1.0
Italy	2025	Professional, scientific and technical activities (ISIC M)	29.5	19.9	2.6	22.0	10.3	1.7	1.8
Italy	2025	Real estate activities (ISIC L)	29.3	30.1	6.4	11.5	1.3	..	..
Italy	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	23.1	26.3	9.1	11.1	1.9	1.0	1.0
Italy	2025	Transportation and storage (ISIC H)	31.0	26.3	8.1	7.0	3.1	1.0	0.5
Italy	2023	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	..	..	10.1	..	..	0.7	0.3
Japan	2023	Accommodation and food service activities (ISIC I)	14.9	2.5	2.2	2.0	1.3	1.4	2.4
Japan	2023	Administrative and support service activities (ISIC N)	23.0	1.8	0.0	0.9	6.7	0.5	1.0
Japan	2023	Construction (ISIC F)	17.2	1.9	0.8	1.1	1.0	0.0	0.5
Japan	2023	Information and communication (ISIC J)	24.1	2.6	0.0	16.2	23.1	0.1	3.9
Japan	2023	Manufacturing (ISIC C)	19.4	1.8	0.4	2.7	4.1	0.3	2.6
Japan	2023	Professional, scientific and technical activities (ISIC M)	32.0	2.5	0.4	8.5	10.3	1.7	0.1
Japan	2023	Real estate activities (ISIC L)	19.9	2.7	1.0	3.6	5.5	0.2	2.0
Japan	2023	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	14.1	1.0	0.5	3.7	5.3	0.3	0.3

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Japan	2023	Transportation and storage (ISIC H)	21.5	0.4	0.2	0.4	0.8	0.0	0.8
Japan	2023	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	20.0	1.9	0.1	2.2	4.4	0.2	1.2
Korea	2024	Accommodation and food service activities (ISIC I)	15.9	13.0	4.7	18.3	10.2	1.1	0.7
Korea	2024	Administrative and support service activities (ISIC N)	30.3	13.7	7.3	12.5	6.7	1.4	0.3
Korea	2024	Construction (ISIC F)	42.8	12.3	6.2	8.2	6.9	0.7	0.1
Korea	2024	Information and communication (ISIC J)	23.3	7.4	2.5	46.9	8.0	1.1	0.0
Korea	2024	Manufacturing (ISIC C)	30.3	19.4	2.9	23.6	11.9	0.5	0.4
Korea	2024	Professional, scientific and technical activities (ISIC M)	30.4	16.0	5.6	20.6	8.7	0.3	0.0
Korea	2024	Real estate activities (ISIC L)	35.0	10.8	6.8	6.0	9.3	0.2	0.5
Korea	2024	Transportation and storage (ISIC H)	43.1	7.3	4.0	7.1	17.7	0.4	0.0
Korea	2024	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	25.3	19.0	1.9	28.0	11.8	0.9	0.4
Latvia	2025	Accommodation and food service activities (ISIC I)	9.9	6.2	11.6	2.5	1.6	0.3	0.0
Latvia	2025	Administrative and support service activities (ISIC N)	13.5	11.8	11.1	7.7	1.5	2.1	1.1
Latvia	2025	Construction (ISIC F)	15.6	11.2	7.3	3.6	1.3	0.0	0.0
Latvia	2025	Information and communication (ISIC J)	11.4	20.0	3.7	38.9	3.2	4.5	3.2
Latvia	2025	Manufacturing (ISIC C)	14.2	13.6	13.9	6.6	2.1	2.5	1.1
Latvia	2025	Professional, scientific and technical activities (ISIC M)	18.8	20.9	8.1	20.0	5.5	2.0	1.5
Latvia	2025	Real estate activities (ISIC L)	11.3	10.9	6.3	6.5	0.7	2.8	1.4
Latvia	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	11.6	12.3	15.9	5.3	0.7	1.7	0.7
Latvia	2025	Transportation and storage (ISIC H)	12.8	9.5	16.8	5.1	0.1	0.0	0.7
Latvia	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	11.5	27.9	16.2	9.2	2.1	1.9	0.0
Lithuania	2025	Accommodation and food service activities (ISIC I)	17.5	15.4	16.4	3.8	3.5	0.7	0.0
Lithuania	2025	Administrative and support service activities (ISIC N)	8.9	31.3	11.0	19.9	3.1	6.7	0.0
Lithuania	2025	Construction (ISIC F)	16.3	22.3	9.7	10.5	2.7	2.7	0.9
Lithuania	2025	Information and communication (ISIC J)	9.0	19.3	5.1	51.5	4.6	3.8	0.5
Lithuania	2025	Manufacturing (ISIC C)	14.5	26.8	11.8	12.8	2.6	2.6	1.2
Lithuania	2025	Professional, scientific and technical activities (ISIC M)	16.0	23.0	6.6	27.1	2.3	6.0	2.3
Lithuania	2025	Real estate activities (ISIC L)	17.8	19.0	10.9	15.0	1.2	0.4	2.4
Lithuania	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	10.8	24.7	12.7	11.4	3.0	2.6	1.0
Lithuania	2025	Transportation and storage (ISIC H)	12.5	26.2	15.1	12.5	1.1	1.9	4.5
Lithuania	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	13.1	30.3	11.8	15.8	2.4	3.0	0.2
Luxembourg	2025	Accommodation and food service activities (ISIC I)	10.6	4.7	11.6	3.3	2.6	2.6	8.5
Luxembourg	2025	Administrative and support service activities (ISIC N)	12.2	12.3	13.9	12.7	6.8	7.5	5.0
Luxembourg	2025	Construction (ISIC F)	17.1	8.1	5.0	7.1	4.6	5.2	7.1
Luxembourg	2025	Information and communication (ISIC J)	7.9	5.6	3.4	44.2	19.3	3.1	6.8
Luxembourg	2025	Manufacturing (ISIC C)	8.9	16.2	10.0	16.1	7.6	6.1	7.7
Luxembourg	2025	Professional, scientific and technical activities (ISIC M)	13.4	7.9	4.7	23.0	17.8	3.5	7.3

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Luxembourg	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	10.6	8.7	18.6	8.6	3.3	5.8	2.9
Luxembourg	2025	Transportation and storage (ISIC H)	5.5	14.2	11.8	14.0	6.0	4.0	3.9
Luxembourg	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	11.5	15.0	13.1	12.6	9.4	8.1	4.1
Netherlands	2025	Accommodation and food service activities (ISIC I)	17.8	11.9	11.7	10.4	4.0	1.1	0.6
Netherlands	2025	Administrative and support service activities (ISIC N)	18.2	17.5	9.0	20.9	5.8	2.2	1.9
Netherlands	2025	Construction (ISIC F)	26.5	15.5	8.7	13.5	4.9	1.6	1.3
Netherlands	2025	Information and communication (ISIC J)	8.9	15.9	2.5	57.1	8.7	3.0	1.2
Netherlands	2025	Manufacturing (ISIC C)	17.0	24.8	9.8	19.5	3.8	3.8	1.5
Netherlands	2025	Professional, scientific and technical activities (ISIC M)	16.9	15.5	5.3	38.5	10.1	4.2	2.2
Netherlands	2025	Real estate activities (ISIC L)	10.9	26.2	2.5	42.7	13.2	1.7	1.1
Netherlands	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	11.9	19.1	11.4	17.1	3.2	5.2	1.9
Netherlands	2025	Transportation and storage (ISIC H)	24.5	23.5	11.0	15.4	1.8	1.6	0.9
Netherlands	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	14.1	27.4	12.9	25.8	1.9	5.6	1.1
Norway	2025	Accommodation and food service activities (ISIC I)	22.9	10.9	6.3	6.9	3.1	1.0	1.4
Norway	2025	Administrative and support service activities (ISIC N)	26.7	9.5	2.6	16.7	11.7	0.9	2.9
Norway	2025	Construction (ISIC F)	44.9	8.4	1.3	5.9	10.8	0.5	1.8
Norway	2025	Information and communication (ISIC J)	7.4	8.7	0.8	52.5	20.4	2.9	2.5
Norway	2025	Manufacturing (ISIC C)	32.5	13.1	4.4	13.9	9.2	0.9	1.9
Norway	2025	Professional, scientific and technical activities (ISIC M)	30.9	6.6	0.8	26.9	24.4	1.5	2.4
Norway	2025	Real estate activities (ISIC L)	29.3	10.6	3.2	23.2	9.9	1.0	2.2
Norway	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	13.9	15.8	11.9	14.4	1.1	3.1	1.1
Norway	2025	Transportation and storage (ISIC H)	25.8	10.5	4.1	11.4	3.9	2.9	2.4
Norway	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	26.7	15.6	8.1	22.1	9.6	3.3	1.0
OECD	2025	Accommodation and food service activities (ISIC I)	15.4	9.8	10.9	6.0	3.1	1.8	2.4
OECD	2025	Administrative and support service activities (ISIC N)	19.1	12.4	8.5	11.2	4.5	2.6	2.1
OECD	2025	Construction (ISIC F)	25.1	10.1	7.8	5.2	3.5	1.2	1.6
OECD	2025	Information and communication (ISIC J)	12.7	11.3	4.7	39.2	11.9	4.2	2.7
OECD	2025	Manufacturing (ISIC C)	19.2	14.9	11.2	10.9	3.8	2.7	2.2
OECD	2025	Professional, scientific and technical activities (ISIC M)	20.7	11.9	5.9	21.5	9.9	3.4	3.1
OECD	2025	Real estate activities (ISIC L)	22.6	14.4	7.5	12.6	6.1	2.1	1.8
OECD	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	12.6	15.4	15.0	10.0	2.4	2.6	1.5
OECD	2025	Transportation and storage (ISIC H)	20.2	12.4	9.6	7.1	2.8	1.7	1.6
OECD	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	16.0	18.6	13.7	15.1	3.8	3.4	1.3
Poland	2025	Accommodation and food service activities (ISIC I)	30.6	12.6	4.5	3.8	1.0	0.0	0.8
Poland	2025	Administrative and support service activities (ISIC N)	22.7	11.6	5.4	6.1	2.6	1.0	0.8
Poland	2025	Construction (ISIC F)	26.1	8.3	4.2	1.0	0.4	0.5	0.5

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Poland	2025	Information and communication (ISIC J)	19.3	18.9	6.0	27.7	5.9	3.9	0.6
Poland	2025	Manufacturing (ISIC C)	29.3	12.2	5.1	4.9	1.6	0.9	0.3
Poland	2025	Professional, scientific and technical activities (ISIC M)	23.4	12.9	6.0	11.3	6.8	2.2	1.8
Poland	2025	Real estate activities (ISIC L)	36.5	18.4	7.0	2.2	1.0	0.4	0.4
Poland	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	18.7	10.6	6.7	4.5	1.3	0.6	0.6
Poland	2025	Transportation and storage (ISIC H)	22.5	9.4	4.7	2.0	0.4	0.2	0.3
Poland	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	26.1	20.1	7.1	7.9	2.3	0.8	0.3
Portugal	2025	Accommodation and food service activities (ISIC I)	8.9	12.0	19.8	3.8	0.2	1.4	2.9
Portugal	2025	Administrative and support service activities (ISIC N)	12.4	17.1	13.6	6.2	1.4	2.7	0.8
Portugal	2025	Construction (ISIC F)	12.5	7.0	16.7	2.0	1.3	0.1	1.3
Portugal	2025	Information and communication (ISIC J)	12.0	12.5	9.2	39.5	10.1	2.9	0.3
Portugal	2025	Manufacturing (ISIC C)	9.4	15.1	23.9	6.3	0.5	1.5	1.6
Portugal	2025	Professional, scientific and technical activities (ISIC M)	17.4	17.8	12.8	17.0	4.0	1.8	2.9
Portugal	2025	Real estate activities (ISIC L)	19.5	17.3	12.8	8.8	3.1	2.9	0.0
Portugal	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	4.2	17.5	28.4	4.6	0.0	2.7	1.3
Portugal	2025	Transportation and storage (ISIC H)	14.9	..	..	10.5	0.0	1.9	2.3
Portugal	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	14.4	21.0	25.3	5.8	0.1	2.7	0.1
Romania	2025	Accommodation and food service activities (ISIC I)	1.3	10.6	13.5	1.6	0.0	0.0	0.1
Romania	2025	Administrative and support service activities (ISIC N)	7.9	9.2	20.2	2.5	0.6	0.8	1.1
Romania	2025	Construction (ISIC F)	6.9	10.8	20.0	1.4	0.6	0.1	0.6
Romania	2025	Information and communication (ISIC J)	15.8	17.3	12.2	17.8	6.1	5.8	2.4
Romania	2025	Manufacturing (ISIC C)	6.7	9.0	22.0	1.8	0.3	0.8	0.4
Romania	2025	Professional, scientific and technical activities (ISIC M)	12.7	16.2	16.4	6.9	3.8	2.9	2.0
Romania	2025	Real estate activities (ISIC L)	3.9	11.0	15.4	0.2	0.4	0.0	0.0
Romania	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	5.3	8.2	18.3	0.5	0.1	1.1	0.0
Romania	2025	Transportation and storage (ISIC H)	5.4	8.9	21.6	1.5	0.7	0.7	0.1
Romania	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	9.5	16.6	24.5	3.6	0.8	1.6	0.6
Slovak Republic	2025	Accommodation and food service activities (ISIC I)	6.8	4.2	14.2	1.9	2.3	1.9	3.8
Slovak Republic	2025	Administrative and support service activities (ISIC N)	7.7	7.4	9.9	9.3	2.8	4.0	3.6
Slovak Republic	2025	Construction (ISIC F)	14.7	9.6	15.8	5.5	0.8	0.1	2.2
Slovak Republic	2025	Information and communication (ISIC J)	13.4	8.1	6.7	29.0	9.0	10.1	2.1
Slovak Republic	2025	Manufacturing (ISIC C)	11.8	12.2	15.3	6.4	1.8	4.6	3.0
Slovak Republic	2025	Professional, scientific and technical activities (ISIC M)	16.4	11.2	8.8	14.9	4.8	7.3	1.5
Slovak Republic	2025	Real estate activities (ISIC L)	17.3	9.4	16.6	2.3	3.4	1.4	1.6
Slovak Republic	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	7.5	10.7	18.9	15.3	1.5	6.2	1.5
Slovak Republic	2025	Transportation and storage (ISIC H)	7.3	9.1	13.8	4.5	1.3	5.1	4.9

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Slovak Republic	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	11.0	15.5	24.5	9.2	3.2	2.9	1.9
Slovenia	2025	Accommodation and food service activities (ISIC I)	21.0	7.6	4.0	5.9	3.2	1.3	2.3
Slovenia	2025	Administrative and support service activities (ISIC N)	20.6	1.7	7.5	10.8	4.7	0.0	4.8
Slovenia	2025	Construction (ISIC F)	18.5	2.3	4.4	1.2	2.2	0.5	1.6
Slovenia	2025	Information and communication (ISIC J)	11.2	7.1	1.6	40.0	14.1	9.8	3.2
Slovenia	2025	Manufacturing (ISIC C)	13.0	10.6	8.2	10.9	5.8	3.2	2.8
Slovenia	2025	Professional, scientific and technical activities (ISIC M)	23.1	13.8	1.9	15.5	6.6	2.5	3.7
Slovenia	2025	Real estate activities (ISIC L)	..	4.2	8.5	..	21.7	0.0	0.0
Slovenia	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	13.6	30.7	11.1	20.7	2.5	3.1	2.0
Slovenia	2025	Transportation and storage (ISIC H)	17.6	5.1	12.0	3.3	2.9	0.4	1.9
Slovenia	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	17.4	17.9	9.0	19.8	5.5	7.2	2.6
Spain	2025	Accommodation and food service activities (ISIC I)	5.4	11.3	24.5	3.4	3.6	7.5	0.7
Spain	2025	Administrative and support service activities (ISIC N)	9.8	11.2	13.7	8.9	3.3	3.2	3.4
Spain	2025	Construction (ISIC F)	13.5	11.1	14.7	5.0	0.9	2.6	2.7
Spain	2025	Information and communication (ISIC J)	7.4	13.6	11.2	41.9	9.1	6.6	3.0
Spain	2025	Manufacturing (ISIC C)	10.6	14.7	19.1	9.5	1.4	4.2	2.0
Spain	2025	Professional, scientific and technical activities (ISIC M)	12.5	13.9	8.8	19.8	5.2	5.5	7.8
Spain	2025	Real estate activities (ISIC L)	7.4	18.1	10.9	20.3	8.1	4.5	1.4
Spain	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	8.5	13.9	19.6	6.0	2.1	3.6	2.3
Spain	2025	Transportation and storage (ISIC H)	12.2	14.4	15.5	7.0	0.5	4.6	2.5
Spain	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	10.0	24.8	23.0	14.6	0.7	4.5	1.1
Sweden	2025	Accommodation and food service activities (ISIC I)	18.4	6.3	7.3	6.4	9.4	0.5	7.4
Sweden	2025	Administrative and support service activities (ISIC N)	27.5	10.7	0.1	17.1	10.7	1.9	1.9
Sweden	2025	Construction (ISIC F)	48.7	11.0	1.8	5.6	7.9	0.5	0.8
Sweden	2025	Information and communication (ISIC J)	5.1	1.9	2.5	64.3	18.0	3.1	2.5
Sweden	2025	Manufacturing (ISIC C)	26.5	15.9	3.4	19.7	7.9	2.5	2.7
Sweden	2025	Professional, scientific and technical activities (ISIC M)	18.8	7.5	1.1	42.4	17.2	3.0	2.3
Sweden	2025	Real estate activities (ISIC L)	25.4	9.8	2.0	37.3	14.8	3.5	0.8
Sweden	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	14.8	16.7	8.0	14.1	3.0	4.7	1.8
Sweden	2025	Transportation and storage (ISIC H)	37.4	8.6	9.2	6.4	2.4	1.3	2.1
Sweden	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	19.9	17.0	5.3	30.7	10.1	5.4	0.8
Türkiye	2025	Accommodation and food service activities (ISIC I)	6.4	4.3	7.8	2.0	1.0	1.7	1.4
Türkiye	2025	Administrative and support service activities (ISIC N)	8.7	2.7	5.1	2.6	0.7	3.3	2.0
Türkiye	2025	Construction (ISIC F)	6.6	2.2	5.1	1.0	0.3	1.2	1.4
Türkiye	2025	Information and communication (ISIC J)	12.8	8.7	5.6	24.7	10.6	7.2	4.6
Türkiye	2025	Manufacturing (ISIC C)	10.6	5.2	8.4	2.6	0.9	1.6	1.9
Türkiye	2025	Professional, scientific and technical activities (ISIC M)	11.0	2.9	5.8	4.3	1.9	1.9	3.4

Table 4. Co-occurrences of technologies, by industry, 2025 (or most recent) *(cont.)*

Country	Year	Economic activity	Combination						
			Cloud computing services only	Cloud computing and data analytics (no AI)	Data analytics only	All three	Cloud computing and AI (no data analytics)	Data analytics and AI (no cloud computing)	AI only
Türkiye	2025	Real estate activities (ISIC L)	10.6	8.1	6.5	1.8	0.4	2.0	2.2
Türkiye	2025	Retail trade, except of motor vehicles and motorcycles (ISIC G: Division 47)	12.0	5.1	7.4	3.3	1.2	2.1	1.0
Türkiye	2025	Transportation and storage (ISIC H)	6.5	4.4	5.4	1.2	0.5	1.7	1.6
Türkiye	2025	Wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46)	13.4	5.1	10.3	2.0	0.8	1.1	1.8

How to read the table? The use of data-dependent technologies increasingly occurs in combination rather than in isolation. This table illustrates these co-occurrences, showing how the integration of multiple technologies has become a defining feature of digital transformation across firm sizes and industry classes.

Notes: Data relate to firms with ten or more employees.

The most recent observation refers to 2025, except for Korea (2024), Canada and Japan (2023), and Australia (2022).

"European Union" refers to 27 countries. For countries in the European Statistical System, data for "big data analytics" relate to "data analytics", while data for "cloud computing services" relate to the purchase of sophisticated or intermediate cloud computing services. Sophisticated or intermediate cloud computing services are defined as the purchase of one or more of the following as a cloud computing service:

– Finance or accounting software applications;
– Enterprise Resource Planning (ERP) software applications;
– Customer Relationship Management (CRM) software;
– Security software applications;
– Hosting for the enterprise's database; and
– Computing platform providing a hosted environment for application development, testing or deployment.

For Australia, data are for the financial year 2021/2022 ending 30 June 2022.

For Brazil, retail trade (ISIC Rev.4 Section G Division 47), and administrative and support service activities (ISIC Rev.4 Section N), are not collected.

For Canada, the North American Industry Classification System is used instead of ISIC Rev.4. Moreover, the Canadian survey only asks about one cloud computing services use-case that is considered sophisticated: "Cloud-based environment for application development, testing or deployment". Furthermore, 2023 data for "big data analytics" relate to "data analytics".

For Japan, data originate from the Japan National Innovation Survey 2024 and refer to the three-year period 2021-2023.

For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC Rev. 4 Section G Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G Division 47).

Sources: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*; Eurostat (2025[2]), *Digital Economy and Society Comprehensive Database*, *https://ec.europa.eu/eurostat/web/digital-economy-and-society/database/comprehensive-database*.

StatLink https://stat.link/m31qj0

Table 5. Purposes of AI adoption, by size, 2025 (or most recent)

As a percentage of enterprises in each group

Country	A. Marketing or sales					B. Organisation of business administration processes or management					C. Accounting, controlling or finance management				
	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)
Austria	2025	11.6	21.2	25.3	13.3	2025	9.8	17.1	28.3	11.4	2025	5.4	11.1	22.9	6.7
Belgium	2025	7.4	13.5	29.7	9.1	2025	10.1	24.5	46.8	13.7	2025	8.7	17.2	30.6	10.8
Brazil	2025	6.8	12.8	21.0	7.7	2025	7.2	12.5	23.7	8.1	..	..	..	..	..
Bulgaria	2025	2.9	3.2	8.1	3.1	2025	2.3	4.3	10.6	2.8	2025	1.8	2.8	6.6	2.1
Canada	2023	2.5	3.2	5.6	2.6	2023	2.0	3.2	8.7	2.3	..	..	..	..	..
Croatia	2025	4.4	6.6	11.6	4.9	2025	2.7	7.2	12.4	3.6	2025	1.1	3.4	6.1	1.6
Czech Republic	2025	8.9	15.2	21.2	10.4	2025	5.2	11.7	23.6	7.0	2025	3.2	6.7	15.1	4.3
Denmark	2025	10.1	15.3	22.3	11.4	2025	8.0	16.9	26.8	10.0	2025	10.0	17.0	25.2	11.6
Estonia	2025	10.1	13.0	20.0	10.7	2025	9.9	16.7	30.3	11.4	2025	5.6	7.8	12.9	6.1
European Union	2025	5.8	10.8	20.9	6.9	2025	4.8	10.6	23.9	6.2	2025	3.8	7.3	15.5	4.6
Finland	2025	14.1	20.4	35.8	15.8	2025	7.8	15.9	35.5	10.0	2025	8.8	17.1	37.0	11.0
France	2025	3.6	8.1	23.1	4.7	2025	4.4	9.7	28.5	5.7	2025	3.9	10.8	20.4	5.2
Germany	2025	7.7	14.5	21.8	9.1	2025	6.1	10.7	19.7	7.2	2025	6.7	8.5	12.9	7.1
Greece	2025	2.0	3.7	11.7	2.4	2025	1.7	4.9	13.2	2.3	2025	1.0	1.3	4.7	1.1
Hungary	2025	3.3	4.4	9.2	3.6	2025	2.6	5.4	16.6	3.3	2025	1.3	2.3	7.5	1.6
Ireland	2025	4.4	6.8	20.7	5.2	2025	6.1	12.0	26.6	7.6	2025	3.6	7.2	17.8	4.6
Italy	2025	4.8	8.4	17.6	5.4	2025	3.3	9.0	20.6	4.2	2025	1.3	3.5	7.9	1.7
Korea	2024	6.8	14.6	24.4	8.2	2024	7.0	16.5	20.2	8.5	2024	8.0	15.8	24.4	9.3
Latvia	2025	5.9	10.3	21.1	7.0	2025	3.5	7.3	16.6	4.4	2025	2.5	6.0	13.5	3.3
Lithuania	2025	6.7	10.6	20.6	7.8	2025	5.9	10.7	23.9	7.3	2025	5.6	8.9	17.1	6.6
Luxembourg	2025	5.1	7.3	12.3	5.7	2025	7.6	13.8	23.1	9.2	2025	4.9	8.2	14.1	5.7
Netherlands	2025	10.7	16.6	28.0	12.3	2025	10.4	20.4	36.6	13.1	2025	6.0	11.9	21.5	7.5
Norway	2025	7.7	11.2	18.7	8.4	2025	8.1	15.0	26.9	9.4	2025	8.4	15.4	26.2	9.8
OECD	2025	6.5	10.7	20.1	7.5	2025	5.7	11.4	23.9	7.1	2025	4.4	8.3	16.8	5.4
Poland	2025	3.8	8.1	21.0	4.9	2025	2.2	6.5	25.9	3.6	2025	1.4	4.7	22.9	2.6
Portugal	2025	3.5	6.9	17.5	4.3	2025	3.6	8.3	25.5	4.7	2025	2.3	5.7	15.3	3.0
Romania	2025	1.4	2.7	6.1	1.7	2025	1.5	2.6	7.8	1.8	2025	0.6	1.5	5.2	0.8
Slovak Republic	2025	4.3	6.6	8.7	4.8	2025	1.6	5.8	10.2	2.7	2025	2.7	4.4	8.9	3.3
Slovenia	2025	5.7	7.2	25.9	6.5	2025	6.5	9.2	33.4	7.6	2025	2.0	2.6	13.7	2.4
Spain	2025	4.6	10.4	22.6	6.0	2025	4.1	11.2	25.8	5.8	2025	3.3	6.7	15.7	4.1
Sweden	2025	13.4	18.2	26.1	14.6	2025	10.0	19.8	31.9	12.3	2025	3.7	9.0	14.0	4.9
Switzerland	2023	4.1	8.6	21.9	5.0	2023	2.7	2.4	10.3	3.0	2023	3.0	3.1	9.9	3.3
Türkiye	2025	3.1	4.0	9.1	3.4	2025	2.6	3.6	9.9	3.0	2025	2.4	2.4	5.4	2.5

Table 5. Purposes of AI adoption, by size, 2025 (or most recent) *(cont.)*

Country	D. ICT security					E. Production or service processes					F. Research and development (R&D) or innovation activity (excluding research on AI)				
	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)
Austria	2025	3.2	10.7	29.6	5.0	2025	6.4	11.1	24.4	7.6	2025	4.3	7.4	18.4	5.1
Belgium	2025	4.6	19.7	50.3	8.6	2025	3.7	11.0	32.0	5.9	2025	5.4	13.6	32.8	7.6
Brazil	2025	4.8	11.2	23.2	5.9	2025	3.2	7.6	13.9	3.9	..	..	..	..	..
Bulgaria	2025	0.8	2.1	7.5	1.2	2025	1.6	3.3	8.6	2.1	2025	1.6	1.9	3.7	1.6
Canada	2023	0.7	1.6	10.8	1.1	2023	1.2	1.1	7.3	1.3	..	..	..	..	..
Croatia	2025	2.8	6.5	18.5	3.7	2025	1.1	2.4	4.2	1.4	2025	0.6	2.0	2.3	0.8
Czech Republic	2025	2.2	9.2	24.7	4.3	2025	1.9	5.3	19.1	3.2	2025	3.1	5.8	15.2	4.1
Denmark	2025	6.8	17.7	34.5	9.4	2025	4.9	9.8	19.8	6.1	2025	4.2	6.9	13.3	4.9
Estonia	2025	3.7	8.4	20.6	4.8	2025	3.1	7.8	9.7	3.9	2025	3.6	5.1	9.0	4.0
European Union	2025	2.5	8.2	26.1	3.9	2025	3.2	6.6	18.4	4.1	2025	2.9	6.3	16.3	3.8
Finland	2025	5.3	13.8	42.1	7.8	2025	5.3	9.9	32.3	6.9	2025	6.7	13.6	27.1	8.5
France	2025	1.8	6.6	28.9	3.2	2025	2.8	6.7	20.1	3.8	2025	3.3	7.3	26.0	4.4
Germany	2025	3.8	9.4	27.6	5.4	2025	4.8	7.3	15.5	5.5	2025	2.6	5.5	12.4	3.3
Greece	2025	3.8	8.9	20.3	4.8	2025	1.7	2.5	6.7	1.9	2025	1.3	2.7	6.6	1.6
Hungary	2025	0.9	2.5	11.2	1.4	2025	1.8	3.8	13.8	2.4	2025	1.6	2.1	4.7	1.8
Ireland	2025	3.1	11.6	31.4	5.2	2025	2.2	5.4	17.9	3.2	2025	4.2	7.9	20.4	5.2
Italy	2025	1.0	6.0	23.2	2.0	2025	2.2	6.1	15.8	2.9	2025	2.6	6.3	15.6	3.3
Korea	2024	20.0	27.6	44.1	21.4	2024	6.5	9.6	15.8	7.1	2024	2.5	6.1	12.8	3.2
Latvia	2025	1.7	6.4	16.1	2.8	2025	3.0	6.2	13.9	3.7	2025	2.4	6.3	10.3	3.2
Lithuania	2025	4.2	9.0	21.1	5.6	2025	2.9	5.4	14.7	3.7	2025	4.6	5.0	6.1	4.7
Luxembourg	2025	4.4	9.8	23.3	5.9	2025	3.7	6.1	14.5	4.5	2025	4.8	8.0	12.1	5.6
Netherlands	2025	4.2	12.8	30.3	6.6	2025	5.4	10.3	24.4	6.9	2025	6.9	12.7	24.0	8.5
Norway	2025	5.7	12.9	32.4	7.3	2025	5.6	7.3	17.5	6.1	2025	3.8	6.2	15.5	4.4
OECD	2025	3.7	9.6	26.7	5.3	2025	3.5	6.8	18.3	4.5	2025	3.6	6.8	15.6	4.4
Poland	2025	0.9	4.2	25.6	2.2	2025	1.5	4.0	22.3	2.5	2025	1.3	3.3	15.6	2.0
Portugal	2025	2.0	7.2	27.8	3.3	2025	2.6	6.1	20.3	3.5	2025	2.2	5.5	15.7	3.0
Romania	2025	0.7	2.1	7.9	1.1	2025	0.9	2.3	8.4	1.4	2025	1.1	1.9	5.2	1.4
Slovak Republic	2025	1.4	5.0	11.8	2.4	2025	1.2	2.6	9.3	1.8	2025	1.8	3.9	8.9	2.5
Slovenia	2025	6.0	14.2	54.6	8.6	2025	3.0	8.0	31.6	4.5	2025	3.6	4.4	17.8	4.1
Spain	2025	2.0	7.9	24.2	3.5	2025	3.1	7.6	21.4	4.3	2025	3.2	7.7	18.5	4.3
Sweden	2025	3.5	12.3	30.6	5.8	2025	8.1	11.2	25.4	9.2	2025	6.1	12.2	21.6	7.6
Switzerland	2023	2.2	2.9	15.3	2.5	2023	4.4	8.1	17.6	5.4	..	..	..	..	..
Türkiye	2025	1.4	2.1	7.8	1.7	2025	2.7	3.7	10.7	3.0	2025	2.7	3.8	8.3	3.0

Table 5. Purposes of AI adoption, by size, 2025 (or most recent) *(cont.)*

Country	G. Logistics				
	Year	Small	Medium	Large	All (10+)
Austria	2025	1.0	2.2	8.8	1.4
Belgium	2025	0.9	4.5	18.9	2.1
Brazil	2025	3.2	6.3	15.1	3.8
Bulgaria	2025	0.9	0.8	2.5	0.9
Canada	2023	0.0	0.5	2.2	0.2
Croatia	2025	0.1	1.6	4.5	0.4
Czech Republic	2025	0.7	1.6	9.4	1.2
Denmark	2025	2.8	5.5	15.7	3.6
Estonia	2025	1.3	1.6	5.2	1.4
European Union	2025	0.8	2.0	8.2	1.2
Finland	2025	2.0	3.3	16.8	2.7
France	2025	0.7	2.5	8.1	1.2
Germany	2025	0.9	1.7	5.9	1.2
Greece	2025	0.2	0.4	2.3	0.2
Hungary	2025	0.4	0.5	7.6	0.6
Ireland	2025	0.8	3.3	9.9	1.5
Italy	2025	0.8	2.0	6.8	1.0
Korea	2024	4.6	6.4	10.6	4.9
Latvia	2025	0.8	1.6	6.7	1.1
Lithuania	2025	2.6	3.3	6.6	2.8
Luxembourg	2025	0.8	2.0	5.8	1.2
Netherlands	2025	1.3	3.4	11.9	2.1
Norway	2025	1.1	2.0	7.9	1.4
OECD	2025	1.2	2.3	8.9	1.6
Poland	2025	0.4	1.2	10.7	0.8
Portugal	2025	0.6	2.1	9.5	1.0
Romania	2025	0.4	0.9	3.4	0.5
Slovak Republic	2025	0.8	1.5	5.4	1.1
Slovenia	2025	0.9	0.6	16.1	1.2
Spain	2025	1.0	2.1	9.8	1.4
Sweden	2025	1.5	2.5	9.8	2.0
Switzerland	2023	1.9	2.5	7.8	2.1
Türkiye	2025	0.9	1.2	4.3	1.0

Notes: The most recent observation refers to 2025 except for Korea (2024), and Canada and Switzerland (2023).
"European Union" refers to 27 countries.
For Brazil, retail trade (ISIC Rev.4 Section G Division 47), and administrative and support service activities (ISIC Rev.4 Section N), are not collected.
For Canada, the North American Industry Classification System is used instead of ISIC Rev.4.
For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC Rev.4 Section G Division 47).
For Switzerland, data for all enterprises refer to businesses with 5 or more employees (instead of 10 or more), and small enterprises refer to 5-49 as opposed to 10-49 persons employed.

Sources: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*; Eurostat (2025[2]), *Digital Economy and Society Comprehensive Database*, *https://ec.europa.eu/eurostat/web/digital-economy-and-society/database/comprehensive-database*.

StatLink https://stat.link/m31qj0

Table 6. Adoption of AI technologies, by size, 2025 (or most recent)

As a percentage of enterprises in each group

Country	A. AI technologies performing analysis of written language (e.g. text mining)					B. AI technologies generating written or spoken language (natural language generation, speech synthesis)					C. AI technologies converting spoken language into machine-readable format (speech recognition)				
	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)
Austria	2025	19.1	32.7	50.7	21.9	2025	12.7	25.1	42.7	15.3	2025	7.8	14.6	29.5	9.4
Belgium	2025	18.5	38.3	59.0	23.0	2025	11.4	30.3	53.4	15.9	2025	8.9	22.8	42.9	12.3
Brazil	2025	5.8	10.7	16.2	6.6	2025	4.7	8.9	11.5	5.3	2025	2.7	4.2	9.1	3.0
Bulgaria	2025	4.2	7.4	14.7	5.0	2025	2.9	3.7	10.0	3.2	2025	2.3	3.8	7.6	2.7
Canada	..	..	..	..	..	2023	5.7	6.8	18.9	6.2	2023	2.2	2.1	6.3	2.3
Croatia	2025	8.4	15.7	21.5	9.8	2025	6.4	12.1	16.6	7.4	2025	3.4	9.2	13.7	4.4
Czech Republic	2025	4.7	13.0	31.6	7.1	2025	9.9	20.7	36.7	12.8	2025	2.6	4.9	17.8	3.6
Denmark	2025	25.9	39.3	57.4	29.1	2025	27.8	40.1	58.1	30.8	2025	13.1	21.5	35.4	15.2
Estonia	2025	11.0	15.1	25.8	12.0	2025	13.2	22.3	33.5	15.1	2025	3.7	7.4	20.0	4.7
European Union	2025	9.9	18.2	35.0	11.8	2025	7.0	14.8	31.7	8.8	2025	5.9	11.3	26.1	7.2
Finland	2025	24.6	40.4	68.7	28.5	2025	17.1	28.5	54.6	20.1	2025	12.1	22.5	43.8	14.8
France	2025	7.9	18.9	42.7	10.2	2025	5.7	15.9	38.7	7.8	2025	4.6	10.8	34.0	6.1
Germany	2025	11.8	18.7	32.3	13.5	2025	7.3	14.1	28.6	9.0	2025	9.4	15.4	28.4	10.9
Greece	2025	5.1	10.0	22.4	6.1	2025	3.2	5.5	15.1	3.7	2025	2.9	4.0	11.5	3.2
Hungary	2025	4.5	7.6	21.4	5.3	2025	3.5	6.2	15.4	4.2	2025	2.8	5.7	17.7	3.5
Ireland	2025	8.7	15.5	34.3	10.5	2025	7.7	12.2	29.8	9.0	2025	4.3	10.6	23.6	5.8
Italy	2025	9.9	20.3	42.3	11.6	2025	5.0	11.8	30.0	6.2	2025	5.8	10.6	28.3	6.8
Korea	2024	0.9	4.9	4.3	1.4	2024	2.5	5.3	16.1	3.2	2024	1.9	3.3	6.8	2.2
Latvia	2025	7.5	14.4	30.5	9.1	2025	4.0	7.1	13.5	4.7	2025	3.2	5.9	16.6	3.9
Lithuania	2025	13.2	24.2	39.3	16.0	2025	5.3	10.2	21.9	6.7	2025	3.3	6.2	16.4	4.3
Luxembourg	2025	23.0	31.2	43.4	25.0	2025	11.8	20.3	30.1	13.9	2025	11.7	16.8	26.8	13.0
Netherlands	2025	20.0	31.2	47.7	22.9	2025	13.4	24.6	41.8	16.3	2025	9.1	18.5	34.5	11.6
Norway	2025	20.2	36.6	50.2	23.1	2025	12.9	24.5	40.0	15.1	2025	8.5	17.9	30.8	10.3
OECD	2025	11.6	20.1	35.3	13.6	2025	8.5	15.6	30.5	10.2	2025	5.5	10.4	22.9	6.8
Poland	2025	1.5	3.3	12.5	2.1	2025	3.7	8.9	27.2	5.2	2025	0.9	2.9	13.1	1.6
Portugal	2025	5.8	9.7	27.6	6.9	2025	4.0	9.7	25.5	5.3	2025	3.2	6.0	19.8	4.0
Romania	2025	2.8	5.4	15.1	3.6	2025	2.5	4.5	13.1	3.1	2025	1.8	3.2	10.2	2.3
Slovak Republic	2025	8.8	13.6	27.6	10.4	2025	7.4	15.0	23.5	9.3	2025	5.7	8.6	22.9	6.9
Slovenia	2025	12.1	21.1	38.3	14.2	2025	5.5	5.6	25.1	6.1	2025	4.0	4.6	20.8	4.5
Spain	2025	8.1	16.0	34.3	10.0	2025	7.0	14.8	32.1	8.9	2025	5.5	12.7	26.9	7.2
Sweden	2025	22.5	37.1	54.2	25.8	2025	16.4	31.1	48.9	19.7	2025	8.9	15.0	32.2	10.6
Switzerland	2023	2.5	5.6	9.2	3.3	2023	1.9	2.0	12.6	2.1	2023	0.7	5.8	3.6	1.5
Türkiye	2025	2.8	3.8	10.9	3.1	2025	2.4	3.3	9.1	2.7	2025	2.3	3.5	7.9	2.6

Table 6. Adoption of AI technologies, by size, 2025 (or most recent) *(cont.)*

Country	D. AI technologies automating different workflows or assisting in decision making (e.g. AI based software robotic process automation)					E. Machine learning (e.g. deep learning) for data analysis					F. AI technologies identifying objects or persons based on images or videos (image recognition, image processing)				
	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)	Year	Small	Medium	Large	All (10+)
Austria	2025	5.1	10.1	26.1	6.4	2025	5.7	13.6	31.4	7.6	2025	2.4	5.3	12.9	3.2
Belgium	2025	7.3	21.1	45.0	10.8	2025	8.2	19.0	42.8	11.1	2025	4.7	10.4	31.3	6.5
Brazil	2025	9.8	22.7	37.2	11.8	2025	3.3	9.9	18.0	4.3	2025	4.3	12.1	20.7	5.5
Bulgaria	2025	3.1	5.8	15.4	3.8	2025	1.8	3.5	11.4	2.3	2025	2.1	3.0	7.7	2.4
Canada	2023	1.8	2.9	12.4	2.2	2023	1.4	1.9	9.8	1.7	2023	1.4	1.1	5.5	1.5
Croatia	2025	1.7	7.1	19.7	2.9	2025	4.3	7.7	12.9	5.0	2025	2.3	6.5	8.8	3.0
Czech Republic	2025	2.6	6.7	21.5	4.1	2025	5.0	11.3	27.3	6.9	2025	1.1	3.9	14.6	2.1
Denmark	2025	12.3	24.3	42.3	15.2	2025	10.1	20.6	40.7	12.8	2025	6.1	10.4	20.8	7.3
Estonia	2025	2.2	7.1	17.4	3.3	2025	2.9	7.1	15.5	3.9	2025	3.4	5.4	11.0	3.9
European Union	2025	4.1	8.7	24.4	5.3	2025	3.8	8.7	25.0	5.1	2025	3.0	5.8	16.7	3.8
Finland	2025	11.8	24.2	51.7	15.0	2025	10.3	18.9	46.4	12.9	2025	6.1	11.3	30.1	7.7
France	2025	3.4	7.3	25.0	4.5	2025	3.0	7.2	29.0	4.2	2025	2.9	5.6	19.4	3.7
Germany	2025	6.0	9.0	21.2	7.0	2025	4.9	8.8	22.4	6.0	2025	3.7	5.9	13.7	4.3
Greece	2025	1.3	3.6	15.6	1.9	2025	2.4	5.4	17.5	3.1	2025	1.8	2.9	7.3	2.1
Hungary	2025	3.1	5.3	21.9	3.9	2025	1.7	4.3	12.4	2.3	2025	2.5	3.8	12.0	2.9
Ireland	2025	4.2	11.3	28.4	6.0	2025	4.1	11.3	27.2	5.8	2025	2.0	4.5	13.7	2.7
Italy	2025	2.2	5.7	18.9	2.9	2025	2.4	6.8	22.1	3.3	2025	2.5	4.5	14.5	2.9
Korea	2024	18.6	25.7	42.6	20.0	2024	2.3	4.6	12.6	2.8	2024	21.4	29.2	44.5	22.8
Latvia	2025	3.0	6.0	20.6	3.9	2025	2.2	6.1	16.1	3.2	2025	2.9	6.3	16.1	3.7
Lithuania	2025	6.7	13.3	31.4	8.7	2025	3.2	8.4	19.3	4.6	2025	5.0	6.7	14.7	5.6
Luxembourg	2025	6.2	10.4	20.0	7.4	2025	5.1	10.8	19.6	6.6	2025	3.7	5.7	13.3	4.4
Netherlands	2025	6.2	14.2	30.6	8.5	2025	7.2	15.6	32.3	9.5	2025	4.0	8.0	18.1	5.2
Norway	2025	8.0	15.5	30.1	9.5	2025	7.6	16.0	35.9	9.5	2025	5.3	7.4	18.5	5.9
OECD	2025	5.1	10.3	25.8	6.5	2025	4.3	9.6	25.1	5.7	2025	4.0	7.0	18.5	4.9
Poland	2025	1.3	4.9	26.5	2.6	2025	0.9	3.3	20.4	1.8	2025	1.0	2.9	19.2	1.8
Portugal	2025	2.8	7.1	27.7	4.0	2025	2.8	8.0	26.6	4.0	2025	2.3	5.3	20.0	3.1
Romania	2025	1.6	3.2	10.8	2.2	2025	2.2	3.7	10.4	2.7	2025	1.2	2.6	8.3	1.6
Slovak Republic	2025	3.3	8.2	16.4	4.7	2025	2.8	5.6	15.0	3.8	2025	3.1	6.8	13.6	4.2
Slovenia	2025	2.3	4.4	21.6	3.1	2025	3.5	7.9	34.2	5.0	2025	6.9	10.1	47.2	8.5
Spain	2025	5.4	9.8	28.5	6.7	2025	4.0	9.7	29.3	5.6	2025	4.4	8.7	22.6	5.6
Sweden	2025	6.7	14.8	31.3	8.8	2025	6.6	14.5	33.8	8.8	2025	3.6	9.0	17.9	4.9
Switzerland	2023	1.8	1.9	7.0	1.9	2023	3.8	7.7	26.0	4.8	2023	2.3	5.4	14.6	2.9
Türkiye	2025	2.5	3.7	14.4	3.0	2025	2.4	3.7	12.2	2.9	2025	2.5	3.6	12.2	2.9

Table 6. Adoption of AI technologies, by size, 2025 (or most recent) *(cont.)*

Country	G. AI technologies enabling physical movement of machines via autonomous decisions based on observation of surroundings (autonomous robots, self-driving vehicles, autonomous drones)				
	Year	Small	Medium	Large	All (10+)
Austria	2025	1.1	2.7	9.2	1.6
Belgium	2025	1.7	6.0	18.1	2.9
Brazil	2025	1.0	2.0	4.6	1.2
Bulgaria	2025	0.6	0.9	3.0	0.7
Croatia	2025	0.6	1.2	3.6	0.7
Czech Republic	2025	0.6	1.4	9.9	1.1
Denmark	2025	3.6	6.3	13.8	4.4
Estonia	2025	0.5	1.7	4.5	0.8
European Union	2025	1.0	2.2	8.6	1.4
Finland	2025	1.7	4.2	20.3	2.7
France	2025	1.4	3.0	7.3	1.7
Germany	2025	1.2	2.1	6.8	1.5
Greece	2025	0.2	0.8	4.4	0.4
Hungary	2025	0.6	0.9	8.0	0.9
Ireland	2025	0.3	2.1	7.9	0.8
Italy	2025	0.8	1.7	5.9	1.0
Korea	2024	0.7	1.4	4.4	0.9
Latvia	2025	0.9	2.5	6.3	1.3
Lithuania	2025	2.2	4.0	10.3	2.7
Luxembourg	2025	1.2	2.6	8.7	1.7
Netherlands	2025	1.6	3.6	12.5	2.4
Norway	2025	1.7	3.1	9.3	2.1
OECD	2025	1.1	2.4	9.2	1.5
Poland	2025	0.3	0.8	10.2	0.7
Portugal	2025	1.0	2.1	10.9	1.4
Romania	2025	0.5	1.1	4.6	0.7
Slovak Republic	2025	0.5	1.5	7.2	0.9
Slovenia	2025	1.2	0.7	13.1	1.4
Spain	2025	1.0	2.9	12.4	1.6
Sweden	2025	0.7	1.9	7.1	1.1
Switzerland	2023	0.6	0.9	4.7	0.7
Türkiye	2025	1.4	1.6	6.5	1.5

Notes: The most recent observation refers to 2025 except for Korea (2024), and Canada and Switzerland (2023). "European Union" refers to 27 countries. For Brazil, retail trade (ISIC Rev.4 Section G Division 47), and administrative and support service activities (ISIC Rev.4 Section N), are not collected. For Canada, the North American Industry Classification System is used instead of ISIC Rev.4. Moreover, the survey question used to derive the indicator on "AI technologies generating written, spoken language or programming codes (natural language generation, speech synthesis)" asks only whether enterprises use "generative AI" in general, without specifying the type of output. In addition, the survey question used to derive the indicator on "machine learning (e.g. deep learning) for data analysis" combines several categories, asking about the use of "generative AI", "other machine learning" and other types of AI. The data provided reflect only the "other machine learning" category, thereby excluding use-cases where generative AI applications are based on machine learning. For Korea, wholesale trade, except of motor vehicles and motorcycles (ISIC G: Division 46), includes retail trade, except of motor vehicles and motorcycles (ISIC G. Division 47). For Switzerland, data for all enterprises refer to businesses with 5 or more employees (instead of 10 or more), and small enterprises refer to 5-49 as opposed to 10-49 persons employed.

Sources: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*; Eurostat (2025[2]), *Digital Economy and Society Comprehensive Database*, *https://ec.europa.eu/eurostat/web/digital-economy-and-society/database/comprehensive-database*.

StatLink https://stat.link/m31qj0

Table 7. Individuals using any generative AI tools to create content in the last three months, by purpose of use, 2025 (or most recent)

As a share of the individuals aged 16-74

Country	Year	Private purposes	Professional purposes	Formal education	All
Austria	2025	31.6	21.2	14.3	39.4
Belgium	2025	33.5	20.8	10.3	42.0
Brazil	2025	25.0	15.9	13.6	28.4
Bulgaria	2025	20.2	8.4	5.2	22.5
Colombia	2024	..	..	..	15.9
Croatia	2025	24.7	9.0	13.4	27.5
Czech Republic	2025	28.4	13.6	8.4	35.4
Denmark	2025	34.8	27.2	17.9	48.4
Estonia	2025	37.5	25.1	15.4	46.6
European Union	2025	25.1	15.1	9.4	32.7
Finland	2025	30.3	25.1	11.5	46.3
France	2025	27.7	18.4	11.0	37.5
Germany	2025	27.2	15.8	6.0	32.3
Greece	2025	40.9	16.1	11.2	44.1
Hungary	2025	2.1	1.3	0.6	29.6
Ireland	2025	30.9	22.4	12.5	44.9
Italy	2025	12.8	8.0	6.4	19.9
Japan	2024	..	..	..	26.7
Korea	2025	43.9	24.9	..	46.4
Latvia	2025	26.6	14.7	7.8	33.4
Lithuania	2025	32.3	18.8	9.0	36.9
Luxembourg	2025	35.7	24.9	12.2	42.5
Netherlands	2025	28.1	26.6	13.1	44.7
Norway	2025	47.3	35.4	14.2	56.3
OECD	2025	30.0	19.0	11.3	37.2
Poland	2025	19.1	8.4	4.6	22.7
Portugal	2025	33.2	19.9	14.5	38.7
Romania	2025	14.8	5.2	3.4	17.8
Slovak Republic	2025	25.4	11.0	9.1	30.8
Slovenia	2025	31.2	15.2	9.2	37.6
Spain	2025	30.2	17.9	16.3	37.9
Sweden	2025	33.7	21.0	21.0	42.0
Switzerland	2025	40.9	34.4	20.7	47.0
Türkiye	2025	13.7	5.8	5.4	17.2

Notes: "European Union" refers to 27 countries.
For Colombia, data refer to 2024 and the question was applied to all individuals who used the Internet in the past 12 months.
For Japan, data refer to 2024 and to individuals aged 20 to 69. No reference period is specified.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/m31qj0

Table 8. Individuals using any generative AI tools to create content in the last three months, by age, 2025 (or most recent)

As a percentage of the population in each age group

Country	Year	16-24	25-54	55-74	All
Austria	2025	73.2	47.3	14.9	39.4
Belgium	2025	74.4	49.4	17.0	42.0
Brazil	2025	53.8	30.0	6.5	28.4
Bulgaria	2025	50.0	26.8	8.1	22.5
Colombia	2024	30.4	15.8	4.1	15.9
Croatia	2025	58.2	33.8	7.1	27.5
Czech Republic	2025	78.5	39.5	11.3	35.4
Denmark	2025	77.6	55.2	24.1	48.4
Estonia	2025	82.8	56.0	15.9	46.6
European Union	2025	63.8	38.5	12.0	32.7
Finland	2025	67.0	58.0	20.0	46.3
France	2025	76.5	42.4	13.1	37.5
Germany	2025	52.6	41.0	13.1	32.3
Greece	2025	83.5	50.8	20.5	44.1
Hungary	2025	62.9	33.2	10.6	29.6
Ireland	2025	66.5	50.9	18.0	44.9
Italy	2025	47.2	22.3	7.7	19.9
Korea	2025	70.6	62.5	17.4	46.4
Latvia	2025	73.2	41.1	8.6	33.4
Lithuania	2025	73.7	47.4	8.4	36.9
Luxembourg	2025	66.0	50.7	15.7	42.5
Netherlands	2025	73.6	52.9	19.3	44.7
Norway	2025	79.7	64.3	30.7	56.3
OECD	2025	68.3	44.5	14.2	37.2
Poland	2025	49.3	27.4	5.0	22.7
Portugal	2025	76.5	47.7	12.1	38.7
Romania	2025	44.0	20.8	3.8	17.8
Slovak Republic	2025	75.5	35.7	8.2	30.8
Slovenia	2025	73.0	44.7	14.6	37.6
Spain	2025	75.6	43.1	14.2	37.9
Sweden	2025	67.0	50.2	16.1	42.0
Switzerland	2025	78.6	54.7	22.0	47.0
Türkiye	2025	38.5	17.4	1.8	17.2

Notes: "European Union" refers to 27 countries.
For Colombia, data refer to 2024 and the question was applied to all individuals who used the Internet in the past 12 months.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Table 9. Individuals using any generative AI tools to create content in the last three months, by education attainment, 2025 (or most recent)

As a percentage of the population in each group

Country	Year	No or low level of educational attainment	Middle level of educational attainment	High level of educational attainment	All
Austria	2025	28.0	33.5	54.1	39.4
Belgium	2025	26.3	35.5	55.9	42.0
Brazil	2025	5.3	27.0	58.8	28.4
Bulgaria	2025	13.6	15.3	41.2	22.5
Colombia	2024	2.4	17.6	32.9	15.9
Croatia	2025	11.0	28.5	36.5	27.5
Czech Republic	2025	47.2	25.7	55.8	35.4
Denmark	2025	44.6	39.2	59.7	48.4
Estonia	2025	47.6	39.1	54.7	46.6
European Union	2025	22.4	25.9	48.7	32.7
Finland	2025	47.8	36.3	57.3	46.3
France	2025	28.9	29.0	50.8	37.5
Germany	2025	24.4	26.5	46.0	32.3
Greece	2025	18.9	36.6	66.4	44.1
Hungary	2025	21.9	23.0	45.1	29.6
Ireland	2025	48.5	43.9	44.0	44.9
Italy	2025	10.9	19.9	34.8	19.9
Korea	2025	28.8	30.4	62.1	46.4
Latvia	2025	42.4	21.8	46.9	33.4
Lithuania	2025	44.0	17.9	53.9	36.9
Luxembourg	2025	16.7	35.2	59.6	42.5
Netherlands	2025	31.3	37.7	58.7	44.7
Norway	2025	52.6	44.3	65.2	56.3
OECD	2025	30.5	30.9	52.5	37.2
Poland	2025	29.1	12.6	40.8	22.7
Portugal	2025	14.6	44.9	63.4	38.7
Romania	2025	11.0	17.7	25.0	17.8
Slovak Republic	2025	32.8	22.3	51.7	30.8
Slovenia	2025	31.3	28.4	59.0	37.6
Spain	2025	20.2	37.0	50.6	37.9
Sweden	2025	42.2	32.2	54.7	42.0
Switzerland	2025	34.2	41.5	56.5	47.0
Türkiye	2025	6.4	22.4	35.8	17.2

Notes: "European Union" refers to 27 countries.
For Colombia, data refer to 2024 and the question was applied to all individuals who used the Internet in the past 12 months.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

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Table 10. Individuals using any generative AI tools to create content in the last three months, by sex, 2025 (or most recent)

As a percentage of the population in each group

Country	Year	Women	Men	All
Austria	2025	37.3	41.6	39.4
Belgium	2025	41.4	42.6	42.0
Brazil	2025	27.1	29.8	28.4
Bulgaria	2025	21.7	23.3	22.5
Colombia	2024	14.6	17.3	15.9
Croatia	2025	28.2	26.8	27.5
Czech Republic	2025	33.3	37.5	35.4
Denmark	2025	44.5	52.4	48.4
Estonia	2025	47.4	45.8	46.6
European Union	2025	30.4	34.9	32.7
Finland	2025	45.0	47.5	46.3
France	2025	35.2	39.8	37.5
Germany	2025	29.6	34.9	32.3
Greece	2025	42.6	45.6	44.1
Hungary	2025	26.5	32.7	29.6
Ireland	2025	40.3	49.6	44.9
Italy	2025	18.3	21.4	19.9
Korea	2025	42.2	50.4	46.4
Latvia	2025	32.2	34.7	33.4
Lithuania	2025	37.6	36.2	36.9
Luxembourg	2025	39.4	45.5	42.5
Netherlands	2025	41.9	47.5	44.7
Norway	2025	52.7	59.9	56.3
OECD	2025	35.5	39.8	37.2
Poland	2025	19.1	26.4	22.7
Portugal	2025	37.7	39.8	38.7
Romania	2025	16.0	19.6	17.8
Slovak Republic	2025	27.3	34.3	30.8
Slovenia	2025	38.3	36.8	37.6
Spain	2025	35.9	39.9	37.9
Sweden	2025	38.5	45.4	42.0
Switzerland	2025	43.5	50.6	47.0
Türkiye	2025	16.4	18.0	17.2

Notes: "European Union" refers to 27 countries.
For Colombia, data refer to 2024 and the question was applied to all individuals who used the Internet in the past 12 months.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/m31qj0

Table 11. Individuals using any generative AI tools to create content in the last three months, by income quintile, 2025 (or most recent)

As a percentage of the population in each age group

Country		By quintile					
	Year	1st Q	2nd Q	3rd Q	4th Q	5th Q	All
Austria	2025	42.3	35.1	33.9	39.5	46.8	39.4
Belgium	2025	44.8	43.1	38.1	43.1	41.0	42.0
Brazil	2025	13.5	22.4	36.6	51.0	53.5	28.4
Bulgaria	2025	6.1	13.7	20.4	29.7	42.2	22.5
Colombia	2024	7.2	9.2	8.6	16.1	28.7	15.9
Croatia	2025	24.0	18.5	25.5	27.1	38.4	27.5
Czech Republic	2025	27.5	28.5	31.9	32.6	53.0	35.4
Denmark	2025	54.8	27.9	39.8	45.5	63.2	48.4
Estonia	2025	32.5	33.1	44.3	53.4	66.6	46.6
European Union	2025	27.4	25.7	29.9	34.6	44.0	32.7
Finland	2025	42.3	36.7	40.2	43.7	63.2	46.3
France	2025	37.7	30.3	32.6	37.5	48.5	37.5
Germany	2025	28.8	23.8	27.6	34.3	43.3	32.3
Greece	2025	27.9	37.5	44.6	52.3	60.9	44.1
Hungary	2025	18.8	20.6	27.2	32.7	47.3	29.6
Ireland	2025	17.8	32.9	40.9	45.5	60.1	44.9
Italy	2025	14.7	17.2	19.0	22.9	27.0	19.9
Korea	2025	10.5	23.8	38.2	43.3	55.9	46.4
Latvia	2025	10.0	17.5	32.7	35.5	53.8	33.4
Lithuania	2025	15.2	23.1	36.8	47.5	59.0	36.9
Luxembourg	2025	30.8	39.3	45.0	58.1	55.8	42.5
Netherlands	2025	40.9	33.1	41.9	44.8	54.4	44.7
Norway	2025	55.3	47.9	49.6	60.1	65.8	56.3
OECD	2025	28.4	28.7	34.0	39.4	50.3	37.2
Poland	2025	15.0	16.8	20.4	23.8	35.1	22.7
Portugal	2025	22.1	29.9	39.4	45.3	55.4	38.7
Romania	2025	7.8	11.3	18.2	19.5	28.5	17.8
Slovak Republic	2025	34.9	31.1	33.1	24.8	29.5	30.8
Slovenia	2025	26.2	27.3	34.4	40.6	65.8	37.6
Spain	2025	31.2	30.7	32.0	39.2	50.9	37.9
Sweden	2025	42.9	40.5	38.6	40.3	46.6	42.0
Türkiye	2025	6.9	10.2	14.2	21.3	29.3	17.2

Notes: "European Union" refers to 27 countries.
Income levels increase as the number of quintiles and quartiles increase, 1st Q being the lowest.
For Colombia, data refer to 2024 and the question was applied to all individuals who used the Internet in the past 12 months.

Source: OECD (2026[1]), *ICT Access and Usage Database*, *https://oe.cd/dx/ict-access-usage*.

StatLink https://stat.link/m31qj0

Experimental estimates of economic activity

The rapid pace of digital transformation and the limited availability of timely data create a growing need for experimental indicators. Such indicators complement official statistics by providing earlier insights where publication lags or where comprehensive statistics are scarce. They allow policymakers to monitor emerging trends and inform decision making in near real-time, while acknowledging these estimates are provisional and continuously refined.

ICT sector growth nowcasts

Table 12. Nowcasts for ICT sector growth, 2025 (or most recent)

Value added in volumes

Country	Year	Percentage point estimate	Lower bound	Upper bound
Austria	2024	4.14	2.22	6.06
Austria	2025	4.23	3.41	5.05
Belgium	2024	5.73	4.40	7.06
Belgium	2025	4.78	3.08	6.48
Canada	2024	4.97	3.53	6.40
Canada	2025	1.75	1.02	2.47
Costa Rica	2024	0.69	-1.99	3.37
Costa Rica	2025	7.85	4.54	11.17
Czech Republic	2024	7.61	6.34	8.88
Czech Republic	2025	4.09	2.78	5.40
Denmark	2025	3.52	-0.15	7.19
Estonia	2025	4.62	1.52	7.72
Finland	2025	4.34	0.00	8.68
France	2024	8.58	6.57	10.60
France	2025	3.87	1.15	6.58
Germany	2024	3.77	2.00	5.55
Germany	2025	8.02	5.91	10.13
Greece	2024	-0.68	-2.27	0.91
Greece	2025	4.06	1.32	6.79
Hungary	2025	9.00	7.31	10.70
Iceland	2025	6.76	5.50	8.02
Italy	2025	1.11	0.77	1.45
Latvia	2023	6.14	4.34	7.93
Latvia	2024	6.13	4.88	7.38
Latvia	2025	7.48	4.87	10.08
Lithuania	2024	5.72	4.15	7.28
Lithuania	2025	9.07	5.40	12.75
Mexico	2025	7.56	5.25	9.88
Netherlands	2025	4.78	4.26	5.31
Norway	2025	4.63	3.96	5.31
Poland	2023	8.97	7.70	10.24
Poland	2024	9.36	7.99	10.72
Poland	2025	7.63	6.06	9.20
Portugal	2024	8.71	7.19	10.24
Portugal	2025	3.93	1.33	6.54
Slovak Republic	2025	0.61	-1.42	2.63
Slovenia	2024	4.33	3.85	4.82
Slovenia	2025	4.18	2.72	5.64
Spain	2024	2.94	1.34	4.53
Spain	2025	2.77	1.43	4.11
Sweden	2024	-0.10	-3.54	3.33

Table 12. Nowcasts for ICT sector growth, 2025 (or most recent) *(cont.)*

Country	Year	Percentage point estimate	Lower bound	Upper bound
Sweden	2025	6.06	3.46	8.66
Switzerland	2023	1.09	-2.27	4.44
Switzerland	2024	-0.09	-4.11	3.94
Switzerland	2025	1.88	0.86	2.90
United Kingdom	2024	5.53	3.87	7.19
United Kingdom	2025	5.06	2.49	7.63
United States	2025	4.51	3.25	5.76

Notes: The nowcast estimates are the mean predictions from an ensemble of models based on the TiVA-based optimal selective pool model. The 90% confidence bands indicate the range within which the true growth rate is expected to fall with 90% probability. They were calculated from the standard deviation of the predictions across the ensemble of models. Please refer to OECD (2026[3]) for more details on the methodology.

Sources: OECD (2026[13]), *Data Kitchen* (database), *https://goingdigital.oecd.org/datakitchen* based on OECD (2026[4]), *STAN Database*, *https://www.oecd.org/en/data/datasets/structural-analysis-database.htm*; OECD (2026[5]), *TiVA Database*, *https://data-explorer.oecd.org/s/4rq*; and *Google Trends* (dataset) (accessed from 1 to 20 January 2026).

StatLink *https://stat.link/38pufs*

Experimental estimates of digital trade

Table 13. Experimental estimates of digital trade

By country and year, broken down into digitally ordered, digitally delivered, and total digital trade, in USD million, 2010-2023

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Austria	2010	26238	15076	41314
Austria	2011	31300	18206	49506
Austria	2012	27385	18717	46101
Austria	2013	31737	20851	52587
Austria	2014	37177	22257	59434
Austria	2015	28696	18692	47388
Austria	2016	28202	19463	47665
Austria	2017	30375	21406	51781
Austria	2018	35008	24283	59290
Austria	2019	36610	24835	61444
Austria	2020	36054	28795	64849
Austria	2021	35434	33492	68926
Austria	2022	44021	33973	77994
Austria	2023	51570	35845	87414
Belgium	2010	34722	40494	75217
Belgium	2011	43661	44074	87735
Belgium	2012	46050	44740	90790
Belgium	2013	48313	51617	99930
Belgium	2014	48888	58065	106952
Belgium	2015	41320	53395	94715
Belgium	2016	44181	54041	98222
Belgium	2017	47759	58910	106670
Belgium	2018	49594	62520	112114
Belgium	2019	48880	62615	111494
Belgium	2020	49319	73127	122446
Belgium	2021	57854	83533	141386
Belgium	2022	66397	81585	147981
Belgium	2023	68126	88785	156910
Bulgaria	2010	183	1058	1241
Bulgaria	2011	346	1407	1753
Bulgaria	2012	187	1492	1679
Bulgaria	2013	361	1501	1862
Bulgaria	2014	595	2000	2595
Bulgaria	2015	446	2365	2811
Bulgaria	2016	710	2501	3211
Bulgaria	2017	625	2416	3041
Bulgaria	2018	741	2954	3694
Bulgaria	2019	1031	3564	4595
Bulgaria	2020	1068	4233	5301
Bulgaria	2021	1572	5493	7065
Bulgaria	2022	2693	6275	8967

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Bulgaria	2023	3739	7394	11133
Canada	2010	29323	37485	66808
Canada	2011	33445	42639	76084
Canada	2012	35632	45011	80643
Canada	2013	35491	45984	81475
Canada	2014	34423	45459	79882
Canada	2015	30131	41300	71431
Canada	2016	29752	41783	71535
Canada	2017	32646	44475	77121
Canada	2018	34676	51167	85842
Canada	2019	35472	56309	91781
Canada	2020	29753	68810	98563
Canada	2021	50549	77696	128246
Canada	2022	43531	76658	120189
Canada	2023	28319	80134	108453
Croatia	2010	2018	1410	3427
Croatia	2011	2267	1667	3934
Croatia	2012	1719	1414	3133
Croatia	2013	2050	1321	3371
Croatia	2014	2236	1447	3683
Croatia	2015	1937	1474	3410
Croatia	2016	1629	1652	3282
Croatia	2017	1671	1865	3537
Croatia	2018	2078	2207	4285
Croatia	2019	2455	2449	4904
Croatia	2020	2928	2745	5674
Croatia	2021	2931	3443	6374
Croatia	2022	3225	3809	7035
Croatia	2023	4624	4690	9313
Czech Republic	2010	25607	5597	31204
Czech Republic	2011	28087	7018	35105
Czech Republic	2012	28253	6946	35199
Czech Republic	2013	31232	7231	38463
Czech Republic	2014	32286	7638	39924
Czech Republic	2015	27578	6896	34474
Czech Republic	2016	27237	7536	34773
Czech Republic	2017	28702	8417	37119
Czech Republic	2018	35084	9593	44676
Czech Republic	2019	33011	9904	42915
Czech Republic	2020	28722	12042	40763
Czech Republic	2021	37039	14649	51688
Czech Republic	2022	44361	15246	59608
Czech Republic	2023	32491	17296	49786
Denmark	2010	10103	10994	21098

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Denmark	2011	10969	12761	23730
Denmark	2012	10907	13465	24372
Denmark	2013	11675	13383	25058
Denmark	2014	14260	13342	27602
Denmark	2015	14241	11701	25942
Denmark	2016	11988	12656	24644
Denmark	2017	17764	14563	32327
Denmark	2018	15704	16286	31990
Denmark	2019	23181	18402	41583
Denmark	2020	26283	22414	48697
Denmark	2021	17735	24116	41851
Denmark	2022	44469	26187	70657
Denmark	2023	48817	33886	82703
Estonia	2010	1113	1021	2134
Estonia	2011	1891	1177	3068
Estonia	2012	1682	1162	2843
Estonia	2013	1930	1336	3265
Estonia	2014	2032	1524	3556
Estonia	2015	1715	1331	3046
Estonia	2016	2006	1512	3519
Estonia	2017	2125	1737	3862
Estonia	2018	2271	1939	4210
Estonia	2019	2123	2104	4227
Estonia	2020	2149	2847	4996
Estonia	2021	2596	5106	7702
Estonia	2022	2739	5621	8360
Estonia	2023	2694	6627	9321
Finland	2010	12648	12046	24694
Finland	2011	13921	14256	28177
Finland	2012	13852	13992	27844
Finland	2013	14443	14450	28892
Finland	2014	15263	14921	30185
Finland	2015	12105	14357	26462
Finland	2016	11557	15407	26964
Finland	2017	12592	16717	29309
Finland	2018	15757	17819	33575
Finland	2019	13973	20398	34371
Finland	2020	12578	21942	34519
Finland	2021	15522	25112	40634
Finland	2022	16702	23518	40220
Finland	2023	17106	23242	40348
France	2010	80501	79962	160464
France	2011	81545	93778	175323
France	2012	75665	94185	169850

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
France	2013	84 980	107 369	192 348
France	2014	95 369	115 205	210 574
France	2015	74 460	105 960	180 419
France	2016	87 358	113 537	200 895
France	2017	99 419	113 576	212 995
France	2018	106 895	132 217	239 111
France	2019	119 385	128 490	247 875
France	2020	105 388	130 588	235 976
France	2021	85 520	150 707	236 226
France	2022	67 838	150 727	218 565
France	2023	76 596	169 808	246 404
Germany	2010	220 501	101 603	322 104
Germany	2011	233 306	116 383	349 689
Germany	2012	203 642	121 404	325 046
Germany	2013	189 755	131 592	321 347
Germany	2014	239 787	149 550	389 337
Germany	2015	192 639	141 475	334 114
Germany	2016	281 674	152 349	434 024
Germany	2017	201 005	164 818	365 823
Germany	2018	209 331	181 419	390 750
Germany	2019	250 526	182 578	433 105
Germany	2020	251 684	203 398	455 082
Germany	2021	217 252	246 483	463 736
Germany	2022	230 780	238 400	469 180
Germany	2023	367 168	247 654	614 822
Greece	2010	2 874	2 510	5 383
Greece	2011	2 361	2 917	5 279
Greece	2012	1 172	2 986	4 158
Greece	2013	1 430	3 244	4 674
Greece	2014	1 897	3 557	5 454
Greece	2015	1 450	2 587	4 036
Greece	2016	3 116	2 858	5 974
Greece	2017	1 793	3 487	5 280
Greece	2018	2 962	3 654	6 615
Greece	2019	3 983	3 522	7 505
Greece	2020	3 507	3 925	7 432
Greece	2021	8 358	5 355	13 713
Greece	2022	10 511	5 513	16 024
Greece	2023	8 932	6 487	15 419
Hungary	2010	24 894	6 857	31 751
Hungary	2011	28 555	7 711	36 265
Hungary	2012	21 099	7 110	28 209
Hungary	2013	27 216	7 494	34 710
Hungary	2014	27 534	8 188	35 722

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Hungary	2015	20649	7336	27985
Hungary	2016	25231	8022	33254
Hungary	2017	31971	8975	40946
Hungary	2018	36423	9772	46195
Hungary	2019	36656	9460	46115
Hungary	2020	30201	10574	40775
Hungary	2021	28705	11896	40601
Hungary	2022	38124	12486	50610
Hungary	2023	46968	12810	59778
Italy	2010	21729	35975	57704
Italy	2011	26361	40146	66507
Italy	2012	25771	40626	66397
Italy	2013	26031	40948	66979
Italy	2014	29467	41649	71115
Italy	2015	24701	34321	59021
Italy	2016	24854	36295	61149
Italy	2017	26369	40837	67207
Italy	2018	33268	43458	76726
Italy	2019	31966	42216	74182
Italy	2020	28513	45774	74286
Italy	2021	45078	54551	99629
Italy	2022	49712	54581	104293
Italy	2023	47952	61305	109258
Latvia	2010	187	1084	1271
Latvia	2011	419	1250	1669
Latvia	2012	449	1203	1651
Latvia	2013	437	1372	1809
Latvia	2014	458	1411	1869
Latvia	2015	407	1308	1715
Latvia	2016	576	1490	2066
Latvia	2017	646	1596	2242
Latvia	2018	976	1903	2879
Latvia	2019	1099	1932	3031
Latvia	2020	1058	2386	3444
Latvia	2021	2057	2899	4957
Latvia	2022	2186	3421	5607
Latvia	2023	2672	3593	6266
Lithuania	2010	1832	410	2242
Lithuania	2011	2664	523	3187
Lithuania	2012	2228	535	2763
Lithuania	2013	2714	769	3483
Lithuania	2014	3134	813	3948
Lithuania	2015	2830	757	3587
Lithuania	2016	2907	935	3842

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Lithuania	2017	3690	1263	4953
Lithuania	2018	4590	1534	6125
Lithuania	2019	4748	1865	6613
Lithuania	2020	5269	2705	7974
Lithuania	2021	7795	4770	12565
Lithuania	2022	6580	5100	11680
Lithuania	2023	6457	6881	13338
Netherlands	2010	30306	83066	113372
Netherlands	2011	36287	89661	125949
Netherlands	2012	34459	85525	119983
Netherlands	2013	33604	90115	123719
Netherlands	2014	37370	110255	147625
Netherlands	2015	33986	109146	143132
Netherlands	2016	37078	106608	143686
Netherlands	2017	37052	126342	163393
Netherlands	2018	31602	147594	179196
Netherlands	2019	38834	164241	203075
Netherlands	2020	37342	146516	183858
Netherlands	2021	54323	160465	214788
Netherlands	2022	78177	170931	249108
Netherlands	2023	71461	193640	265101
Norway	2010	5253	12707	17960
Norway	2011	6303	11217	17520
Norway	2012	6602	14401	21003
Norway	2013	6656	15179	21835
Norway	2014	6057	14691	20748
Norway	2015	4662	12985	17647
Norway	2016	4147	13632	17779
Norway	2017	5129	12420	17549
Norway	2018	7482	14066	21548
Norway	2019	4929	13053	17982
Norway	2020	4973	15406	20379
Norway	2021	3117	17675	20792
Norway	2022	4964	18187	23151
Norway	2023	4563	19086	23649
Poland	2010	18736	9835	28570
Poland	2011	23411	10551	33962
Poland	2012	23725	10759	34484
Poland	2013	24462	11716	36178
Poland	2014	26862	13204	40066
Poland	2015	24819	12768	37587
Poland	2016	23563	14350	37913
Poland	2017	29392	17076	46468
Poland	2018	37945	20934	58879

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Poland	2019	35720	22114	57835
Poland	2020	36087	28932	65019
Poland	2021	42534	35047	77580
Poland	2022	49408	38683	88091
Poland	2023	53749	46329	100078
Portugal	2010	10367	4232	14599
Portugal	2011	13268	5090	18358
Portugal	2012	10975	4674	15649
Portugal	2013	11492	5629	17121
Portugal	2014	12080	5972	18052
Portugal	2015	10546	5381	15927
Portugal	2016	12385	5512	17897
Portugal	2017	14545	5871	20416
Portugal	2018	15776	6529	22305
Portugal	2019	16423	6734	23157
Portugal	2020	13944	8388	22332
Portugal	2021	15744	10875	26620
Portugal	2022	19195	11738	30933
Portugal	2023	23739	13883	37623
Romania	2010	1975	3409	5384
Romania	2011	2469	3823	6292
Romania	2012	2502	4409	6911
Romania	2013	2811	5557	8367
Romania	2014	2956	6424	9380
Romania	2015	2683	5943	8626
Romania	2016	3201	6877	10078
Romania	2017	3061	7928	10989
Romania	2018	2951	9654	12605
Romania	2019	3662	10621	14282
Romania	2020	3178	13361	16539
Romania	2021	3484	15834	19317
Romania	2022	4197	17897	22094
Romania	2023	4038	20438	24476
Slovak Republic	2010	13601	1238	14839
Slovak Republic	2011	11177	1456	12633
Slovak Republic	2012	13161	1964	15125
Slovak Republic	2013	14423	2560	16982
Slovak Republic	2014	17863	2483	20346
Slovak Republic	2015	14642	2198	16840
Slovak Republic	2016	17857	2504	20360
Slovak Republic	2017	16758	3136	19894
Slovak Republic	2018	18697	3553	22250
Slovak Republic	2019	19442	3555	22997
Slovak Republic	2020	17765	4430	22195

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Slovak Republic	2021	22241	4831	27071
Slovak Republic	2022	22815	4771	27586
Slovak Republic	2023	27040	5203	32244
Slovenia	2010	2361	1353	3714
Slovenia	2011	3383	1535	4918
Slovenia	2012	2499	1451	3950
Slovenia	2013	2950	1562	4512
Slovenia	2014	3165	1734	4899
Slovenia	2015	3212	1542	4754
Slovenia	2016	3435	1690	5125
Slovenia	2017	4246	1943	6189
Slovenia	2018	4478	2169	6647
Slovenia	2019	4394	2242	6636
Slovenia	2020	4590	2679	7270
Slovenia	2021	5599	3466	9064
Slovenia	2022	5121	3668	8789
Slovenia	2023	5383	4077	9460
Spain	2010	29464	30499	59963
Spain	2011	35591	35785	71376
Spain	2012	34926	33680	68605
Spain	2013	35897	33487	69383
Spain	2014	36569	36613	73182
Spain	2015	34694	32545	67239
Spain	2016	38386	35397	73783
Spain	2017	38178	39106	77283
Spain	2018	48946	42554	91500
Spain	2019	46466	44813	91279
Spain	2020	41377	45628	87006
Spain	2021	53309	52138	105446
Spain	2022	60669	56696	117365
Spain	2023	68640	67239	135878
Sweden	2010	46038	26422	72461
Sweden	2011	50171	33122	83293
Sweden	2012	44606	32990	77596
Sweden	2013	50540	39398	89938
Sweden	2014	54040	41768	95808
Sweden	2015	50165	39684	89849
Sweden	2016	46091	39006	85097
Sweden	2017	57737	38991	96728
Sweden	2018	62474	40414	102888
Sweden	2019	64800	45016	109816
Sweden	2020	65456	50895	116351
Sweden	2021	74292	64748	139040
Sweden	2022	71416	64571	135986

Table 13. Experimental estimates of digital trade *(cont.)*

Country	Year	Digitally ordered trade	Digitally delivered trade	Total digital trade
Sweden	2023	69 991	69 294	139 284
United Kingdom	2010	96 305	200 623	296 928
United Kingdom	2011	117 049	228 961	346 010
United Kingdom	2012	115 649	228 666	344 315
United Kingdom	2013	131 963	237 842	369 805
United Kingdom	2014	126 167	251 842	378 010
United Kingdom	2015	115 565	243 795	359 360
United Kingdom	2016	106 663	236 734	343 397
United Kingdom	2017	118 853	249 891	368 744
United Kingdom	2018	143 404	283 457	426 861
United Kingdom	2019	148 500	274 361	422 862
United Kingdom	2020	121 359	317 557	438 916
United Kingdom	2021	140 576	380 370	520 946
United Kingdom	2022	160 602	376 660	537 262
United Kingdom	2023	164 604	438 094	602 698

Note: This table combines the experimental estimates of digitally ordered trade, based on the international ecommerce approach, with data on digitally delivered services trade from WTO (2025[6]) to calculate total digital trade estimates for a sample of countries.

Sources: OECD (2026[13]), *Data Kitchen* (database), *https://goingdigital.oecd.org/datakitchen*; OECD (2025[7]), *Deriving experimental estimates of digital trade*, *https://doi.org/10.1787/c7dbbc14-en*.

StatLink https://stat.link/38pufs

Communication markets indicators: OECD communication price baskets

The OECD, through the Working Party on Connectivity Services and Infrastructures (WPCSI), has been collecting prices of communication services for 30 years. In the process, it has developed a unique set of basket methodologies comparing communications services in OECD Member countries. Internationally comparable measures on prices of communication services allow for the evaluation of the affordability of services and is an important factor in understanding competition in communication markets. The basket methodologies have been revised and updated over the years to keep pace with service offerings and technological developments. The methodology for standalone price baskets for mobile broadband services (referred to as «mobile voice and data») and fixed broadband services was revised in 2017 (OECD, 2017[8]). The data presented in this statistical annex are based on this 2017 methodology. The WPCSI has since revised the methodology for standalone communication services in 2026.

In 2020, OECD delegates approved and adopted a new price basket methodology, the "OECD Bundled communication price baskets" (OECD, 2020[9]). The baskets for bundled communication services range from dual play (fixed broadband and fixed voice) to quadruple play baskets (fixed broadband, fixed voice, television and mobile broadband), which include different combinations of fixed broadband, Fixed voice, mobile voice and data (i.e. mobile broadband), and Pay TV services. With increased convergence and the prevalence of communication bundles in most OECD Member countries, this methodology sets a clear reference for discussions on price baskets for bundled communication services in international fora.

The Statistical Annex presents tables from the three different basket methodologies (i.e. mobile voice and data, fixed broadband services and bundles of communication services). The features of different offers of communication services are evaluated and compared, including the number of calls, download speed, data allowance, number of TV channels and premium channels (in the case of bundles). The basket methodology consists of selecting, for every OECD Member country, the cheapest offers in the market that meet all criteria for a given user profile (i.e. Low, Medium, High usage profiles).

For more details on OECD's measurement methodologies of communication services prices, please refer to (OECD, 2020[9]) and (OECD, 2017[8]).

Table 14. OECD Communication price baskets, Mobile voice and data (MVD), Low usage, May 2025

100 calls + 500 MB, May 2025, USD PPP including VAT per month

Country	Provider	Package, option	Fixed	Add-on	Voice	Message	Data	Grand total	Pre-paid?
Australia	Boost (Telstra)	Pre-paid - Anytime Plus $300 (12 Months), MyData 20480 MB, 12 months	17.1	0.0	0.0	0.0	0.0	17.1	Pre-paid
Austria	Bob (A1 Telekom Austria)	Flex bob, Data 56320 MB, SIM only	12.8	0.0	0.0	0.0	0.0	12.8	
Belgium	Orange	Small, Mail&Surf 8192 MB	17.3	0.0	0.0	0.0	0.0	17.3	
Canada	Chatr (Rogers)	4G Nation-wide Talk, Text & Data $149 Annual, Data 2560 MB	11.8	0.0	0.0	0.0	0.0	11.8	Pre-paid
Chile	Entel Movil	Bolsa Datos + Minutos, $5000 Top up - 30 days, Mobile Internet 10240 MB, 1 month	9.8	0.0	0.0	3.9	0.0	13.7	Pre-paid
Colombia	Movistar	Paquete Anticípate 365 Days, Datos Full 40960 MB, 12 months	10.0	0.0	0.0	0.0	0.0	10.0	Pre-paid
Costa Rica	Liberty	Plan libre Prepago, Data 4096 MB, SIM only	17.7	0.0	1.8	0.0	0.0	19.5	Pre-paid
Czech Republic	O2	Neo Bílý (White), O2 Internet v Mobilu 500 MB, 24 months	29.3	0.0	0.0	0.0	0.0	29.3	
Denmark	TDC / YouSee	YouSee 3H + 3GB 5G, Data 3072 MB, SIM only, 1 month	11.3	0.0	1.4	0.0	0.0	12.7	
Estonia	Telia	Super Calling Card, Call 200, EMT Internet on the Phone 1024 MB, Voicemail option	0.0	6.5	0.0	0.0	0.0	6.6	Pre-paid
Finland	Telia	Prepaid, Paketit S, Internet access 1024 MB	12.1	0.0	8.8	0.0	0.0	21.0	Pre-paid
France	Sosh (Orange)	Forfait 1 Go €1.99, Surf 1024 MB, SIM only	3.0	0.0	0.0	0.0	0.0	3.0	
Germany	O2	My Prepaid Jahrestarife, Data 2133 MB, 12 months	9.0	0.0	0.0	0.0	0.0	9.0	Pre-paid
Greece	What's Up (Cosmote)	PAYG, Calls to all, Mobile Internet Package 1536 MB	19.6	0.0	0.0	0.0	0.0	19.6	Pre-paid
Hungary	One	Tuti Prepaid card, 10 Ft/min on-net, Mobilnet 1124 MB	0.2	3.8	16.4	4.9	0.0	25.3	Pre-paid
Iceland	Nova	Frelsi 5GB, Data 5120 MB	12.2	0.0	0.0	0.0	0.0	12.2	Pre-paid
Ireland	Three	Bill Pay 300 SIMO, Unlimited data, SIM only, 1 month	21.4	0.0	0.7	0.0	0.0	22.1	
Israel	Partner	Prince 400GB 5G, Mobile surfing 409600 MB, SIM only, 24 months	10.2	0.0	0.0	0.0	0.0	10.2	
Italy	Kena (TIM)	1.99 DomoKena, Internet 500 MB, SIM only, 1 month	3.4	0.0	0.0	0.0	0.0	3.4	Pre-paid
Japan	NTT DoCoMo	irumo 0.5GB, 5 minute free call option, Data Plus 512 MB, SIM only, 1 month, Voicemail option	6.4	11.8	0.9	1.3	0.0	20.4	
Korea	SK 7 (SK Telecom)	LTE uSIM 1GB/200Min, Data 1024 MB, SIM only	4.9	0.0	0.0	0.0	0.0	4.9	
Latvia	LMT	Sarunas, Internets Telefona 1300 MB, SIM only, 1 month	22.8	0.0	0.0	0.0	0.0	22.8	Pre-paid
Lithuania	Tele2	PILDYK Sets - 199 Min + 5GB, Data 5120 MB	11.6	0.0	0.0	0.0	0.0	11.6	Pre-paid
Luxembourg	Tango	Smart LU SIM Only 5G, Data 5120 MB, SIM only, 12 months	10.9	0.0	0.0	0.0	0.0	10.9	
Mexico	MoviStar	Giga Move 3GB 5G, Data 3072 MB, SIM only, 1 month	14.4	0.0	0.2	0.0	0.0	14.6	
Netherlands	Odido	SIM Only 2GB and Unltd mins 5G, Internet 2048 MB, SIM only, 24 months	20.4	0.0	0.0	0.0	0.0	20.4	
New Zealand	One New Zealand	MyFlex Prepay 200Mins (Data to 5GB), Data 1112.38095238095 MB	10.1	1.4	0.3	0.0	0.0	11.8	Pre-paid
Norway	Telia	Smart Kontant 14 Days, Data 543 MB	21.7	0.0	0.0	0.0	0.0	21.7	Pre-paid
Poland	Orange	Orange Free - 200 mins + 200 SMS, Internet on the phone 1024 MB	6.5	2.3	0.0	0.0	0.0	8.8	Pre-paid
Portugal	UZO (MEO)	Tarifários Móveis - 100GB + Minutos ilimitados + 1000 SMS, Mobile Internet 102400 MB, SIM only, 1 month	13.4	0.0	0.0	0.0	0.0	13.4	
Slovak Republic	Orange	Prima Card, 100 extra SR mins, SMS addons 100 SMS, Mobile Internet 1024 MB	0.5	15.7	15.2	3.7	0.0	35.1	Pre-paid
Slovenia	Telekom Slovenije	Mobi A, Mobile Internet 1024 MB	6.2	0.0	0.0	0.0	0.0	6.2	Pre-paid
Spain	O2 (MoviStar)	7€ TARIFA O2 – MÓVIL 20GB, Data 20480 MB, SIM only	11.2	0.0	0.0	0.0	0.0	11.2	
Sweden	Comviq (Tele 2)	Fastpris mini, Mobilsurf 3072 MB	11.0	0.0	0.0	0.0	0.0	11.0	Pre-paid
Switzerland	M-Budget (Swisscom)	Mini, Data traffic 2048 MB, SIM only, 12 months	12.4	0.0	0.0	0.0	0.0	12.4	
Türkiye	Vodafone	Red Kirmizi Firsat 3 GB, Mobile Internet Packs 3072 MB, 12 months	10.9	0.0	0.0	0.0	0.0	10.9	
United Kingdom	O2	Pay & Go Big Bundle 4G 8GB, Data 8192 MB, 1 month	13.6	0.0	0.0	0.0	0.0	13.6	Pre-paid
United States	TracFone (Verizon)	$144 Unlimited 1GB, Data 1024 MB, 12 months	13.5	0.0	0.0	0.0	0.0	13.5	Pre-paid
OECD average			**11.9**	**1.1**	**1.2**	**0.4**	**0.0**	**14.52**	

Source: OECD (2025[10]), *OECD Communication Price Basket Benchmarking systems*, "Mobile Voice and Data price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 15. OECD Communication price baskets, Mobile voice and data (MVD), Medium usage, May 2025

300 calls + 1 GB, USD PPP including VAT per month

Country	Provider	Package, option	Fixed	Add-on	Voice	Message	Data	Grand total	Pre-paid?
Australia	Boost (Telstra)	Pre-paid - Anytime Plus $300 (12 Months), MyData 20480 MB, 12 months	17.1	0	0	0	0	17.12	Pre-paid
Austria	Bob (A1 Telekom Austria)	Flex bob, Data 56320 MB, SIM only	12.8	0	0	0	0	12.78	
Belgium	Orange	Small, Mail&Surf 8192 MB	17.3	0	0	0	0	17.28	
Canada	Chatr (Rogers)	4G Nation-wide Talk, Text & Data $149 Annual, Data 2560 MB	11.8	0	0	0	0	11.79	Pre-paid
Chile	Entel Movil	Recarga Facil $8000, 4GB + 150 mins, Mobile Internet 40960 MB	15.7	0	0	0	0	15.68	Pre-paid
Colombia	Movistar	Paquete Anticípate 365 Days, Datos Full 40960 MB, 12 months	10.0	0	0	0	0	9.97	Pre-paid
Costa Rica	Liberty	Plan @1, Extra minutos 120, Data 10240 MB, SIM only, 1 month	33.7	9.0	0	0.3	0	43.07	
Czech Republic	O2	Neo Modrý (Blue), O2 Internet v Mobilu 4096 MB, 24 months	30.4	0	0	0	0	30.43	
Denmark	TDC / YouSee	YouSee Fri + 20GB 5G, Data 20480 MB, SIM only, 1 month	20.1	0	0	0	0	20.07	
Estonia	Elisa	Soodne 6.49, Interniti Lisamaht 2048 MB, SIM only	9.2	0	0.0	0	0	9.25	
Finland	Telia	Telia Dot - 4G Unlimited 100 Mbit/s, Unlimited data	29.8	0	0	0	0	29.78	
France	Sosh (Orange)	Forfait 1 Go €1.99, Surf 1024 MB, SIM only	3.0	0	0	0	0	3.00	
Germany	O2	My Prepaid Jahrestarife, Data 2133 MB, 12 months	9.0	0	0	0	0	9.02	Pre-paid
Greece	What's Up (Cosmote)	PAYG, Calls to all, Mobile Internet Package 1536 MB	19.6	0	0.0	0	0	19.57	Pre-paid
Hungary	One	Tuti Prepaid card, Unlimited talk 30 days, Mobilnet 1124 MB	0.2	26.9	0	9.9	0	36.99	Pre-paid
Iceland	Nova	Frelsi 5GB, Data 5120 MB	12.2	0	0	0	0	12.18	Pre-paid
Ireland	Three	Total Talker, Data 10240 MB	23.2	0	0	0	0	23.24	Pre-paid
Israel	Partner	Prince 400GB 5G, Mobile surfing 409600 MB, SIM only, 24 months	10.2	0	0	0	0	10.18	
Italy	Kena (TIM)	4.99 1GB, Internet 1024 MB, SIM only, 1 month	7.8	0	0	0	0	7.78	Pre-paid
Japan	NTT DoCoMo	irumo 0.5GB, 5 minute free call option, Data Plus 512 MB, SIM only, 1 month, Voicemail option	6.4	11.8	2.6	2.6	10.7	34.13	
Korea	SK 7 (SK Telecom)	LTE uSIM Data Safety 1GB+/1000Min Blocked, DATA 1024 MB, SIM only	6.0	0	0	0	0	5.97	
Latvia	LMT	Sarunas, Internets Telefona 1300 MB, SIM only, 1 month	22.8	0	0	0	0	22.81	Pre-paid
Lithuania	Tele2	PILDYK Sets - Unltd Min + 5GB, Data 5120 MB	15.1	0	0	0	0	15.13	Pre-paid
Luxembourg	Tango	Smart LU SIM Only 5G, Data 5120 MB, SIM only, 12 months	10.9	0	0	0	0	10.90	
Mexico	MoviStar	Giga Move 3GB 5G, Data 3072 MB, SIM only, 1 month	14.4	0	0.6	0	0	15.04	
Netherlands	Odido	SIM Only 2GB and Unltd mins 5G, Internet 2048 MB, SIM only, 24 months	20.4	0.0	0	0	0	20.36	
New Zealand	Skinny (Spark)	$17 4-Week Rollover 5G, 150 NZ minutes, Data 1664 MB	12.2	5.8	0.00	0	0	17.97	Pre-paid
Norway	Telia	SMART Basis Kontant 3GB, Data 3072 MB	27.1	0	0	0	0	27.06	Pre-paid
Poland	Plus	Up to 1500GB 30 PLN Bundle Promotion, Data 102400 MB	13.5	0	0	0	0	13.53	Pre-paid
Portugal	UZO (MEO)	Tarifários Móveis - 100GB + Minutos ilimitados + 1000 SMS, Mobile Internet 102400 MB, SIM only, 1 month	13.4	0	0	0	0	13.41	
Slovak Republic	Orange	Flat Medium - 5G, Mobile Internet 10240 MB, SIM only, 12 months	45.9	0	0	0	0	45.93	
Slovenia	Telekom Slovenije	Mobi A, Mobile Internet 1024 MB	6.2	0	0	0	0	6.18	Pre-paid
Spain	O2 (MoviStar)	7€ TARIFA O2 – MÓVIL 20GB, Data 20480 MB, SIM only	11.2	0	0	0	0	11.23	
Sweden	Comviq (Tele 2)	Fastpris 4GB - 5G, Mobilsurf 4096 MB, 12 months	13.1	0	0	0	0	13.06	
Switzerland	M-Budget (Swisscom)	Mini, Data traffic 2048 MB, SIM only, 12 months	12.4	0	0	0	0	12.44	
Türkiye	Vodafone	Red Kirmizi Firsat 3 GB, Mobile Internet Packs 3072 MB, 12 months	10.9	0	0	0	0	10.94	
United Kingdom	O2	Pay & Go Big Bundle 4G 8GB, Data 8192 MB, 1 month	13.6	0	0	0	0	13.55	Pre-paid
United States	TracFone (Verizon)	$144 Unlimited 1GB, Data 1024 MB, 12 months	13.5	0	0	0	0	13.52	Pre-paid
OECD average			**15.3**	**1.4**	**0.1**	**0.3**	**0.3**	**17.4**	

Source: OECD (2025[10]), *OECD Communication Price Basket Benchmarking systems*, "Mobile Voice and Data price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 16. OECD Communication price baskets, Mobile voice and data (MVD), High usage, May 2025

900 calls + 2 GB, USD PPP including VAT per month

Country	Provider	Package, option	Fixed	Add-on	Voice	Message	Data	Grand total	Pre-paid?
Australia	Boost (Telstra)	Pre-paid - Anytime Plus $300 (12 Months), MyData 20480 MB, 12 months	17.1	0	0	0	0	17.1	Pre-paid
Austria	Hi! (Magenta)	Einfach, Data 30720 MB, SIM only, 1 month	15.4	0	0	0	0	15.4	
Belgium	Orange	Small, Mail&Surf 8192 MB	17.3	0	0	0	0	17.3	
Canada	Chatr (Rogers)	4G Nation-wide Talk, Text & Data $149 Annual, Data 2560 MB	11.8	0	0	0	0	11.8	Pre-paid
Chile	Movistar	Plan 5G Libre Full, Bolsa de Internet 460800 MB, SIM only, 18 months	25.6	0	0	0	0	25.6	
Colombia	Movistar	Paquete Anticípate 365 Days, Datos Full 40960 MB, 12 months	10.0	0	0	0	0	10.0	Pre-paid
Costa Rica	Kölbi	Ultra K3, Extra minutos 100, Data 20480 MB, SIM only, 1 month	60.8	6.7	14.8	0	0	82.2	
Czech Republic	O2	Neo Modrý (Blue), O2 Internet v Mobilu 4096 MB, 24 months	30.4	0	0	0	0	30.4	
Denmark	TDC / YouSee	YouSee Fri + 20GB 5G, Data 20480 MB, SIM only, 1 month	20.1	0	0	0	0	20.1	
Estonia	Elisa	Soodne 6.49, Interniti Lisamaht 2048 MB, SIM only	9.2	0	0	0	0	9.2	
Finland	Telia	Telia Dot - 4G Unlimited 100 Mbit/s, Unlimited data	29.8	0	0	0	0	29.8	
France	SFR Red (SFR)	Illimite 10GB, Internet 10240 MB, SIM only	4.3	0	0	0	0	4.3	
Germany	O2	My Prepaid Jahrestarife, Data 2133 MB, 12 months	9.0	0	0	0	0	9.0	Pre-paid
Greece	What's Up (Cosmote)	PAYG, Unlimited Calls, Mobile Internet Package 2560 MB	23.0	0	15.3	0	0	38.3	Pre-paid
Hungary	One	Tuti Prepaid card, Unlimited talk 30 days, Mobilnet 2148 MB	0.2	29.3	0	19.7	0	49.2	Pre-paid
Iceland	Nova	Frelsi 5GB, Data 5120 MB	12.2	0	0	0	0	12.2	Pre-paid
Ireland	Three	Total Talker, Data 10240 MB	23.2	0	0	0	0	23.2	Pre-paid
Israel	Partner	Prince 400GB 5G, Mobile surfing 409600 MB, SIM only, 24 months	10.2	0	0	0	0	10.2	
Italy	Kena (TIM)	5.99 100GB, Internet 204800 MB, SIM only, 1 month	8.8	0	0	0	0	8.8	Pre-paid
Japan	NTT DoCoMo	ahamo Basic, 5 minute free call option, Data Plus 30720 MB, SIM only, 1 month, Voicemail option	29.0	3.2	8.5	5.2	0.0	45.9	
Korea	SK 7 (SK Telecom)	LTE uSIM Self 2GB+/2000Min, DATA 2048 MB, SIM only	6.9	0	0	0	0.0	6.9	
Latvia	Tele2	Tarifu plāns 6 GB, Data 6144 MB, 1 month	28.1	0	0	0	0	28.1	
Lithuania	Tele2	PILDYK Sets - Unltd Min + 5GB, Data 5120 MB	15.1	0	0	0	0	15.1	Pre-paid
Luxembourg	Tango	Smart LU SIM Only 5G, Data 5120 MB, SIM only, 12 months	10.9	0	0	0	0	10.9	
Mexico	MoviStar	Giga Move 3GB 5G, Data 3072 MB, SIM only, 1 month	14.4	0	1.9	0	0	16.3	
Netherlands	Odido	SIM Only 2GB and Unltd mins 5G, Internet 2048 MB, SIM only, 24 months	20.4	0.0	0	0	0	20.4	
New Zealand	One New Zealand	Entry Pay Monthly 5G, Data 4096 MB, SIM only, 1 month	19.9	0.0	0.0	0	0	19.9	
Norway	Telia	SMART Basis Kontant 3GB, Data 3072 MB	27.1	0	0	0	0	27.1	Pre-paid
Poland	Plus	Up to 1500GB 30 PLN Bundle Promotion, Data 102400 MB	13.5	0	0	0	0	13.5	Pre-paid
Portugal	UZO (MEO)	Tarifários Móveis - 100GB + Minutos ilimitados + 1000 SMS, Mobile Internet 102400 MB, SIM only, 1 month	13.4	0	0	0	0	13.4	
Slovak Republic	Orange	Flat Medium - 5G, Mobile Internet 10240 MB, SIM only, 12 months	45.9	0	0	0	0	45.9	
Slovenia	A1	A1 maxiSIMPL, Mobile Internet 6958 MB, SIM only	11.0	0	0	0	0	11.0	Pre-paid
Spain	O2 (MoviStar)	7€ TARIFA O2 – MÓVIL 20GB, Data 20480 MB, SIM only	11.2	0	0	0	0	11.2	
Sweden	Comviq (Tele 2)	Fastpris 4GB - 5G, Mobilsurf 4096 MB, 12 months	13.1	0	0	0	0	13.1	
Switzerland	M-Budget (Swisscom)	Mini, Data traffic 2048 MB, SIM only, 12 months	12.4	0	0	0	0	12.4	
Türkiye	Turkcell	Yapboz Small, 1000 SMS, Mobile Internet 8192 MB	16.5	1.3	8.1	0	0	25.9	
United Kingdom	O2	Pay & Go Big Bundle 4G 8GB, Data 8192 MB, 1 month	13.6	0	0	0	0	13.6	Pre-paid
United States	Ultra Mobile (T-Mobile)	Flexible Plan 3GB 5G, Data 3072 MB, SIM only, 12 months	15.7	0	0	0	0	15.7	
OECD average			**17.8**	**1.1**	**1.3**	**0.7**	**0.0**	**20.8**	

Source: OECD (2025[10]), *OECD Communication Price Basket Benchmarking systems*, "Mobile Voice and Data price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 17. OECD Communication price baskets, Mobile voice and data (MVD), Very-high usage, May 2025

900 calls + 10 GB, USD PPP including VAT per month

Country	Provider	Package, option	Fixed	Add-on	Voice	Message	Data	Grand total	Pre-paid?
Australia	Boost (Telstra)	Pre-paid - Anytime Plus $300 (12 Months), MyData 20480 MB, 12 months	17.1	0	0	0	0	17.1	Pre-paid
Austria	Hi! (Magenta)	Einfach, Data 30720 MB, SIM only, 1 month	15.4	0	0	0	0	15.4	
Belgium	Proximus	Mobilus Easy 5G, Data 10240 MB, 1 month	23.8	0	0	0	0	23.8	
Canada	Lucky (Bell)	Prepaid - Unltd Talk & Text + 10GB, Data 10240 MB	27.2	0.0	0	0	0	27.2	Pre-paid
Chile	Movistar	Plan 5G Libre Full, Bolsa de Internet 460800 MB, SIM only, 18 months	25.6	0	0	0	0	25.6	
Colombia	Movistar	Paquete Anticípate 365 Days, Datos Full 40960 MB, 12 months	10.0	0	0	0	0	10.0	Pre-paid
Costa Rica	Kölbi	Ultra K3, Extra minutos 100, Data 20480 MB, SIM only, 1 month	60.8	6.7	14.8	0	0	82.2	
Czech Republic	T-Mobile	Next 12GB, Data 12288 MB, SIM only, 1 month	48.4	0	0	0	0	48.4	
Denmark	TDC / YouSee	YouSee Fri + 20GB 5G, Data 20480 MB, SIM only, 1 month	20.1	0	0	0	0	20.1	
Estonia	Elisa	18 GB Pilsavalt Ulmet, Interniti Lisamaht 18432 MB	19.8	0	0	0	0	19.8	
Finland	Telia	Telia Dot - 4G Unlimited 100 Mbit/s, Unlimited data	29.8	0	0	0	0	29.8	
France	SFR Red (SFR)	Illimite 10GB, Internet 10240 MB, SIM only	4.3	0	0	0	0	4.3	
Germany	Telekom	MagentaMobil Prepaid Jahrestaif 5G, Data start 13312 MB, 12 months	11.3	0	0	0	0	11.3	Pre-paid
Greece	Vodafone	Vodafone Prepaid, Combo Unltd Mins & Data + 300 SMS, Unlimited data	31.0	0.0	21.4	0	0	52.5	Pre-paid
Hungary	One	Tuti Prepaid card, Unlimited talk 30 days, Mobilnet 10340 MB	0.2	41.0	0	9.9	0	51.1	Pre-paid
Iceland	Siminn	Þrenna - Triple - unlim Mins/SMS 10GB, More data 10240 MB, 1 month	17.8	0	0	0	0	17.8	Pre-paid
Ireland	Three	Total Talker, Data 10240 MB	23.2	0	0	0	0	23.2	Pre-paid
Israel	Partner	Prince 400GB 5G, Mobile surfing 409600 MB, SIM only, 24 months	10.2	0	0	0	0	10.2	
Italy	Kena (TIM)	5.99 100GB, Internet 204800 MB, SIM only, 1 month	8.8	0	0	0	0	8.8	Pre-paid
Japan	NTT DoCoMo	ahamo Basic, 5 minute free call option, Data Plus 30720 MB, SIM only, 1 month, Voicemail option	29.0	3.2	8.5	2.6	0	43.3	
Korea	SK 7 (SK Telecom)	LTE uSIM Self 10GB+/2000Min, DATA 10240 MB, SIM only	14.1	0	0	0	0	14.1	
Latvia	LMT	Nedela Visam, Unlimited data, SIM only, 1 month	34.2	0	0	0	0	34.2	Pre-paid
Lithuania	Tele2	PILDYK Sets - Unltd Min + 10GB, Data 10240 MB	20.5	0	0	0	0	20.5	Pre-paid
Luxembourg	Tango	Smart LU SIM Only 5G, Data 10240 MB, SIM only, 12 months	10.9	5.5	0	0	0	16.4	
Mexico	MoviStar	Giga Move 12GB 5G, Data 12288 MB, SIM only, 1 month	24.7	0.0	1.9	0	0	26.6	
Netherlands	Odido	SIM Only 10GB and Unltd mins 5G, Internet 10240 MB, SIM only, 24 months	24.7	0	0	0	0	24.7	
New Zealand	Skinny (Spark)	$520 1-Year 5G, Data 11093 MB	27.3	0	0	0	0	27.3	Pre-paid
Norway	Telia	Telia for One 10GB - 5G, Data 10240 MB, 12 months	37.7	0	0	0	0	37.7	
Poland	Plus	Up to 1500GB 30 PLN Bundle Promotion, Data 102400 MB	13.5	0	0	0	0	13.5	Pre-paid
Portugal	UZO (MEO)	Tarifários Móveis - 100GB + Minutos ilimitados + 1000 SMS, Mobile Internet 102400 MB, SIM only, 1 month	13.4	0	0	0.0	0	13.4	
Slovak Republic	Orange	Flat Medium - 5G, Mobile Internet 10240 MB, SIM only, 12 months	45.9	0	0	0	0	45.9	
Slovenia	Telekom Slovenije	Mobi B, Mobile Internet 102400 MB	11.5	0	0	0	0	11.5	Pre-paid
Spain	O2 (MoviStar)	7€ TARIFA O2 – MÓVIL 20GB, Data 20480 MB, SIM only	11.2	0	0	0	0	11.2	
Sweden	Comviq (Tele 2)	Fastpris SEK 199, Mobilsurf 10240 MB	22.1	0	0	0	0	22.1	Pre-paid
Switzerland	Yallo (Sunrise)	BLACK, Unlimited data	22.1	0	0	0	0	22.1	
Türkiye	Turkcell	Yapboz Small, 1000 SMS, Mobile Internet 8192 MB	16.5	1.3	8.1	0	2.7	28.6	
United Kingdom	O2	Pay & Go Rolling Plan 4G 10GB, Data 10240 MB, 1 month	13.6	0	0	0	0	13.6	Pre-paid
United States	TracFone (Verizon)	$288 Unlimited 10GB, Data 10240 MB, 12 months	26.8	0	0	0	0	26.8	Pre-paid
OECD average			**21.7**	**1.5**	**1.4**	**0.3**	**0.1**	**25.0**	

Source: OECD (2025[10]), *OECD Communication Price Basket Benchmarking systems*, "Mobile Voice and Data price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 18. OECD Communication price baskets, Fixed broadband (FBB), Low usage, June 2025

20 GB per month, 25 Mbps and above, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Connection	Rental	Usage	Total
Australia	TPG	5G Home Plus	51200/16384	0.0	40.8	0	40.8
Austria	A1 Telekom Austria	A1 Cube Internet 50	51200/10240	0.0	28.4	0	28.4
Belgium	Proximus	Scarlet - Internet Poco	30720/2048	1.0	28.5	0	29.5
Canada	Bell	Wireless Home Internet 25	25600/5120	0.0	63.6	0	63.6
Chile	Mundo	1 Mundo 600 Megas	614400/614400	0.8	32.1	0	32.9
Colombia	Claro	250Megas	256000/30720	0.0	45.1	0	45.1
Costa Rica	Liberty	Mega 120	122880/	0.0	65.5	0	65.5
Czech Republic	T-Mobile	Fiber 250	256000/256000	0.0	27.1	0	27.1
Denmark	YouSee/TDC Erhverv	Internet 200/200	204800/204800	0.4	33.4	0	33.8
Estonia	Telia	Asymmetric 30Mbit/s	30720/10240	0.0	35.8	0	35.8
Finland	DNA Welho	DNA Netti Huoleton 4G 50M	50000/	4.0	24.3	0	28.3
France	SFR	Fiber Starter	1048576/1048576	0.0	35.8	0	35.8
Germany	Vodafone	GigaZuhause 50 Kabel + Phone	51200/25600	0.3	40.8	0	41.0
Greece	Vodafone	Vodafone Home double play 50 (VDSL) Online	51200/5120	7.2	44.5	0	51.7
Hungary	One	HomeNet 250	256000/20480	0.0	29.4	0	29.4
Iceland	Vodafone	Ljósnet - Unlimited Data 100M	102400/25600	0.0	82.2	0	82.2
Ireland	Vodafone	500Mbps	512000/92160	0.0	40.3	0	40.3
Israel	18	Optical Fiber 500MB	512000/51200	5.1	26.4	0	31.6
Italy	Fastweb	Fastweb Home Light FWA	1024000/102400	0.0	38.1	0	38.1
Japan	Yahoo! BB/NTT-East	SoftBank Hikari Yahoo! BB (optical line) - Apartment plan 1Giga	1024000/1024000	0.9	40.7	0	41.6
Korea	KT	Slim (100 Mbps)	102400/	1.1	19.7	0	20.8
Latvia	Balticom	Internet 100 Mbit/s	102400/102400	2.8	25.0	0	27.8
Lithuania	Splius	Fiber Optic Plan EO	102400/	0.0	20.6	0	20.6
Luxembourg	Tango - Proximus Luxembourg	Tango Fiber S + Phone	153600/76800	1.5	43.8	0	45.3
Mexico	Megacable	30 Megas	30720/10240	0.0	27.9	0	27.9
Netherlands	Odido	Click&Ready Internet 5G	156672/26624	0.7	31.0	0	31.7
New Zealand	2Degrees	4G Wireless 300GB	38912/17715.2	0.3	30.4	0	30.7
Norway	Telia	Wireless Broadband 25	25000/25000	0.0	63.7	0	63.7
Poland	Netia	Fixed Internet 150Mbps	153600/51200	1.0	19.1	0	20.2
Portugal	Vodafone	Fibra1 Light	204800/102400	0.0	45.2	0	45.2
Slovak Republic	T-Com	Internet 80	81920/30720	0.0	22.6	0	22.6
Slovenia	T-2	Optics FTTH 50/20	51200/20480	1.4	44.1	0	45.5
Spain	Jazztel	Jazztel - Fibra 300Mb + Phone	307200/307200	0.0	40.2	0	40.2
Sweden	Telia	Mobile Broadband at home	600000/150000	1.2	37.4	0	38.7
Switzerland	Sunrise	Easy Internet	1024000/1024000	4.9	44.6	0	49.5
Türkiye	Superonline	Fiber 50 Mbps	50000/10000	0.0	34.4	0	34.4
United Kingdom	BT	Fibre Essential	35840/9216	0.0	42.7	0	42.7
OECD average				**0.9**	**37.7**	**0.0**	**38.6**

Source: OECD (2025[11]), *OECD Communication Price Basket Benchmarking systems*, "Fixed broadband price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 19. OECD Communication price baskets, Fixed broadband (FBB), Medium usage, June 2025

120 GB per month, 100 Mbps and above, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Connection	Rental	Usage	Total
Australia	TPG	5G Home Premium	102400/18432	0.0	44.3	0	44.3
Austria	A1 Telekom Austria	A1 Cube Internet 100	102400/15360	0.0	33.2	0	33.2
Belgium	Proximus	Scarlet - Internet Loco	102400/20480	1.0	42.2	0	43.2
Canada	Shaw	5G Home Internet Gateway	256000/10240	0.0	71.5	0	71.5
Chile	Mundo	1 Mundo 600 Megas	614400/614400	0.8	32.1	0	32.9
Colombia	Claro	250Megas	256000/30720	0.0	45.1	0	45.1
Costa Rica	Liberty	Mega 120	122880/	0.0	65.5	0	65.5
Czech Republic	T-Mobile	Fiber 250	256000/256000	0.0	27.1	0	27.1
Denmark	YouSee/TDC Erhverv	Internet 200/200	204800/204800	0.4	33.4	0	33.8
Estonia	Elisa	Home Internet Standard Speed 100/100	100000/100000	5.7	32.8	0	38.5
Finland	DNA Welho	DNA Netti Huoleton 4G 100M	100000/	4.0	29.6	0	33.6
France	SFR	Fiber Starter	1048576/1048576	0.0	35.8	0	35.8
Germany	Vodafone	GigaZuhause 100 Kabel + Phone	102400/51200	-1.6	49.8	0	48.2
Greece	Vodafone	Vodafone Home double play Fiber 100 Online	102400/10240	4.8	49.6	0	54.4
Hungary	One	HomeNet 250	256000/20480	0.0	29.4	0	29.4
Iceland	Vodafone	Ljósnet - Unlimited Data 100M	102400/25600	0.0	82.2	0	82.2
Ireland	Vodafone	500Mbps	512000/92160	0.0	40.3	0	40.3
Israel	18	Optical Fiber 500MB	512000/51200	5.1	26.4	0	31.6
Italy	Fastweb	Fastweb Home Light FWA	1024000/102400	0.0	38.1	0	38.1
Japan	Yahoo! BB/NTT-East	SoftBank Hikari Yahoo! BB (optical line) - Apartment plan 1Giga	1024000/1024000	0.9	40.7	0	41.6
Korea	KT	Slim (100 Mbps)	102400/	1.1	19.7	0	20.8
Latvia	Balticom	Internet 100 Mbit/s	102400/102400	2.8	25.0	0	27.8
Lithuania	Splius	Fiber Optic Plan EO	102400/	0.0	20.6	0	20.6
Luxembourg	Tango - Proximus Luxembourg	Tango Fiber S + Phone	153600/76800	1.5	43.8	0	45.3
Mexico	Telmex	Infinitum 100	102400/102400	0.0	36.1	0	36.1
Netherlands	Odido	Click&Ready Internet 5G	156672/26624	0.7	31.0	0	31.7
New Zealand	One NZ	HFC	896000/105472	0.0	49.3	0	49.3
Norway	Telia	Wireless Broadband 100	100000/50000	0.0	74.0	0	74.0
Poland	Netia	Fixed Internet 150Mbps	153600/51200	1.0	19.1	0	20.2
Portugal	Vodafone	Fibra1 Light	204800/102400	0.0	45.2	0	45.2
Slovak Republic	UPC	Internet 600	614400/51200	0.0	26.0	0	26.0
Slovenia	T-2	Optics FTTH 100/20	102400/20480	1.4	54.0	0	55.3
Spain	Jazztel	Jazztel - Fibra 300Mb + Phone	307200/307200	0.0	40.2	0	40.2
Sweden	Telia	Mobile Broadband at home	600000/150000	1.2	37.4	0	38.7
Switzerland	Sunrise	Easy Internet	1024000/1024000	4.9	44.6	0	49.5
Türkiye	Superonline	Fiber 100 Mbps	100000/20000	0.0	37.5	0	37.5
United Kingdom	Sky	Full Fibre 150	155648/28672	0.0	43.7	0	43.7
OECD average				**1.0**	**40.4**	**0.0**	**41.4**

Source: OECD (2025[11]), *OECD Communication Price Basket Benchmarking systems*, "Fixed broadband price benchmarking tool [Q2 2025]" (dataset).
StatLink https://stat.link/0hjq74

Table 20. OECD Communication price baskets, Fixed broadband (FBB), High usage (Giga offer), June 2025

900 GB per month, 1000 Mbps and above, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Connection	Rental	Usage	Total
Austria	A1 Telekom Austria	A1 Internet 1000	1024000/256000	4.7	90.3	0	95.0
Belgium	Proximus	Internet Giga Fiber	2097152/204800	0.0	88.5	0	88.5
Canada	Shaw	Ultimate 1G	1024000/102400	-1.3	108.7	0	107.4
Chile	Mundo	1 Mundo 1000 Megas	1024000/1024000	1.0	50.9	0	51.9
Costa Rica	Telecable	Fiber Optic 1000/1000Mb	1024000/1024000	0.0	157.6	0	157.6
Czech Republic	Vodafone	Internet Super+ Lite 500 Megas	1024000/204800	0.2	33.0	0	33.1
Denmark	YouSee/TDC Erhverv	Internet 1000/500	1024000/512000	0.4	36.9	0	37.2
Estonia	Elisa	Home Internet Hyper Speed 1000/1000	1000000/1000000	5.7	58.5	0	64.3
Finland	DNA Welho	DNA Netti Huoleton 5G 1000M	1000000/	9.4	49.3	0	58.7
France	SFR	Fiber Starter	1048576/1048576	0.0	35.8	0	35.8
Germany	Vodafone	GigaZuhause 1000 Kabel + Phone	1024000/51200	0.3	68.0	0	68.2
Greece	Cosmote	Cosmote Fiber 1 Gbps Unlimited	1024000/512000	6.0	98.1	0	104.1
Hungary	One	Home GigaNet 1000	1024000/40960	0.0	36.1	0	36.1
Iceland	Nova	Fiber 1000	1024000/	0.0	82.9	0	82.9
Ireland	Vodafone	1000Mbps	1024000/92160	0.0	51.1	0	51.1
Israel	012 Smile	1000Mb Fiber	1024000/256000	0.0	40.1	0	40.1
Italy	Fastweb	Fastweb Home Light FWA	1024000/102400	0.0	38.1	0	38.1
Japan	Yahoo! BB/NTT-East	SoftBank Hikari Yahoo! BB (optical line) - Apartment plan 1Giga	1024000/1024000	0.9	40.7	0	41.6
Korea	KT	Essence WiFi (1Gbps)	1024000/	1.1	35.8	0	36.9
Latvia	Balticom	Internet 1000 Mbit/s	1024000/1024000	2.8	32.6	0	35.4
Lithuania	Cgates	Internet 1000	1048576/	0.7	38.1	0	38.9
Luxembourg	Luxembourg Online	LOL Fiber L	1024000/256000	0.0	59.0	0	59.0
Mexico	Megacable	1000 Megas	1024000/25600	0.0	72.3	0	72.3
Netherlands	Odido	Glasvezel 1000	1024000/1024000	0.0	49.6	0	49.6
New Zealand	2Degrees	Hyperfibre 2	2048000/2048000	0.3	93.8	0	94.1
Norway	Global Connect	Giga (1000/1000)	1000000/1000000	25.3	105.2	0	130.5
Poland	Netia	Fixed Internet 1Gbps	1048576/307200	1.0	26.8	0	27.8
Portugal	NOS	NOS 1Gbps	1048576/102400	0.9	54.7	0	55.7
Slovak Republic	Antik Telecom	1Gbit/s + Phone	1024000/1024000	2.1	31.5	0	33.6
Slovenia	Telemach	EON Light	1048576/20480	0.0	62.6	0	62.6
Spain	Jazztel	Jazztel - Fibra 1Gb + Phone	1048576/1048576	0.0	49.9	0	49.9
Sweden	Tele2	Broadband Premium	1024000/102400	1.2	56.2	0	57.4
Switzerland	Sunrise	Easy Internet	1024000/1024000	4.9	44.6	0	49.5
Türkiye	Superonline	Fiber 1000 Mbps	1000000/50000	0.0	56.3	0	56.3
United Kingdom	Virgin Media	Gig1 Fibre	1157120/106496	0.0	82.1	0	82.1
OECD average				**1.9**	**60.4**	**0.0**	**62.4**

Source: OECD (2025[11]), *OECD Communication Price Basket Benchmarking systems*, "Fixed broadband price benchmarking tool [Q2 2025]" (dataset).

StatLink https://stat.link/0hjq74

Table 21. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Television (TV), Low usage, January 2025

25 Mbps, 20 TV channels, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	Magenta Austria	Internet Flex + TV	60 Mbps	64/30	..	0.0	43.6	0	0	0	43.6
Belgium	Orange Belgium	Internet + TV	200 Mbps	31/0	..	0.0	67.0	0	0	0	67.0
Canada	Videotron	Internet + TV APP	60 Mbps	0/24	..	0.0	61.5	0	0	0	61.5
Chile	Mundo	2 Mundo - Fibra + TV Go	800 Mbps	0/176	..	0.0	56.1	0	0	0	56.1
Colombia	Claro Colombia	Arma tu Play - internet + TV Digital Intermedio Plus	250 Mbps	33/54	..	0.9	56.7	0	0	0	57.6
Costa Rica	Liberty	Dobleplay	45 Mbps	167/74	..	1.1	66.9	0	0	0	68.0
Czech Republic	Starnet	Internet + TV	50 Mbps	30/0	..	4.1	19.5	0	0	0	23.7
Denmark	YouSee	Broadband	200 Mbps	32/0	..	0.4	89.1	0	0	0	89.4
Estonia	STV Estonia	Koosta endale sobiv pakett	50 Mbps	29/27	..	6.7	41.1	0	0	0	47.8
Finland	DNA	DNA Netti + TV Hubi	200 Mbps	71/11	..	0.3	59.1	0	0	0	59.4
France	SFR France	SFR ADSL Starter	70 Mbps	160/0	..	2.2	38.7	0	0	0	40.9
Germany	Vodafone Deutschland	Internet & Phone Cable	50 Mbps	88/57	..	-2.4	60.2	0	0	0	57.8
Greece	Nova Greece	Fiber EON	100 Mbps	27/55	..	0.0	59.4	0	0	0	59.4
Hungary	One Hungary	Home Net TV Basic	250 Mbps	12/32	..	0.0	42.2	0	0	0	42.2
Iceland	Siminn	Heimilispakkinn HEIMILIS	1000 Mbps	26/0	..	0.0	139.9	0	0	0	139.9
Ireland	eir	Complete Broadband and Phone	100 Mbps	56/4	..	-1.5	66.9	0	0	0	65.4
Japan	NTT East -BB Excite	Flet'S Hikari Next (Apartment Type) + Flet'S TV	100 Mbps	0/37	..	8.6	45.0	0	0	0	53.7
Korea	LG U+	Internet + IPTV	100 Mbps	5/211	..	1.7	15.8	0	0	0	17.5
Latvia	BALTICOM	Interaktīvā Televīzija 31Ch + Internets	100 Mbps	9/22	..	0.7	28.5	0	0	0	29.2
Lithuania	Splius	Internetas & Televizija	100 Mbps	13/23	..	0.0	31.3	0	0	0	31.3
Luxembourg	Tango	Tango Duo M	300 Mbps	36/44	..	0.0	66.1	0	0	0	66.1
Mexico	Megacable	TV Connecta + Internet Ilimitado	50 Mbps	38/58	..	0.6	40.7	0	0	0	41.3
Netherlands	Odido	Build Your Own Bundle	100 Mbps	5/59	..	0.0	54.1	0	0	0	54.1
Norway	Telia Norway	Wireless Bredband & TV	25 Mbps	80/0	..	0.0	94.6	0	0	0	94.6
Poland	Netia	Internet stacjonarny 300 Mbps + telewizja	300 Mbps	38/46	..	1.1	27.3	0	0	0	28.4
Portugal	Vodafone Portugal	TV + Net + Voz - Fibra 3 Base	30 Mbps	59/41	..	0.0	58.2	0	0	0	58.2
Slovak Republic	Orange Slovensko	Optický FiberNet + televízia	80 Mbps	31/76	..	0.5	42.0	0	0	0	42.5
Slovenia	T-2	ORANŽNI Start	100 Mbps	84/46	20	4.9	57.9	0	0	0	62.8
Spain	Orange - Jazztel	Fibra + Llamadas + TV	300 Mbps	60/0	..	0.0	39.7	0	0	0	39.7
Sweden	Telia Sweden	Bredband via mobilnätet och tv	150 Mbps	56/0	..	0.0	61.8	0	0	0	61.8
Switzerland	Sunrise	Easy Internet + TV	1024 Mbps	320/0	..	0.0	53.6	0	0	0	53.6
Türkiye	TTNet	Tivibu'lu İnternet Kampanyasi - Aile	50 Mbps	111/19	..	0.0	41.3	0	0	0	41.3
United Kingdom	Sky UK	Broadband with Sky Talk + Sky TV (Stream)	108 Mbps	309/26	..	0.0	66.5	0	0	0	66.5
United States	Spectrum	Internet + TV	50 Mbps	0/85	..	0.9	82.5	0	0	0	83.4
OECD average						**0.9**	**55.1**	**0.0**	**0.0**	**0.0**	**56.0**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

StatLink https://stat.link/0hjq74

Table 22. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Television (TV), High usage, January 2025

600 Mbps, 80 TV channels including premium movies, sports and digital video recorder, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	Magenta Austria	Internet + TV	600 Mbps	64/42	..	0.0	58.3	0.0	0	49.6	107.9
Belgium	Orange Belgium	Internet + TV	1000 Mbps	37/51	..	0.0	102.4	0.0	0	43.9	146.2
Canada	Bell	Build Your Own - Internet & TV	1536 Mbps	144/14	..	0.0	167.1	0.0	0	22.3	189.5
Chile	Movistar Chile	Pack Duo Internet + TV HD	600 Mbps	39/90	..	0.0	97.0	0.0	0	25.0	121.9
Colombia	Movistar Colombia	Trio Fibra	700 Mbps	36/70	..	0.9	75.5	0.0	0	35.3	111.6
Czech Republic	O2 Czech	Spolu	1000 Mbps	91/31	..	0.0	82.5	0.0	0	12.7	95.2
Estonia	Telia Estonia	Telia 1	1024 Mbps	117/0	..	6.9	171.6	0.0	0	0.0	178.4
Finland	DNA	DNA Netti + TV Hubi	600 Mbps	71/21	..	0.3	74.5	0.0	0	24.7	99.6
France	SFR France	Fibre Starter de SFR	1024 Mbps	160/2	..	2.2	38.7	0.0	0	104.0	144.9
Germany	Vodafone Deutschland	Internet & Phone Cable	1000 Mbps	88/74	..	-2.4	87.4	0.0	0	56.6	141.6
Hungary	One Hungary	Home Net TV Family	1000 Mbps	54/71	..	0.0	57.8	0.0	0	12.5	70.3
Ireland	Vodafone Ireland	Broadband and TV	1000 Mbps	75/25	..	0.0	80.0	0.0	0	49.6	129.6
Latvia	Tet	Tet TV+ & Internet	1000 Mbps	100/0	..	0.0	68.1	0.0	0	0.0	68.1
Lithuania	Cgates	TV-Internetas	1000 Mbps	24/71	..	1.2	68.7	0.0	0	23.2	93.1
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	50/59	..	0.0	67.4	0.0	0	44.1	111.4
Mexico	Megacable	TV Connecta + Internet Ilimitado	750 Mbps	38/58	..	0.6	81.3	0.0	0	30.0	111.9
Netherlands	KPN	Internet and TV	1000 Mbps	48/54	..	0.9	91.7	0.0	0	31.2	123.8
Norway	Telenor Norway	Fiber Bredband and TV	750 Mbps	94/1	..	6.1	182.0	0.0	0	83.0	271.1
Poland	Play	internet z telewizja 600	600 Mbps	198/13	..	0.0	43.7	0.0	0	18.7	62.5
Portugal	Vodafone Portugal	TV + Net + Voz - Fibra 3 Plus - Online offer	1024 Mbps	89/68	..	-4.7	73.3	0.0	0	50.9	119.5
Slovak Republic	Orange Slovensko	Optický FiberNet + televízia	1000 Mbps	31/85	..	0.5	56.6	0.0	0	20.2	77.3
Slovenia	Telemach	EON Premium	1024 Mbps	102/135	..	0.0	97.3	0.0	0	0.0	97.3
Spain	Movistar España	Movistar Esencial	600 Mbps	114/9	30	0.0	92.4	0.0	0	86.0	178.5
Switzerland	Sunrise	Easy Internet + TV	1024 Mbps	320/17	..	0.0	53.6	0.0	0	49.1	102.7
Türkiye	TTNet	Tivibu'lu İnternet Kampanyasi	1000 Mbps	177/22	..	0.0	77.9	0.0	0	0.0	77.9
United Kingdom	BT	Broadband & Phone + TV	900 Mbps	119/16	..	0.0	97.8	7.0	0	14.0	118.8
United States	Spectrum	Fixed broadband + TV	1024 Mbps	0/116	..	0.9	129.8	0.0	0	29.7	160.4
OECD average						**0.5**	**87.9**	**0.3**	**0**	**33.9**	**122.6**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

StatLink https://stat.link/0hjq74

Table 23. 2 play: OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Fixed voice (FV), Low usage, January 2025

25 Mbps, 20 calls, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Australia	TPG	FTTB Superfast	50 Mbps	..	..	0.6	44.9	7.0	0	0	52.5
Austria	Kabelplus	KabelTWIN	70 Mbps	..	..	0.7	35.8	3.5	0	0	40.1
Belgium	Orange Belgium	Internet + TV	200 Mbps	..	..	0.0	54.8	14.6	0	0	69.5
Canada	Videotron	Internet + TV APP + Home Phone	60 Mbps	0/24	..	2.6	61.5	17.0	0	0	81.1
Chile	VTR Chile	VTR WIFI + Fono ilimitados 600 Movil	600 Mbps	..	..	0.0	48.0	0.0	0	0	48.0
Colombia	Claro Colombia	Arma tu Play - internet + telefonia	250 Mbps	..	..	0.9	22.2	16.4	0	0	39.5
Costa Rica	Liberty	Tripleplay	45 Mbps	167/74	..	1.1	71.2	1.6	0	0	73.9
Czech Republic	O2 Czech	Internet	100 Mbps	42/0	..	0.0	26.0	22.8	0	0	48.8
Denmark	YouSee	Broadband	200 Mbps	..	..	0.0	41.1	13.6	0	0	54.7
Estonia	STV Estonia	Koosta endale sobiv pakett	50 Mbps	..	..	6.7	29.8	5.8	0	0	42.2
France	Free	Freebox Revolution Light	1024 Mbps	..	..	1.8	35.4	2.0	0	0	39.2
Germany	Vodafone Deutschland	Internet & Phone Cable	50 Mbps	..	..	-2.4	40.9	0.0	0	0	38.5
Greece	Nova Greece	Stathero-Internet	100 Mbps	..	..	0.0	49.2	0.0	0	0	49.2
Hungary	Telekom Hungary	Home Services - Internet + Fixed Voice	250 Mbps	..	..	0.0	31.5	16.1	0	0	47.6
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	..	..	0.0	75.5	16.3	0	0	91.7
Ireland	Vodafone Ireland	Broadband and Talk	100 Mbps	..	..	0.0	42.3	7.3	0	0	49.5
Italy	Vodafone Italia	Vodafone Casa FWA	100 Mbps	..	..	0.0	38.0	0.0	0	0	38.0
Japan	J Com	NET + Phone (Apartment Building)	320 Mbps	..	..	0.9	35.0	12.1	0	0	47.9
Korea	LG U+	Internet + IPTV + Internet Phone	100 Mbps	5/211	..	1.7	15.8	3.0	0	0	20.4
Latvia	BALTICOM	Digitālā Televīzija 19 Ch + Internets + Home Phone	100 Mbps	9/10	..	0.7	24.9	8.7	0	0	34.4
Lithuania	Splius	Internetas & Televizija	100 Mbps	13/23	..	0.0	31.3	10.4	0	0	41.6
Luxembourg	Tango	Tango Internet + Fixe	150 Mbps	..	..	0.0	44.1	2.8	0	0	46.8
Mexico	Telmex	Paquete 389	80 Mbps	..	..	0.0	35.2	0.0	0	0	35.2
Netherlands	KPN	Internet	100 Mbps	..	..	0.9	50.7	15.0	0	0	66.5
New Zealand	One NZ	Unlimited Broadband	50 Mbps	..	..	0.3	46.9	9.4	0	0	56.6
Norway	Telenor Norway	Fiber Bredband and Fixed Voice	100 Mbps	..	..	6.1	91.2	30.6	0	0	127.9
Poland	Orange Polska	Orange Światłowód + TV	600 Mbps	27/111	..	0.8	51.2	0.0	0	0	51.9
Portugal	Vodafone Portugal	Net + Voz	100 Mbps	..	..	0.0	48.4	8.1	0	0	56.5
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic	80 Mbps	..	..	0.0	20.5	18.3	0	0	38.8
Slovenia	Telemach	EON Light	200 Mbps	61/90	..	0.0	63.9	3.8	0	0	67.7
Spain	Orange - Jazztel	Fibra + Llamadas	300 Mbps	..	..	0.0	31.8	4.8	0	0	36.6
Switzerland	Quickline	Quickline Start	100 Mbps	..	..	5.7	42.3	13.4	0	0	61.4
Türkiye	Superonline	Fiber Karnavalı	25 Mbps	..	..	0.0	33.0	0.5	0	0	33.5
United Kingdom	Sky UK	Broadband with Sky Talk	152 Mbps	..	..	0.2	44.9	22.5	0	0	67.6
United States	Spectrum	Internet + home Phone	50 Mbps	..	..	0.9	27.5	16.5	0	0	44.9
OECD average						**0.9**	**42.5**	**9.2**	**0.0**	**0.0**	**52.6**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

StatLink https://stat.link/0hjq74

Table 24. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Fixed voice (FV), High usage, January 2025

600 Mbps, 140 calls, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Australia	TPG	NBN Home Bundle	800 Mbps	..	..	0.2	73.5	7.0	0	0	80.7
Austria	Magenta Austria	Internet + Fixed Voice	600 Mbps	..	..	0.0	46.9	3.9	0	0	50.8
Belgium	Orange Belgium	Internet + TV	1000 Mbps	..	..	0.0	79.2	14.6	0	0	93.8
Canada	Videotron	Internet + TV APP + Home Phone	940 Mbps	0/24	..	2.6	80.4	17.0	0	0	100.1
Chile	VTR Chile	VTR WIFI + Fono ilimitados 600 Movil	600 Mbps	..	..	0.0	48.0	0.0	0	0	48.0
Colombia	Movistar Colombia	Duo Fibra Internet + Telefonia	700 Mbps	..	..	0.9	53.2	0.0	0	0	54.0
Costa Rica	Liberty	Liberty Total	1000 Mbps	..	30	1.1	203.6	12.0	0	0	216.7
Czech Republic	O2 Czech	Internet	1000 Mbps	42/0	..	0.0	43.4	22.8	0	0	66.2
Denmark	YouSee	Broadband	1000 Mbps	..	..	1.5	45.2	13.6	0	0	60.3
Estonia	STV Estonia	Koosta endale sobiv pakett	1024 Mbps	..	..	6.7	83.7	33.0	0	0	123.4
France	Free	Freebox Revolution Light	1024 Mbps	..	..	1.8	35.4	4.0	0	0	41.2
Germany	Vodafone Deutschland	Internet & Phone Cable	1000 Mbps	..	..	-2.4	68.1	0.0	0	0	65.7
Greece	Nova Greece	Stathero-Internet	1000 Mbps	..	..	0.0	67.1	0.0	0	0	67.1
Hungary	Telekom Hungary	Home Services - Internet + Fixed Voice	1000 Mbps	..	..	0.0	42.1	27.2	0	0	69.3
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	..	..	0.0	84.5	16.3	0	0	100.8
Ireland	eir	Complete Broadband and Phone	1000 Mbps	..	..	-1.5	63.3	10.8	0	0	72.6
Italy	Vodafone Italia	Internet Unlimited Smart Fiber	2500 Mbps	..	..	0.0	42.5	0.0	0	0	42.5
Japan	J Com	NET + Phone (Apartment Building)	1024 Mbps	..	..	0.9	42.0	36.4	0	0	79.3
Korea	SK Telecom	Cable Internet + Cable Home Phone	1024 Mbps	..	..	1.1	27.3	17.4	0	0	45.7
Latvia	BALTICOM	Interaktīvā Televīzija 31Ch + Internets + Home Phone	600 Mbps	9/22	..	0.7	35.6	17.0	0	0	53.3
Lithuania	Splius	Internetas & Televizija	1000 Mbps	13/23	..	0.0	47.3	13.0	0	0	60.4
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	..	..	0.0	50.2	5.5	0	0	55.7
Mexico	Megacable	Telefonía + Internet	750 Mbps	..	..	0.6	76.8	0.0	0	0	77.4
Netherlands	KPN	Internet	1000 Mbps	..	..	0.9	60.1	15.0	0	0	75.9
New Zealand	Slingshot	Broadband Plan	872 Mbps	..	..	0.3	75.5	20.1	0	0	95.9
Norway	Telenor Norway	Fiber Bredband and Fixed Voice	750 Mbps	..	..	6.1	127.9	30.6	0	0	164.6
Poland	Orange Polska	Orange Światłowód + TV	600 Mbps	27/111	..	0.8	51.2	0.0	0	0	51.9
Portugal	Vodafone Portugal	Net + Voz - Fibra2 Light - Online offer	1000 Mbps	..	..	0.0	50.7	77.7	0	0	128.3
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic with Speed Benefit	850 Mbps	..	..	0.0	31.7	25.3	0	0	57.0
Slovenia	Telekom Slovenije	NEO A	1024 Mbps	96/6	..	2.2	89.9	13.9	0	0	106.0
Spain	Orange - Jazztel	Fibra + Llamadas	600 Mbps	..	..	0.0	41.4	4.8	0	0	46.1
Switzerland	Sunrise	Internet + Phone	2560 Mbps	..	..	0.0	59.5	13.4	0	0	73.0
Türkiye	Superonline	Fiber Karnavalı	1000 Mbps	..	..	0.0	43.3	2.1	0	0	45.5
United Kingdom	Sky UK	Broadband with Sky Talk	930 Mbps	..	..	0.2	64.1	22.5	0	0	86.8
United States	Spectrum	Internet + home Phone	1024 Mbps	..	..	0.9	99.0	16.5	0	0	116.4
OECD average						**0.7**	**63.8**	**14.7**	**0.0**	**0.0**	**79.2**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 25. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), Low usage, January 2025

25 Mbps, 20 calls, 20 channels, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	Kabelplus	Kabel Complete	70 Mbps	130/0	..	0.7	43.9	3.5	0	0	48.1
Belgium	Orange Belgium	Internet + TV	200 Mbps	31/0	..	0.0	67.0	14.6	0	0	81.6
Canada	Videotron	Internet + TV APP + Home Phone	60 Mbps	0/24	..	2.6	61.5	17.0	0	0	81.1
Chile	Mundo	3 Mundo - Fibra + Fijo + TV Go	600 Mbps	0/176	..	0.0	70.0	0.0	0	0	70.0
Colombia	UNE - Tigo	Internet, Telefonía Fija y Televisión Especial	100 Mbps	42/59	..	0.9	35.5	30.6	0	0	67.0
Costa Rica	Liberty	Tripleplay	45 Mbps	167/74	..	1.1	71.2	1.6	0	0	73.9
Czech Republic	O2 Czech	Internet	100 Mbps	42/0	..	0.0	32.5	22.8	0	0	55.3
Denmark	YouSee	Broadband	200 Mbps	32/0	..	0.4	89.1	13.6	0	0	103.0
Estonia	STV Estonia	Koosta endale sobiv pakett	50 Mbps	29/27	..	6.7	41.1	5.8	0	0	53.6
France	SFR	ADSL Starter	70 Mbps	160/0	..	2.2	38.7	4.6	0	0	45.6
Germany	Vodafone Deutschland	Internet & Phone Cable	50 Mbps	88/57	..	-2.4	60.2	0.0	0	0	57.8
Greece	Nova Greece	Fiber EON	100 Mbps	27/55	..	0.0	59.4	0.0	0	0	59.4
Hungary	Tarr	Basic TV + Internet & Tel	350 Mbps	14/24	..	0.0	42.7	5.2	0	0	47.9
Iceland	Siminn	Heimilispakkinn HEIMILIS	1000 Mbps	26/0	..	0.0	139.9	0.0	0	0	139.9
Ireland	eir	Complete Broadband and Phone	100 Mbps	56/4	..	-1.5	66.9	10.8	0	0	76.2
Japan	NTT East -BB Excite	Flet's Hikari Next (Apartment Type) + Hikari Telephone + Flet's TV	100 Mbps	0/37	..	9.6	45.0	10.0	0	0	64.7
Korea	LG U+	Internet + IPTV + Internet Phone	100 Mbps	5/211	..	1.7	15.8	3.0	0	0	20.4
Latvia	BALTICOM	Interaktīvā Televīzija 31Ch + Internets + Home Phone	100 Mbps	9/22	..	0.7	28.5	8.7	0	0	37.9
Lithuania	Splius	Internetas & Televizija	100 Mbps	13/23	..	0.0	31.3	10.4	0	0	41.6
Luxembourg	Tango	Tango Duo M	300 Mbps	36/44	..	0.0	66.1	2.8	0	0	68.9
Mexico	Megacable	TV Conecta + Ilimitado Plus + Internet Simetrico	50 Mbps	38/58	..	0.6	45.2	0.0	0	0	45.8
Netherlands	Odido	Build Your Own Bundle	100 Mbps	5/59	..	0.0	54.1	14.1	0	0	68.2
Norway	Telenor Norway	Fiber Bredband and TV	100 Mbps	94/0	..	6.1	134.6	30.6	0	0	171.3
Poland	Orange Polska	Orange Światłowód + TV	600 Mbps	27/111	..	0.8	51.2	0.0	0	0	51.9
Portugal	MEO	M3 Fibra 30	30 Mbps	99/0	..	0.0	58.6	5.4	0	0	63.9
Slovak Republic	UPC Slovakia	Internet + Internet Smart TV	600 Mbps	33/55	..	0.5	41.4	4.7	0	0	46.6
Slovenia	Telemach	EON Light	200 Mbps	61/90	..	0.0	63.9	3.8	0	0	67.7
Spain	Orange - Jazztel	Fibra + Llamadas + TV	300 Mbps	60/0	..	0.0	39.7	4.8	0	0	44.5
Switzerland	Swisscom	Basic Home	50 Mbps	100/60	..	0.0	53.6	10.0	0	0	63.6
Türkiye	TTNet	Tivibu'lu İnternet Kampanyasi - Aile	50 Mbps	111/19	..	0.0	41.3	1.9	0	0	43.3
United Kingdom	Virgin Media UK	Big Bundle	264 Mbps	113/16	..	0.0	77.9	4.8	0	0	82.8
United States	Spectrum	Internet + Home Phone + TV	50 Mbps	0/85	..	0.9	82.5	16.5	0	0	99.9
OECD average						**1.0**	**57.8**	**8.2**	**0.0**	**0.0**	**67.0**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 26. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), Medium-high usage, January 2025

250 Mbps, 60 calls, 40 channels including premium movies, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	Magenta Austria	Internet + Fixed Voice + TV	600 Mbps	64/40		0.0	58.3	3.9	0	36.7	98.9
Belgium	Orange Belgium	Internet + TV	500 Mbps	37/51		0.0	90.2	14.6	0	30.5	135.3
Canada	Shaw	Essentials Internet 250 + TV Essentials + Fixed Voice	250 Mbps	41/10		-2.6	112.0	21.8	0	19.7	150.8
Chile	VTR Chile	VTR Plus 3	500 Mbps	28/82		0.0	89.3	0.0	0	0.0	89.3
Colombia	Movistar Colombia	Trio Fibra	700 Mbps	36/70		0.9	75.5	0.0	0	15.3	91.6
Costa Rica	Liberty	Tripleplay	300 Mbps	167/82		1.1	106.1	4.4	0	0.0	111.6
Czech Republic	O2 Czech	Internet	300 Mbps	42/3		0.0	39.0	22.8	0	12.7	74.5
Denmark	YouSee	Broadband	1000 Mbps	41/0		1.9	102.8	13.6	0	0.0	118.3
Estonia	STV Estonia	Koosta endale sobiv pakett	250 Mbps	29/28		6.7	52.5	13.6	0	11.4	84.1
France	SFR	Fibre Starter	1024 Mbps	160 / 1		2.2	38.7	6.6	0	45.4	92.9
Germany	Vodafone Deutschland	Internet & Phone Cable	250 Mbps	88/61		-2.4	73.8	0.0	0	37.5	108.9
Greece	Cosmote	COSMOTE Fiber Plus TV	300 Mbps	44/29		0.0	85.3	1.0	0	0.0	86.3
Hungary	Tarr	Premium TV + Internet & Tel	350 Mbps	48/59		0.0	49.3	18.5	0	0.0	67.7
Ireland	Vodafone Ireland	Broadband & Talk and TV	500 Mbps	75/25		0.0	69.2	14.1	0	12.9	96.3
Japan	J Com	NET + PHONE + TV (Apartment Building)	320 Mbps	0/43		0.9	75.7	21.4	0	19.1	117.1
Korea	LG U+	Internet + IPTV + Internet Phone	500 Mbps	5/211		1.7	25.3	7.2	0	9.2	43.3
Latvia	BALTICOM	Digitālā Televīzija 115 Ch + Internets + Home Phone	300 Mbps	43/80		0.7	40.1	13.7	0	8.2	62.7
Lithuania	Cgates	TV-Internetas	250 Mbps	24/66		1.2	56.1	9.2	0	0.0	66.5
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	50/54		0.0	67.4	3.3	0	27.5	98.2
Mexico	Megacable	TV Conecta + Telefonía + Internet	250 Mbps	38/58		0.6	63.3	0.0	0	18.0	81.9
Netherlands	Odido	Build Your Own Bundle	400 Mbps	5/63		0.0	58.2	14.1	0	18.5	90.8
Norway	Telenor Norway	Fiber Bredband and TV	500 Mbps	94/0		6.1	149.9	30.6	0	0.0	186.7
Poland	Orange Polska	Orange Światłowód + TV	600 Mbps	27/114		0.8	51.2	0.0	0	11.4	63.3
Portugal	NOS	NOS 3 - Fibra 200Mbps upgraded to 500Mbps - 180 Canais UMA 4K with TV Cine - Online offer	500 Mbps	124/63		-7.1	66.5	28.3	0	6.8	94.5
Slovak Republic	UPC Slovakia	Internet + Internet Smart TV	600 Mbps	33/58		0.5	41.4	14.6	0	12.2	68.7
Slovenia	Telemach	EON Full	500 Mbps	82/103		0.0	77.8	13.6	0	10.9	102.3
Spain	Vodafone España	Fibra Vodafone 1Gbps + Pack TV Esencial	1024 Mbps	71/0		0.0	67.7	0.0	0	15.9	83.6
Switzerland	Sunrise	Internet + TV	2560 Mbps	320/0		0.0	71.5	13.4	0	13.4	98.3
Türkiye	Superonline	TV+ PRO Fiber Kampanyası	500 Mbps	119/48		0.0	62.2	0.9	0	0.0	63.1
United Kingdom	BT	Broadband & Phone + TV	300 Mbps	119/16		0.0	79.5	25.3	0	0.0	104.8
United States	Spectrum	Internet + Home Phone + TV	500 Mbps	0/93		0.9	128.3	16.5	0	18.7	164.5
OECD average						**0.5**	**71.7**	**11.2**	**0.0**	**13.3**	**96.7**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 27. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), High usage, January 2025

600 Mbps, 140 calls, 80 channels including premium movies, sports and digital video recorder, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	Magenta Austria	Internet + Fixed Voice + TV	600 Mbps	64/42	..	0.0	58.3	3.9	0.0	49.6	111.8
Belgium	Orange Belgium	Internet + TV	1000 Mbps	37/51	..	0.0	102.4	14.6	0.0	43.9	160.8
Canada	Shaw	Ultimate Internet 1GB + TV Popular + Fixed Voice	1024 Mbps	122/13	..	-2.6	148.2	26.5	0.0	53.7	225.8
Chile	Movistar Chile	Pack Trío Internet + TV + Telefonia	600 Mbps	39/90	..	0.0	106.6	0.0	0.0	25.0	131.6
Colombia	Movistar Colombia	Trio Fibra	700 Mbps	36/70	..	0.9	75.5	0.0	0.0	35.3	111.6
Estonia	Telia Estonia	Telia 1	1024 Mbps	117/0	..	6.9	171.6	27.9	0.0	0.0	206.4
France	SFR	Fibre Starter	1024 Mbps	160 / 2		2.2	38.7	6.6	0.0	104.0	151.6
Germany	Vodafone Deutschland	Internet & Phone Cable	1000 Mbps	88/74	..	-2.4	87.4	0.0	0.0	56.6	141.6
Hungary	One Hungary	Home Net TV Family	1000 Mbps	54/71	..	0.0	57.8	30.2	0.0	12.5	100.5
Ireland	Vodafone Ireland	Broadband & Talk and TV	1000 Mbps	75/25	..	0.0	80.0	27.1	0.0	49.6	156.7
Lithuania	Cgates	TV-Internetas	1000 Mbps	24/71	..	1.2	68.7	11.0	0.0	23.2	104.1
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	50/59	..	0.0	67.4	5.5	0.0	44.1	116.9
Mexico	Megacable	TV Conecta + Telefonía + Internet	750 Mbps	38/58	..	0.6	85.9	0.0	0.0	30.0	116.4
Netherlands	KPN	Internet and TV	1000 Mbps	48/54	..	0.9	91.7	15.0	0.0	31.2	138.8
Norway	Telenor Norway	Fiber Bredband and TV	750 Mbps	94/1	..	6.1	182.0	30.6	0.0	83.0	301.8
Poland	Orange Polska	Orange Światłowód + TV	600 Mbps	27/116	..	0.8	51.2	0.0	0.0	15.9	67.9
Portugal	MEO	M3 Fibra - Pack Standar+Extra TV + €50 canais premium	1000 Mbps	145/20	..	0.0	129.0	62.4	0.0	0.0	191.4
Slovenia	Telekom Slovenije	NEO A	1024 Mbps	96/9	..	2.2	89.9	13.9	0.0	12.5	118.5
Spain	Movistar España	Movistar Esencial	600 Mbps	114/9	30	0.0	92.4	49.8	0.0	86.0	228.3
Switzerland	Swisscom	InOne home - Internet + Fixed Voice + TV	1024 Mbps	274/293	..	0.0	85.6	13.4	0.0	22.3	121.3
Türkiye	TTNet	Tivibu'lu İnternet Kampanyasi	1000 Mbps	177/22	..	0.0	77.9	5.3	0.0	0.0	83.2
United Kingdom	BT	Broadband & Phone + TV	900 Mbps	119/16	..	0.0	97.8	25.3	0.0	14.0	137.1
United States	Spectrum	Internet + Home Phone + TV	1024 Mbps	0/116	..	0.9	168.3	16.5	0.0	29.7	215.4
OECD average						**0.8**	**96.3**	**16.8**	**0.0**	**35.7**	**149.5**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 28. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), Low usage, January 2025

25 Mbps, FV: 20 calls, MVD: 30 calls, 1 GB, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	A1 Telekom Austria	Internet Connect Plus	50 Mbps	..	50	0.7	32.3	10.8	16.7	0	60.4
Belgium	Orange Belgium	Pack Love (Mobile + Internet)	200 Mbps	..	8	0.0	48.7	14.6	14.6	0	78.0
Canada	Videotron	Economy Package + Home Phone	60 Mbps	0/29	25.8	2.6	108.8	17.0	1.8	0	130.3
Colombia	Movistar Colombia	Total Duo - Internet 700Megas + Telefonia + Movil	700 Mbps	..	Unlimited	0.9	83.7	0.0	0.0	0	84.6
Costa Rica	Liberty	Liberty Total 150Mb	150 Mbps	..	22	1.1	94.3	1.6	0.0	0	97.0
France	Free	Freebox Revolution Light	1024 Mbps	..	Unlimited	2.2	35.4	2.0	18.6	0	58.1
Germany	United Internet (1und1)	1&1 DSL & Glasfaser	50 Mbps	..	1	2.3	50.4	2.2	0.0	0	54.8
Greece	Vodafone Greece	RED 10GB + Fiber 300 Plus	300 Mbps	..	20	0.0	73.9	0.0	0.5	0	74.4
Hungary	Tarr	Tarr Pakk Basic TV + Internet & Tel	350 Mbps	14/24	1	0.0	42.7	5.2	10.0	0	57.9
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	..	5	0.0	75.5	16.3	15.0	0	106.8
Ireland	eir	Complete Broadband and Phone	100 Mbps	..	120	-1.5	52.5	10.8	18.0	0	79.7
Italy	Vodafone Italia	Vodafone Family Plan	100 Mbps	..	Unlimited	0.2	51.7	0.0	0.0	0	51.9
Korea	SK Telecom	Cable Internet + Cable Home Phone + 2 Mobile lines	1024 Mbps	..	1.8	1.1	11.5	4.1	23.7	0	40.5
Lithuania	Telia Lithuania	Telia 1	250 Mbps	34/0	4	1.5	53.3	12.7	22.4	0	89.9
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	..	15	0.0	50.2	1.7	18.7	0	70.6
Netherlands	Odido	Internet + Mobile	100 Mbps	5/59	2	0.0	47.8	14.1	17.5	0	79.4
New Zealand	One NZ	Unlimited Broadband	50 Mbps	..	5	0.3	40.2	9.4	30.2	0	80.0
Norway	Telenor Norway	Fiber Bredband and Fixed Voice	100 Mbps	..	6	6.1	91.2	30.6	36.8	0	164.7
Poland	Orange Polska	Love Standard	600 Mbps	27/111	Unlimited	0.8	57.0	0.0	0.0	0	57.8
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/60	200	-7.1	97.3	6.0	0.0	0	96.3
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic	80 Mbps	..	4	0.0	20.5	18.3	25.5	0	64.3
Slovenia	T-2	ORANŽNI Start	100 Mbps	84/46	20	4.9	57.9	5.5	0.0	0	68.2
Spain	Vodafone España	Fibra + Movil 25GB	600 Mbps	..	25	0.0	55.8	0.0	0.0	0	55.8
Switzerland	Quickline	Quickline Start	100 Mbps	..	5	6.7	42.3	13.4	7.5	0	69.9
United Kingdom	Virgin Media UK	Volt Fibre Broadband and Phone	264 Mbps	..	10	0.0	61.8	4.8	8.4	0	75.0
United States	Spectrum	Internet + Home Phone + Mobile	50 Mbps	..	20	0.9	27.5	16.5	33.6	0	78.5
OECD average						**0.9**	**56.3**	**8.4**	**12.3**	**0.0**	**77.9**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 29. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), Medium-high usage, January 2025

250 Mbps, FV: 60 calls, MVD: 100 calls, 10 GB, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	A1 Telekom Austria	Internet Connect Plus	250 Mbps	..	50	0.7	43.1	31.5	16.7	0.0	92.0
Belgium	Telenet	One	250 Mbps	..	10	0.0	80.3	7.3	0.0	0.0	87.7
Canada	Videotron	Powerful Bundle + Home Phone	500 Mbps	..	63.3	2.6	151.9	17.0	1.8	0.0	173.3
Colombia	Movistar Colombia	Total Duo - Internet 700Megas + Telefonia + Movil	700 Mbps	..	Unlimited	0.9	83.7	0.0	0.0	0.0	84.6
Costa Rica	Liberty	Liberty Total	300 Mbps	..	30	1.1	100.2	4.4	0.0	0.0	105.6
France	Free	Freebox Revolution Light	1024 Mbps	..	Unlimited	2.2	35.4	4.0	18.6	0.0	60.1
Germany	Vodafone Deutschland	Internet & Phone Cable & Giga Kombi	250 Mbps	..	30	-2.4	54.5	0.0	30.0	0.0	82.1
Greece	Vodafone Greece	RED 10GB + Fiber 300 Plus	300 Mbps	..	20	0.0	73.9	0.0	1.7	0.0	75.6
Hungary	Telekom Hungary	Magenta 1	250 Mbps	..	5	0.0	31.5	20.0	49.7	0.0	101.2
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	..	25	0.0	84.5	16.3	22.3	0.0	123.1
Ireland	eir	Complete Broadband and Phone	500 Mbps	..	120	-1.5	56.1	10.8	18.0	0.0	83.3
Italy	Vodafone Italia	Vodafone Family Plan	2500 Mbps	..	Unlimited	0.2	51.7	0.0	0.0	0.0	51.9
Korea	SK Telecom	Cable Internet + Cable Home Phone + 2 Mobile lines	1024 Mbps	..	11	1.1	11.5	8.3	36.7	0.0	57.7
Lithuania	Telia Lithuania	Telia 1	250 Mbps	34/0	10	1.5	53.3	15.8	29.0	0.0	99.5
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	..	15	0.0	50.2	3.3	18.7	0.0	72.2
Netherlands	Odido	Internet + Mobile	400 Mbps	5/59	10	0.0	52.0	14.1	21.8	0.0	87.9
New Zealand	Slingshot	Broadband Plan	312 Mbps	..	10	0.3	62.8	19.9	33.5	0.0	116.4
Norway	Telenor Norway	Fiber Bredband and Fixed Voice	250 Mbps	..	11	6.1	103.3	30.6	41.9	0.0	182.0
Poland	Orange Polska	Love Standard	600 Mbps	27/111	Unlimited	0.8	57.0	0.0	0.0	0.0	57.8
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/60	200	-7.1	97.3	28.3	0.0	0.0	118.5
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic	500 Mbps	..	15	0.0	28.5	22.0	42.5	0.0	93.0
Slovenia	T-2	T4	500 Mbps	23/43	20	4.9	64.0	19.3	0.0	0.0	88.2
Spain	Vodafone España	Fibra + Movil 25GB	600 Mbps	..	25	0.0	55.8	0.0	0.0	0.0	55.8
Switzerland	Quickline	Quickline Start	500 Mbps	..	Unlimited	6.7	51.3	13.4	11.9	0.0	83.3
United Kingdom	Virgin Media UK	Volt Fibre Broadband and Phone	264 Mbps	..	10	0.0	61.8	9.6	8.4	0.0	79.8
United States	Spectrum	Internet + Home Phone + Mobile	500 Mbps	..	20	0.9	73.3	16.5	33.6	0.0	124.4
OECD average						**0.7**	**64.2**	**12.0**	**16.8**	**0.0**	**93.7**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

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Table 30. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), High usage, January 2025

600 Mbps, FV: 140 calls, MVD: 300 calls, 20 GB, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	A1 Telekom Austria	Internet Connect Plus	1000 Mbps	..	50	0.7	73.3	86.8	16.7	0.0	177.4
Belgium	Orange Belgium	Pack Love (Mobile + Internet)	1000 Mbps	..	50	0.0	73.1	14.6	20.7	0.0	108.5
Colombia	Movistar Colombia	Total Duo - Internet 700Megas + Telefonia + Movil	700 Mbps	..	Unlimited	0.9	83.7	0.0	0.0	0.0	84.6
Costa Rica	Liberty	Liberty Total	1000 Mbps	..	30	1.1	203.6	12.0	0.0	0.0	216.7
France	Free	Freebox Revolution Light	1024 Mbps	..	Unlimited	2.2	35.4	4.0	18.6	0.0	60.1
Germany	Vodafone Deutschland	Internet & Phone Cable & Giga Kombi	1000 Mbps	..	30	-2.4	68.1	0.0	30.0	0.0	95.7
Greece	Nova Greece	Fiber EON+ with Mobile Unlimited	1000 Mbps	38/78	Unlimited	0.0	150.3	0.0	0.0	0.0	150.3
Hungary	One Hungary	Home Net TV Basic	1000 Mbps	12/32	Unlimited	0.0	50.3	30.2	50.3	0.0	130.7
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	..	25	0.0	84.5	16.3	22.3	0.0	123.1
Ireland	eir	Complete Broadband and Phone	1000 Mbps	..	120	-1.5	63.3	10.8	18.0	0.0	90.5
Italy	Vodafone Italia	Vodafone Family Plan	2500 Mbps	..	Unlimited	0.2	51.7	0.0	0.0	0.0	51.9
Korea	SK Telecom	Cable Internet + Cable Home Phone + 2 Mobile lines	1024 Mbps	..	24	1.1	11.5	17.4	45.3	0.0	75.3
Lithuania	Telia Lithuania	Telia 1	1024 Mbps	34/0	20	1.5	69.4	15.8	37.9	0.0	124.5
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	..	250	0.0	50.2	5.5	44.1	0.0	99.8
Netherlands	KPN	Internet with Mobile	1000 Mbps	..	24	0.9	60.1	15.0	21.2	0.0	97.1
New Zealand	One NZ	Unlimited Broadband	813 Mbps	..	50	0.3	59.0	31.6	46.9	0.0	137.8
Norway	Telenor Norway	Fiber Bredband and Fixed Voice	750 Mbps	..	Unlimited	6.1	127.9	30.6	54.2	0.0	218.9
Poland	Orange Polska	Love Standard	600 Mbps	27/111	Unlimited	0.8	57.0	0.0	0.0	0.0	57.8
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/60	200	-7.1	97.3	70.2	0.0	0.0	160.4
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic with Speed Benefit	850 Mbps	..	31	0.0	31.7	25.3	56.6	0.0	113.6
Slovenia	T-2	ORANŽNI Diamant HBO	1000 Mbps	123/80	Unlimited	4.9	106.9	0.0	0.0	0.0	111.8
Spain	Vodafone España	Fibra + Movil 25GB	600 Mbps	..	25	0.0	55.8	0.0	0.0	0.0	55.8
Switzerland	Quickline	Quickline Start	10240 Mbps	..	Unlimited	6.7	57.2	13.4	11.9	0.0	89.3
United Kingdom	Virgin Media UK	Volt Fibre Broadband and Phone	1130 Mbps	..	30	0.0	87.0	14.0	21.1	0.0	122.1
United States	Spectrum	Internet + Home Phone + Mobile	1024 Mbps	..	20	0.9	99.0	16.5	33.6	0.0	150.0
OECD average						**0.7**	**76.3**	**17.2**	**22.0**	**0.0**	**116.2**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H1 2025]" (dataset).

StatLink https://stat.link/0hjq74

Table 31. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD) + TV, Low usage, January 2025

25 Mbps, FV: 20 calls, MVD: 30 calls, 1 GB, 20 channels, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	A1 Telekom Austria	TV Kombi Connect Plus	50 Mbps	66/30	50	0.0	44.1	10.8	16.7	0.0	71.5
Belgium	Orange Belgium	Pack Love (Mobile + Internet + TV Lite)	200 Mbps	31/0	8	0.0	60.9	14.6	14.6	0.0	90.2
Canada	Videotron	Economy Package + Home Phone	60 Mbps	0/29	25.8	2.6	108.8	17.0	1.8	0.0	130.3
Colombia	Movistar Colombia	Total Trio - Internet 700Megas + Telefonia + TV + Movil	700 Mbps	34/65	Unlimited	0.9	106.0	0.0	0.0	0.0	106.9
Costa Rica	Liberty	Liberty Total 150Mb Con TV	150 Mbps	167/74	22	1.1	111.8	1.6	0.0	0.0	114.4
France	SFR France	ADSL Starter	70 Mbps	160/0	1.1	2.2	38.7	4.6	14.5	0.0	60.1
Germany	United Internet (1und1)	1&1 DSL & Glasfaser	50 Mbps	55/60	1	2.3	64.0	2.2	0.0	0.0	68.4
Greece	Vodafone Greece	RED 5GB + Fiber 300 plus+ Vodafone TV	300 Mbps	28/1	10	0.0	78.1	0.0	0.5	0.0	78.6
Hungary	Tarr	Tarr Pakk Basic TV + Internet & Tel	350 Mbps	14/24	1	0.0	42.7	5.2	10.0	0.0	57.9
Iceland	Vodafone Iceland	Build Your Own	1000 Mbps	22/0	5	0.0	150.9	16.3	15.0	0.0	182.2
Ireland	eir	Complete Broadband and Phone	100 Mbps	56/4	120	-1.5	66.9	10.8	18.0	0.0	94.1
Korea	LG U+	Internet + IPTV + Internet Phone + Mobile	100 Mbps	5/211	1.5	1.7	24.1	3.0	26.7	0.0	55.4
Lithuania	Telia Lithuania	Internet + TV	250 Mbps	34/0	4	1.5	49.7	12.7	22.4	0.0	86.3
Luxembourg	Tango	Tango Duo M	300 Mbps	36/44	4	0.0	66.1	2.8	12.1	0.0	81.0
Netherlands	Odido	Internet + Mobile	100 Mbps	5/59	2	0.0	47.8	14.1	17.5	0.0	79.4
Norway	Telenor Norway	Fiber Bredband and TV	100 Mbps	94/0	6	6.1	134.6	30.6	36.8	0.0	208.1
Poland	Orange Polska	Love Standard	600 Mbps	27/111	Unlimited	0.8	57.0	0.0	0.0	0.0	57.8
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/60	200	-7.1	97.3	6.0	0.0	0.0	96.3
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic	80 Mbps	28/34	4	0.0	43.5	18.3	25.5	0.0	87.2
Slovenia	T-2	ORANŽNI START	100 Mbps	84/46	20	4.9	57.9	5.5	0.0	0.0	68.2
Spain	Orange - Jazztel	Fibra 1GB + Movil 100Gb 2 lineas + TV	1024 Mbps	60/0	50	0.0	68.4	0.0	0.0	0.0	68.4
Switzerland	Quickline	Quickline Start	100 Mbps	78/133	5	6.7	51.3	13.4	7.5	0.0	78.8
United Kingdom	Virgin Media UK	Big Volt Bundle	264 Mbps	113/16	10	0.0	70.2	4.8	14.0	0.0	89.1
United States	Spectrum	Internet + Home Phone + Mobile + TV	50 Mbps	0/85	20	0.9	82.5	16.5	33.6	0.0	133.5
OECD average					**25.9**	**1.0**	**71.8**	**8.8**	**12.0**	**0.0**	**93.5**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H2 2025]" (dataset).

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Table 32. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD)+ TV, Medium-high usage, January 2025

250 Mbps, FV: 60 calls, MVD: 100 calls, 10 GB, 40 channels including premium movies, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Austria	A1 Telekom Austria	TV Kombi Connect Plus	250 Mbps	66/30	50	0.0	55.3	31.5	16.7	25.9	129.4
Belgium	Telenet	One	250 Mbps	33/67	10	0.0	107.2	7.3	0.0	30.5	145.0
Colombia	Movistar Colombia	Total Trio - Internet 700Megas + Telefonia + TV + Movil	700 Mbps	35/70	Unlimited	0.9	106.0	0.0	0.0	15.3	122.2
Costa Rica	Liberty	Liberty Total Con TV	300 Mbps	167/82	30	1.1	117.7	4.4	0.0	0.0	123.1
France	Free	Freebox Pop	5120 Mbps	66/165	Unlimited	1.8	48.7	0.0	13.3	45.4	109.1
Germany	Vodafone Deutschland	Internet & Phone Cable & Giga Kombi	250 Mbps	88/61	30	-2.4	73.8	0.0	30.0	37.5	138.9
Hungary	Tarr	Tarr Pakk Premium TV + Internet & Tel	350 Mbps	48/59	12	0.0	49.3	18.5	40.8	0.0	108.5
Korea	LG U+	Internet + IPTV + Internet Phone + Mobile	500 Mbps	5/211	14	1.7	28.8	7.2	44.5	9.2	91.4
Lithuania	Telia Lithuania	Internet + TV	250 Mbps	70/1	10	1.5	64.7	15.8	29.0	14.3	125.2
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	50/54	15	0.0	67.4	3.3	18.7	27.5	117.0
Netherlands	Odido	Internet + Mobile	400 Mbps	5/63	10	0.0	52.0	14.1	21.8	18.5	106.4
Norway	Telenor Norway	Fiber Bredband and TV	500 Mbps	94/0	11	6.1	149.9	30.6	41.9	0.0	228.6
Poland	Orange Polska	Love Standard	600 Mbps	27/114	Unlimited	1	57.0	0.0	0.0	11.4	69.2
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/63	200	-7.1	97.3	28.3	0.0	6.8	125.3
Slovak Republic	Telekom Slovak	Magenta1 with FibreOptic	500 Mbps	28/37	15	0.0	51.4	22	42.5	12.1	128.0
Slovenia	T-2	T4	500 Mbps	23/43	20	5	64.0	19.3	0.0	18.4	106.6
Spain	Movistar España	Movistar Esencial	600 Mbps	44/9	30	0.0	71.7	20.0	0.0	30.3	122.0
Switzerland	Quickline	Quickline Start	500 Mbps	78/155	Unlimited	7	60.2	13.4	11.9	19.7	111.9
United Kingdom	Virgin Media UK	Big Volt Bundle	264 Mbps	113/27	10	0.0	70.2	9.6	14.0	29.5	123.3
United States	Spectrum	Internet + Home Phone + Mobile + TV	500 Mbps	0/93	20	0.9	128.3	16.5	33.6	18.7	198.1
OECD average					**30.4**	**0.8**	**76.1**	**13.1**	**17.9**	**18.5**	**126.5**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H2 2025]" (dataset).

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Table 33. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband + Fixed voice (FV) + Mobile voice and data (MVD)+ TV, High usage, January 2025

600 Mbps, FV: 140 calls, MVD: 300 calls, 20 GB, 80 channels including premium movies, sports and digital video recorder, USD PPP including VAT per month

Country	Provider	Package, option	Speed	Channels (SD/HD)	Mobile data (GB)	Connection	Rental	Fixed voice	Mobile voice and data	Pay TV	Total
Belgium	Orange Belgium	Pack Love (Mobile + Internet + Orange TV)	1000 Mbps	37/51	50	0.0	96.3	14.6	20.7	43.9	175.5
Colombia	Movistar Colombia	Total Trio - Internet 700Megas + Telefonia + TV + Movil	700 Mbps	36/70	Unlimited	0.9	106.0	0.0	0.0	35.3	142.2
France	Free	Freebox Pop	5120 Mbps	66/166	Unlimited	1.8	48.7	0.0	13.3	104.0	167.7
Germany	Vodafone Deutschland	Internet & Phone Cable & Giga Kombi	1000 Mbps	88/74	30	-2.4	87.4	0.0	30.0	56.6	171.6
Hungary	One Hungary	Home Net TV Family	1000 Mbps	54/71	Unlimited	0.0	57.8	30.2	50.3	12.5	150.8
Luxembourg	Luxembourg Online	LOL Fiber	1000 Mbps	50/59	250	0.0	67.4	5.5	44.1	44.1	161.0
Netherlands	KPN	Internet and TV with Mobile	1000 Mbps	48/54	24	0.9	79.3	15.0	21.2	31.2	147.5
Norway	Telenor Norway	Fiber Bredband and TV	750 Mbps	94/1	Unlimited	6.1	182.0	30.6	54.2	83.0	356.0
Poland	Orange Polska	Love Standard	600 Mbps	27/116	Unlimited	0.8	57.0	0.0	0.0	15.9	73.7
Portugal	NOS	NOS 4 - Fibra 200Mbpps upgraded to 1Gbps - 180 Canais UMA 4K with TV Cine + Cartão - Online offer	1000 Mbps	124/69	200	-7.1	97.3	70.2	0.0	57.7	218.1
Slovenia	Telekom Slovenije	NEO C	1024 Mbps	200/17	20	2.2	82.4	13.9	28.4	12.5	139.4
Spain	Movistar España	Movistar Esencial	600 Mbps	114/9	30	0.0	92.4	49.8	0.0	86.0	228.3
Switzerland	Quickline	Quickline Start	10240 Mbps	90/176	Unlimited	6.7	75.1	13.4	11.9	48.7	155.8
United Kingdom	Virgin Media UK	Big Volt Bundle	1130 Mbps	113/35	30	0.0	94.8	14.0	21.1	64.9	194.8
United States	Spectrum	Internet + Home Phone + Mobile + TV	1024 Mbps	0/116	20	0.9	168.3	16.5	33.6	29.7	249.0
OECD average						**0.7**	**92.8**	**18.2**	**21.9**	**48.4**	**182.1**

Source: OECD (2025[12]), *OECD Communication Price Basket Benchmarking systems*, "OECD Bundled Communication Price Benchmarking tool [H2 2025]" (dataset).

StatLink https://stat.link/0hjq74

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List of Figures

Chapter 1 **DIGITAL PRIORITIES, POLICIES AND GOVERNANCE**

1.1. Artificial intelligence is the most oft-mentioned term in digital policy initiatives, with skills being the most prominent policy domain 19
1.2. National digital strategies are increasingly developed by dedicated digital ministries rather than at high level and at the centre of government 20
1.3. Almost all countries monitor their national digital strategies and most countries evaluate them 21
1.4. Policy initiatives aim at increasing effective use, unleashing digital innovation, and societal issues dominate the digital policy landscape 22
1.5. Beyond national digital strategies, the policy landscape differs across countries 23
1.6. Among digital technologies, AI, cloud computing and 5G dominate the digital policy landscape 27
1.A.1. The Going Digital Integrated Policy Framework 2026 28

Chapter 2 **TRENDS IN ACCESS AND CONNECTIVITY**

2.1. Gigabit subscriptions are on the rise across the OECD 38
2.2. Fibre and FWA show growth in fixed broadband subscriptions 39
2.3. 5G coverage reaches 90% of population on average across the OECD 40
2.4. Operators are investing a substantial proportion of revenues to expand and upgrade networks in some OECD Member countries and partner economies 41
2.5. EBITDA margins in OECD Member countries 42
2.6. Fixed broadband performance has steadily improved across speed and latency 42
2.7. 5G download speeds are almost four times higher than 4G speeds, on average, across the OECD 43
2.8. Gaps remain in access to high-quality fixed networks (capable of speeds >100 Mbps) 44
2.9. Urban users experience 42% higher fixed speeds than people living in regions far from metropolitan areas 44
2.10. Users in cities across the OECD experience mobile download speeds 41% higher than those in rural areas 45
2.11. Mobile voice and data, and fixed broadband prices have decreased across the OECD over the past decade 46
2.12. Prices for triple-play bundles vary substantially across the OECD 47
2.13. Content providers account for over half of used bandwidth in five of nine major routes 49
2.14. Submarine connectivity in the Balearic and Canarian archipelagos 51
2.15. Top challenges facing communication regulation and policy in the next three to five years 52
2.16. More than half of regulators have at least a partial mandate on six of ten digital issues 54
2.17. Mid-band spectrum has been the most commonly assigned spectrum since 2023 58

Spotlight **POWERING AI PROGRESS: THE FUTURE OF COMPUTE**

1.S.1. AI progress relies on system-level performance across the compute layers of the AI stack 70
1.S.2. A high-performance AI chip is only as effective as the system it operates within 72
1.S.3. Venture capital funding for AI firms in IT infrastructure and hosting has surged 75

Chapter 3 **DIGITAL TECHNOLOGY DIFFUSION AND THE ECONOMY**
3.1. Cloud adoption remains over twice as high as AI adoption among firms 86
3.2. Firm-size gaps in adoption are projected to increase for AI but narrow for cloud computing 87
3.3. Adoption of frontier digital technologies is strongest in knowledge- and data-intensive sectors 87
3.4. Most firms adopt cloud computing alone or with data analytics, while full integration with AI remains limited 88
3.5. Information and communication lead in co-ordinated adoption of frontier digital technologies across sectors 89
3.6. As technologies get more advanced, the gap in technology adoption rates between digital intensity clusters increases 90
3.7. Rapid diffusion of advanced technologies in Italy contracts the MCA factor space 91
3.8. AI use in enterprises differs substantially across the OECD 92
3.9. AI adoption purposes reflect efficiency, strategic and customer-focussed priorities among firms 93
3.10. AI technologies deployed align with business priorities and firm sizes 94
3.11. AI adoption surged in 2024 but has moderated in 2025 with strong disparities across sectors 95
3.12. About 40% of individuals use generative AI in the OECD, mostly for private purposes 96
3.13. Disparities in AI use are greatest by age 97
3.14. ICT sector growth in 2025 points to broad convergence across the OECD 98
3.15. ICT spillovers represent a significant share of forward linkages in most countries 99
3.16. Reliance on ICT goods and services varies significantly across sectors 100
3.17. A few economies drive most global ICT value added absorbed abroad 101
3.18. The dependence on imported ICT inputs varies significantly across the OECD 102
3.19. China is the leading source of foreign ICT value added for most OECD Member countries 103

Spotlight **THE INNOVATION LANDSCAPE OF PRIVACY-ENHANCING TECHNOLOGIES**
2.S.1. Trends in patent applications, scientific publications, and OSS development show that innovation in PETs is surging 116
2.S.2. A large range of corporate entities are active in the OSS ecosystem 117
2.S.3. The number of new firms patenting PETs is on the rise 118
2.S.4. Research and development on PETs is partly driven by AI 119
2.S.5. The uptake of PETs varies across application domains 121
2.S.6. PETs patenting is highly concentrated in a handful of economies 123
2.S.7. PETs specialisation differs by country 123

Chapter 4 **LEVELLING UP CHILD WELL-BEING IN VIDEO GAMING**
4.1. Types of devices commonly used by children to play video games 141
4.2. Common types of interactions between players and the game environment 143
4.3. Main types of target audiences for online gaming 144
4.4. The distribution of weekday gaming time varies markedly across countries 147
4.5. The share of students gaming intensively differs widely across countries 148
4.6. Most children game regularly, with frequent gaming slightly declining with age 148
4.7. Most 11-, 13- and 15-year-olds play one to four hours per day on average 149
4.8. Boys are more likely than girls to game intensively on weekdays 150
4.9. Gaming decreases as socio-economic status rises, with boys gaming more than girls across all groups 150
4.10. School performance declines with excessive gaming, while moderate use shows no or little disadvantage 152
4.11. Gaming relates differently to school performance across socio-economic status groups 153
4.12. Intensive gaming is associated with steeper declines in academic performance among girls, particularly on weekdays 154

4.13. Symptoms of gaming disorder are more common among children who play frequently and for longer daily periods ... 158

Spotlight **GROWING OLDER IN THE AI AGE**
3.S.1. Age gaps in Internet use are closing fast as nine out of ten older adults are now online ... 174
3.S.2. Use of online public services has increased, but age gaps persist ... 175
3.S.3. Older adults are increasingly seeking health information online, narrowing the age gap ... 176
3.S.4. Internet banking is gaining ground rapidly in many OECD Member countries ... 177
3.S.5. More than half of older adults are now making purchases online ... 177
3.S.6. Older adults are less likely to adopt GenAI, which is concentrated among younger users ... 179
3.S.7. Older adults are more negative about the impact of AI on their lives ... 180

List of Tables

Chapter 1 **DIGITAL PRIORITIES, POLICIES AND GOVERNANCE**
1.1. Digital policy priorities are becoming more diverse, but some have demonstrated strong continuity over time ... 18
1.2. Allocation of NDS responsibility by country ... 21
1.B.1. National digital strategies in force, 2025 ... 29
1.C.1. Digital policy priorities as defined in the DESO 2026 data collection ... 31

Spotlight **POWERING AI PROGRESS: THE FUTURE OF COMPUTE**
1.S.1. AI compute business models and appropriate access modalities vary ... 76

Chapter 3 **DIGITAL TECHNOLOGY DIFFUSION AND THE ECONOMY**
3.A.1. Estimated diffusion paths for cloud computing and AI ... 104
3.B.1. Nowcasts of AI uptake in enterprises for selected OECD Member countries ... 106

Spotlight **THE INNOVATION LANDSCAPE OF PRIVACY-ENHANCING TECHNOLOGIES**
2.S.B.1. Keywords for identifying PETs ... 129
2.S.B.2. Narrow definition of PET patents ... 129
2.S.B.3. Broad definition of PET patents ... 129
2.S.B.4. Keywords for identifying application domains ... 130
2.S.B.5. Keywords for identifying AI co-occurrence ... 130

Chapter 4 **LEVELLING UP CHILD WELL-BEING IN VIDEO GAMING**
4.1. Common video game genres and sub-genres popular among children ... 142
4.A.1. Association between time spent on gaming and school performance: Baseline specification ... 162
4.A.2. Association between gaming and school performance: Sex in focus ... 163

STATISTICAL ANNEX
1. Technology adoption, by size, 2025 (or most recent) ... 191
2. Technology adoption, by industry, 2025 (or most recent) ... 194
3. Co-occurrences of technologies, by size, 2025 (or most recent) ... 198
4. Co-occurrences of technologies, by industry, 2025 (or most recent) ... 202
5. Purposes of AI adoption, by size, 2025 (or most recent) ... 212
6. Adoption of AI technologies, by size, 2025 (or most recent) ... 215
7. Individuals using any generative AI tools to create content in the last three months, by purpose of use, 2025 (or most recent) ... 218

8. Individuals using any generative AI tools to create content in the last three months, by age, 2025 (or most recent) 219
9. Individuals using any generative AI tools to create content in the last three months, by education attainment, 2025 (or most recent) 220
10. Individuals using any generative AI tools to create content in the last three months, by sex, 2025 (or most recent) 221
11. Individuals using any generative AI tools to create content in the last three months, by income quintile, 2025 (or most recent) 222
12. Nowcasts for ICT sector growth, 2025 (or most recent) 224
13. Experimental estimates of digital trade 226
14. OECD Communication price baskets, Mobile voice and data (MVD), Low usage, May 2025 236
15. OECD Communication price baskets, Mobile voice and data (MVD), Medium usage, May 2025 237
16. OECD Communication price baskets, Mobile voice and data (MVD), High usage, May 2025 238
17. OECD Communication price baskets, Mobile voice and data (MVD), Very-high usage, May 2025 239
18. OECD Communication price baskets, Fixed broadband (FBB), Low usage, June 2025 240
19. OECD Communication price baskets, Fixed broadband (FBB), Medium usage, June 2025 241
20. OECD Communication price baskets, Fixed broadband (FBB), High usage (Giga offer), June 2025 242
21. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Television (TV), Low usage, January 2025 243
22. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Television (TV), High usage, January 2025 244
23. 2 play: OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Fixed voice (FV), Low usage, January 2025 245
24. OECD Bundled Communication Price Baskets, 2 play: Fixed broadband (FBB) + Fixed voice (FV), High usage, January 2025 246
25. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), Low usage, January 2025 247
26. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), Medium-high usage, January 2025 248
27. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Television (TV), High usage, January 2025 249
28. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), Low usage, January 2025 250
29. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), Medium-high usage, January 2025 251
30. OECD Bundled Communication Price Baskets, 3 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD), High usage, January 2025 252
31. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD) + TV, Low usage, January 2025 253
32. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband (FBB) + Fixed voice (FV) + Mobile voice and data (MVD)+ TV, Medium-high usage, January 2025 254
33. OECD Bundled Communication Price Baskets, 4 play: Fixed broadband + Fixed voice (FV) + Mobile voice and data (MVD)+ TV, High usage, January 2025 255

List of Boxes

Chapter 1 **DIGITAL PRIORITIES, POLICIES AND GOVERNANCE**
1.1. Surveying digital policies yields valuable insights, but qualitative surveys come with caveats 18

Chapter 2 **TRENDS IN ACCESS AND CONNECTIVITY**
2.1. Submarine cable disruptions can interrupt or degrade international traffic 48
2.2. Case study: Domestic submarine cables in Spain 50

Spotlight **POWERING AI PROGRESS: THE FUTURE OF COMPUTE**
1.S.1. What makes a data centre AI-ready? 72

Spotlight **THE INNOVATION LANDSCAPE OF PRIVACY-ENHANCING TECHNOLOGIES**
2.S.1. Using privacy-enhancing technologies to enable international data sharing 120
2.S.2. Market dynamics and competition challenges: The case of Inpher 125

Chapter 4 **LEVELLING UP CHILD WELL-BEING IN VIDEO GAMING**
4.1. Glossary of popular game genres and sub-genres 142
4.2. Gaming and academic outcomes: Non-linear patterns and cognitive pathways 151

OECD Digital Economy and Society Outlook 2026

From rapid advances in artificial intelligence (AI) compute that are reshaping the technology frontier to screen-time dynamics that are affecting the academic performance of children, digital transformation has evolved from a simple question of Internet access into a much more complex phenomenon. The *OECD Digital Economy and Society Outlook 2026* helps chart the path ahead by providing evidence-based analysis on today's key technological trends and their impacts. It examines new directions in digital priorities, policies and governance, and then explores key technologies that underpin digital transformation, as well as their economic and societal effects. A Statistical Annex completes the publication.

PRINT ISBN 978-92-64-58269-9
PDF ISBN 978-92-64-99780-6