



Brussels, 2.7.2024  
COM(2024) 260 final

ANNEX 3 – PART 2/4

**ANNEX**

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**Communication from the Commission to the European Parliament, the Council, the  
European Economic and Social Committee and the Committee of the Regions**

**State of the Digital Decade 2024**

**Annex 3: Short EU 27 Member States reports**



# State of the Digital Decade 2024

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**Finland**

## 1 Executive summary

**Finland brings a very strong contribution** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Finland made notable progress in gigabit networks roll-out** and continued to record growth in the **digital skills of the population and the digitalisation of its enterprises**. However, **challenges persist to keep up with gigabit networks deployment** across its territory and in the area of e-government, where there is a need to **improve on e-health and to ensure that access to other digital public services remains at highest possible levels**.

Using digitalisation as a tool to achieve a thriving and resilient economy and a safe, inclusive society is a priority for the Finnish authorities. Finland set out its vision for 2030 in the national digital compass, in line with the EU-level objectives. As the digital transition is at full speed in Finland, the country is focusing on research, development and innovation (RDI) in advanced technologies, 6G connectivity and opportunities deriving from the data economy. The production of semiconductors and quantum computing are also given a top priority. These developments in Finland are in a context of accessible online public services and a highly digitally literate population. ICT specialists remain sought after to meet labour shortages.

According to the **Special Eurobarometer 'Digital Decade 2024'**<sup>1</sup>, **78% of the Finnish population consider that the digitalisation of daily public and private services makes their life easier**. This is slightly above the EU average of 73%.

Finland is participating in the works to set up **European Digital Infrastructure Consortia (EDICs)** for the Genome EDIC, the Mobility and Logistics Data EDIC and Connected Public Administration EDIC (IMPACTS-EDIC). The country is finalising membership negotiations for the Local Digital Twins (LDT – CitiVERSE) EDIC and has decided to seek an observer status in the Alliance for Language Technologies one (ALT-EDIC)<sup>2</sup>(both already set up). The country also participates in the EuroHPC Joint Undertaking, hosting LUMI, one of the supercomputers procured by the Joint Undertaking.

**Finland's recovery and resilience plan dedicates 29% of its budget to digital policy measures (EUR 0.5 billion)**, with priorities given to e-Health, cybersecurity, and R&D in key technologies (6G, AI, quantum)<sup>3</sup>. Under Cohesion Policy, an additional EUR 0.4 billion (20% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>4</sup>.

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<sup>1</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>2</sup> Information last updated on 31 May 2024.

<sup>3</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>4</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Digital Decade KPI <sup>(1)</sup>	Finland			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	FI	EU
Fixed Very High Capacity Network (VHCN) coverage	70.8%	77.7%	9.8%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage	50.3%	61.2%	21.5%	64.0%	13.5%	x	-
Overall 5G coverage	94.7%	98.4%	3.9%	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		24		1 186		x	10 000
SMEs with at least a basic level of digital intensity	81.6%	85.6%	2.4%	57.7%	2.6%	90%	90%
Cloud	66.3%	73.0%	4.9%	38.9%	7.0%	75%	75%
Artificial Intelligence	15.8%	15.1%	-2.2% <sup>(2)</sup>	8.0%	2.6%	75%	75%
Data analytics	NA	40.6%	NA	33.2%	NA	75%	75%
AI or Cloud or Data analytics	NA	79.5%	NA	54.6%	NA		75%
Unicorns		7		263		x	500
At least basic digital skills	79.2%	82.0%	1.8%	55.6%	1.5%	87%	80%
ICT specialists	7.6%	7.6%	0.0%	4.8%	4.3%	10%	~10%
eID scheme notification		No					
Digital public services for citizens	91.6	90.6	-1.1%	79.4	3.1%	100	100
Digital public services for businesses	100.0	100.0	0.0%	85.4	2.0%	100	100
Access to e-Health records	90.1	82.6	-8.3%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

<sup>(2)</sup> The variation between the two years is not considered statistically significant but in line with the stagnation of this indicator.

## National Digital Decade strategic roadmap

With respect to **Finland's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating a **very high ambition** and based on this document, intends to allocate **significant effort** to achieve the Digital Decade objectives and targets.

**The roadmap is ambitious and coherent including all objectives.** Finland's national roadmap includes 2030 targets for all KPIs except for FTTP, edge nodes and unicorns. It also demonstrates ambitions in areas such as semiconductors and quantum. In total, all the national targets presented are aligned with EU 2030 targets. At this stage, trajectories are missing for FTTP, edge nodes, unicorns, take-up of cloud, AI and data analytics, digital public services for citizens and e-health. The roadmap covers all objectives of the Digital Decade, such as technological leadership, sovereignty, competitiveness, cybersecurity, protection of fundamental rights in the digital space and the green transition. The proposed set of measures to achieve them is underpinned by values such as trust and sustainability.

**The total budget for the measures is an estimated EUR 499.7 million (0.2% of GDP).** The priorities are the uptake of cloud, artificial intelligence and data analytics/big data, the development of quantum computing capacities, innovations in connectivity (such as 6G) and increasing RDI expenditure.

### Recommendations for the roadmap

Finland should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the DDPP Decision:

- **TARGETS:** (i) Propose a target and trajectory for **FTTP, edge nodes and unicorns**, design a trajectory for **VHCN, cloud, data analytics, AI, digital public services for citizens and e-health**; (ii) Propose a higher target for **basic digital intensity of enterprises**.
- **MEASURES:** (i) Strengthen the measures on **ICT specialists and gigabit**, add measures on **digital public services and e-health**; (ii) Review the **budget description** of all presented measures, duly highlighting national and EU sources such as Recovery and Resilience Facility; (iii) Provide **more information on the implementation of digital rights and principles** (and Digital Decade general objectives), including what national measures contribute to it.

### Digital rights and principles

The Digital Decade Eurobarometer reveals detailed views from Finland on digital rights. While the majority find digitalisation beneficial, only 58% of Finns believe their rights are well protected by the EU, a 9-point drop since 2023 but still higher than the EU average (45%). Key concerns include safe internet for children and digital legacy control, with only 33% and 36% feeling secure, respectively. However, 71% feel they have sufficient freedom of expression and information online, up by 5 points. Positive trends are seen in access to high-speed internet (68% satisfaction, up 2%) and online privacy protection (69% satisfaction). The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>5</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**To underpin its technological leadership and competitiveness, Finland is equipped with excellent mobile network infrastructures, a high level of digitalisation of businesses and high level of investment in disruptive technologies.** On infrastructures, Finland is already very close to reaching 100% coverage for 5G (98.4%). 5G in the 3.4-3.8 GHz band, essential for enabling advanced applications requiring large-spectrum bandwidth, covers 89.7% of Finnish households. The rate of deployment of gigabit networks (VHCNs) is rising steadily but the coverage remains slightly below the EU average. However, fixed broadband subscriptions with download speeds of 1 Gbps or more are at 4%, lower than the EU average of 18.5%.

85.6% of SMEs in Finland have at least a basic level of digital intensity and almost 80% use AI, Cloud or Data analytics. Companies are continuously encouraged to increase their productivity and competitiveness by tapping the potential of 6G, the data economy and AI. The Government and industry invest heavily in research and development across multiple digital areas, notably semiconductors, AI and quantum computing. The current approach to cybersecurity frames the issue as an exercise for the whole society, with public investments in citizen skills and resilience of businesses. The national strategy in this area will be updated in 2024.

### Recommendations – Finland should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) Intensify efforts to develop fixed gigabit connectivity, including by reinforcing public investments where necessary; (ii) Ensure sufficient access of new

<sup>5</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to continue the deployment of 5G stand-alone core networks.

- **AI/CLOUD/DATA ANALYTICS:** (i) Encourage enterprises to apply existing advanced technological solutions, such as AI or quantum testing possibilities and innovate further in these areas; (ii) Stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the coordinators and the Member States participating in the IPCEI-CIS.
- **CYBERSECURITY:** Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.
- **TECHNOLOGICAL LEADERSHIP:** Secure further sources of funding and encourage private investment in disruptive technologies.

### Protecting and empowering EU people and society

**Finland is well equipped to deliver the digital transformation based on trust and putting people at the centre.** Finland has already reached the EU-level target of at least basic skills with measures planned to boost societal resilience and to keep bridging geographical and demographical divides in formal and informal education and training. The country aims to achieve a 10% proportion of ICT specialists in employment, which requires keeping up the momentum, even though it performs better than other EU countries. To increase the number of employees with advanced digital skills, Finland's roadmap proposes a higher number of places in higher education institutions and incentives for foreigners. The country scores 90.6 in the accessibility of digital public services for citizens and 100 on access for businesses. The e-ID is very widely used, and in 2023 Finland has started the process to notify an e-ID for cross-border authentication under the eIDAS Regulation. Looking beyond the country's above-average performance in e-health, digital support in health and care services could help offset labour shortages in these fields and additional features of the e-health system – increase its user-friendliness.

#### Recommendations – Finland should:

- **BASIC SKILLS:** Continue empowering literacy of its population and developing competences in areas such as cybersecurity.
- **ICT SPECIALISTS:** Intensify efforts in attracting ICT specialists and offering tailored training paths as well as address the gender gap in this field.
- **e-ID:** Notify to the Commission an e-ID scheme under the eIDAS Regulation.
- **e-Health:** (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online; (ii) Widen the catalogue of data available to citizens in that service; (iii) Consider offering a mobile application for citizens to access their electronic health records and enhanced authentication methods.

### Leveraging digital transformation for a smart greening

**Finland's ambition for digital leadership is based on sustainability as an underlying value and the goal of facilitating a digital green transition.** The government published a [Climate and Environmental Strategy for the ICT Sector](#) in 2021 in cooperation with the private sector and research community and keeps following its implementation. In Finland, research and other activities are ongoing to not only reduce its carbon footprint but also to create a handprint of technological industries. The aim is therefore to develop digital technologies that can help overcome global climate and environmental challenges. One example is the choice of Finnish

supercomputer LUMI to run the Climate Change Adaptation Digital Twin (Climate DT), a high-priority digital twin under the EU flagship initiative *Destination Earth*.

#### Recommendations – Finland should:

- Continue developing a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.
- Demonstrate leadership in using digital transition for environmental purposes by promoting national tools and methodologies at European level.





# State of the Digital Decade 2024

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**France**

## 1 Executive summary

**France brings a positive contribution** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

In 2023, France made notable **progress** in **e-health** and rolling out its **fibre network**. However, **important challenges** persist in the **digitalisation of SMEs** and the **adoption of advanced technologies** (such as AI and cloud) by enterprises.

**Digitalisation is a priority for the French authorities with an emphasis on infrastructure and research and development (R&D) in key technologies.** Under its investment plan 'France 2030', France is investing massively in research and innovation in new technologies such as cloud, cybersecurity, Artificial Intelligence (AI), and quantum. The production of semiconductors on the national territory is also given a top priority. France also benefits from robust digital infrastructures. Although its digitalisation policies cover a broad range of areas, there is scope to improve several metrics related to the general population of citizens and enterprises. According to the **special Eurobarometer survey on the 'Digital Decade 2024'**<sup>6</sup>, only 64% of the French population consider that the digitalisation of daily public and private services makes their life easier, one of the lowest scores in the EU.

France is hosting the **European Digital Infrastructure Consortium** (EDIC) ALT-EDIC (already set up), which addresses the scarcity of European language data needed for AI solutions, and is candidate to host two more EDICs, both in the making: Agrifood EDIC and (along with The Netherlands) and Digital Commons EDIC. France is also a member of the Local Digital Twins towards the CitiVERSE EDIC (already set up). In addition, France is developing the Statute of the possible future Mobility and Logistics Data EDIC and the Genome EDIC<sup>7</sup>.

France allocates 21.6% of its total Recovery and Resilience plan to digital (EUR 8.1 billion)<sup>8</sup> with the priorities given to e-Health and R&D in key technologies (5G, quantum, and cloud). Under Cohesion Policy, an additional EUR 1.9 billion (11% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>9</sup>.

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<sup>6</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>7</sup> Information last updated on 31 May 2024.

<sup>8</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>9</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Digital Decade KPI <sup>(1)</sup>	France			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	FR	EU
Fixed Very High Capacity Network (VHCN) coverage	73.4%	81.4%	10.9%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage	73.4%	81.4%	10.9%	64.0%	13.5%	x	-
Overall 5G coverage	88.8%	93.2%	4.9%	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		257		1 186		x	10 000
SMEs with at least a basic level of digital intensity	47.0%	52.0%	<sup>(2)</sup>	57.7%	2.6%	90%	90%
Cloud	25.3%	22.9%	<sup>(2)</sup>	38.9%	7.0%	53.3%	75%
Artificial Intelligence	6.7%	5.9%	<sup>(2)</sup>	8.0%	2.6%	46.7%	75%
Data analytics	NA	33.9%	NA	33.2%	NA	49.7%	75%
AI or Cloud or Data analytics	NA	44.9%	NA	54.6%	NA		75%
Unicorns		40		263		100	500
At least basic digital skills	62.0%	59.7%	-1.9%	55.6%	1.5%	80%	80%
ICT specialists	4.3%	4.7%	9.3%	4.8%	4.3%	10%	~10%
eID scheme notification		Yes					
Digital public services for citizens	71.3	72.1	1.1%	79.4	3.1%	100	100
Digital public services for businesses	79.3	79.3	0.0%	85.4	2.0%	100	100
Access to e-Health records	54.5	79.3	45.5%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

<sup>(2)</sup> Comparison with previous years cannot be done for France due to methodological changes.

## National Digital Decade strategic roadmap

With respect to **France's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating a **high ambition** and, based on this document, intends to allocate **some effort** to achieve the Digital Decade objectives and targets.

**Overall, France's roadmap is ambitious and consistent including on objectives but with some weaknesses in the digitalisation of enterprises.** France's national roadmap includes 2030 targets for all KPIs except for **FTTP and edge nodes** (the former is assumed to be similar to VHCN but needs formalisation). In total, 9 national targets are aligned with EU 2030 targets, but 3 are below: **take up of AI, take up of data analytics and take up of cloud.** Trajectories are missing for **FTTP, edge nodes and unicorns.** The roadmap covers all objectives of the Digital Decade such as a human-centred digital space, resilience and security, sovereignty, green, and protection of the society with a high level of ambition, especially on the human centred digital space, on sovereignty, and on the green transition.

The total budget of the measures (public and private) presented in the roadmap **is estimated to EUR 17.8 billion** (about 0.6% of GDP) with the priorities being semiconductors, connectivity, and e-Health. Some aspects require more action, especially regarding ICT specialists to double the current number of ICT professionals and for the digitalisation of enterprises (both in terms of basic digital intensity and the rate of adoption of advanced technologies).

### Recommendations for the roadmap

France should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the Digital Decade Policy Programme (DDPP) Decision:

- **TARGETS:** (i) Provide a target and trajectory for **edge nodes**, design a trajectory for **unicorns**, and formalise the trajectory for **FTTP**; (ii) Consider aligning **the level of ambition of targets for the 3 technologies take-up by enterprises (AI, cloud, data analytics) to the EU's targets**.
- **MEASURES:** (i) Strengthen the measures contributing to targets that are the most difficult to achieve, especially as regards **skills and digitalisation of enterprises**; (ii) Review the budget description of all presented measures, duly highlighting EU sources such as Recovery and Resilience Facility (RRF); (iii) Provide **more information on the implementation of digital rights and principles** (and Digital Decade general objectives), including what national measures contribute to it.
- **CONSULTATION:** Report on the consultation of stakeholders in the roadmap.

### Digital rights and principles

The Special Eurobarometer 'Digital Decade 2024' provides insights into French perceptions of digital rights. Although 39% of French respondents believe the EU protects their digital rights effectively, this marks a decrease and is below the EU average of 47%. Concerns have intensified, with 52% worried about children's online safety and 45% about control over personal data, reflecting growing unease. On a positive note, 85% value digital technologies for connecting with friends and family, and 82% for accessing public services, indicating strong appreciation for digital advancements. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>10</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**To underpin its technological leadership and competitiveness, France is equipped with good infrastructures with a positive deployment dynamic but should boost the digitalisation of its businesses.** On infrastructures, France is on track to reach 100% coverage for VHCN (+3.5 million fibre connections in 2023) and 5G for 2025, 5 years earlier than the EU target. France shows the highest share of fixed broadband subscriptions with speed > 1 Gbps in the EU with 51.6%. This is mainly due to the successful roll-out of the fast broadband plan 'France très haut débit', the choice of FTTH as the leading technology, and the French appetite for high-speed broadband. 5G coverage stands at 93.2% with 64.8% of French households covered by the 3.4-3.8 GHz band, an essential band for enabling advanced applications requiring large spectrum bandwidth. Several calls for projects were launched to develop industrial 5G and the 26GHz band has been open since 2019 for experimentation purposes. However, the indicators on the digitalisation of enterprises (basic intensity of SMEs and take-up of data analytics, AI, and cloud) all point to a performance below the EU average. Although France hosts some innovative frontrunners (including dynamic start-ups), as a whole, the global business sector underperforms on digitalisation. France has made digital sovereignty a priority by, for example, increasing the production of semiconductors and is developing sovereign solutions in AI, cloud, quantum, and cybersecurity. On AI, a national commission recently released [a report](#) guiding the future actions of the government. The national cybersecurity strategy will be updated in 2024 with a focus on skills.

<sup>10</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

### Recommendations – France should:

- **CONNECTIVITY INFRASTRUCTURE:** Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.
- **CYBERSECURITY:** (i) Continue efforts in cybersecurity to address evolving threats and restore the confidence of enterprises and general public; (ii) Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.
- **SMEs:** Set up additional measures and increase resources for existing schemes to improve the SMEs digitalisation performance and to further leverage the impact of the European Digital Innovation Hub in regions and its close presence to regional ecosystems, paying special attention to its outermost regions.
- **AI/CLOUD/DATA ANALYTICS/EDGE NODES:**
  - (i) Review the mix of measures to support the adoption of advanced digital technologies (with a particular attention to AI and cloud). Foster the creation of local ecosystems to allow technologies (AI, cloud, data analytics) and best practices to diffuse across the broader business sector. Build on the recent national AI Commission report to design new measures to develop the AI ecosystem and foster related technologies adoption by enterprises.
  - (ii) Ensure the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country-specific dissemination strategy (complementing what has already been committed under IPCEI-CIS); contributing to the additional dissemination activities led by the Cloud IPCEI Exploitation Office.
  - (iii) Consider measures specific to edge nodes deployment, supplementary to the IPCEI-CIS participation.

### Protecting and empowering EU people and society

**France is well equipped to deliver an inclusive digital transition, but it will require sustained efforts to continuously increase the level of digital skills of the population and train ICT specialists.** The level of digital skills of the population is still slightly above the EU average, with a slight decrease compared to last year's report, possibly due to post-COVID-19 effects (i.e., lower usage of ICT tools). Over the last years, France has integrated digital skills in curricula at different stage. In 2023 it also announced measures to strengthen the basic education (especially in mathematics) and boost the attractiveness of science, technology, engineering, and mathematics (STEM). This could increase the number of young people embarking on a digital career in the future. The proportion of ICT specialists (4.7%) in employment is broadly in line with the EU average and in strong progress. However, it will require sustained action to reach the EU and national Digital Decade targets given the relatively slow change in population indicators. The digitalisation of public services will require acceleration as France is slightly below the EU average. France improved its overall e-Health maturity score from 54.5 in 2022 to 79.3 in 2023. In February 2024, the authorities launched 'France Identité', a companion application enabling e-ID users to authenticate and access digital ID services. France has a long history of prioritising inclusiveness in designing policies. Digitalisation is current practice with measures in place to narrow the geographical divides and the gender gap and to reduce digital illiteracy.

#### Recommendations – France should:

- **BASIC DIGITAL SKILLS:** Take measures to boost the digital skills of the population on the shorter term, with additional efforts in its outermost regions.
- **ICT SPECIALISTS:** (i) Increase the attractiveness of STEM disciplines at school to boost the number of young people, including girls, interested in taking up ICT-related studies or careers; (ii) Increase the visibility and readability of training and reskilling options. Design incentive schemes to attract and retain ICT specialists.
- **KEY DIGITAL PUBLIC SERVICES:** Make efforts to digitalise public services, with particular attention to re-use of information available to public administrations and user support.
- **E-HEALTH:** (i) Make all data types available to citizens through the online access service; (ii) Enhance the authentication method for logging in to the online access service by using a (pre)notified e-ID; (iii) Introduce a legal basis and provide the technical functionality for authorised persons to access electronic health data on behalf of others.

#### Leveraging digital transformation for a smart greening

France emerges as an EU leader in its ability to create links between the digital and green transitions. It is at the forefront in monitoring the footprint of the ICT sector and in promoting energy sobriety and the eco-design of ICT equipment and services. During the French presidency of the EU, France drafted a joint declaration on the dual digital and environmental transition, signed by 22 Member States.

#### Recommendations – France should:

- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Demonstrate leadership and continue monitoring and quantifying the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.



# State of the Digital Decade 2024

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**Germany**

## 1 Executive summary

**Germany brings a positive contribution** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Germany made notable progress** in the deployment of connectivity infrastructure, in particular 5G stand-alone-ready infrastructure and in FTTP. There is also good progress in enhancing basic digital skills. However, the country is still facing **important challenges** in reaching full FTTP coverage as well as in the digitalisation of public services.

**Digitalisation is a top priority for the Federal Government, reflected in several targeted strategies and massive investments in research and development of digital technologies.** Germany's cornerstone policy is the [Digital Strategy](#), adopted in August 2022 and updated in April 2023, which encompasses all facets of a sovereign, digital society, an innovative economy and a digital state. Several other strategies focus on specific aspects of digitalisation in Germany, such as the [Gigabit Strategy](#), the [AI Strategy](#), the [Data Strategy](#), the [Start-up Strategy](#); [Education in the Digital World](#) Strategy and the [National Further Education Strategy](#).

According to the **Special Eurobarometer survey, the 'Digital Decade 2024'**<sup>11</sup>, 70% of the German population said that the digitalisation of daily public and private services makes their life easier, below the EU average of 73%.

Regarding **European Digital Infrastructure Consortia** (EDICs) Germany is engaging in discussions on the setting up of the Mobility and Logistics Data EDIC, the Digital Commons EDIC, the Cancer Image Europe (EUCAIM) EDIC, the Genome EDIC and the AGRIfood EDIC. The country is also finalising membership negotiations with the Local Digital Twins towards the CitiVERSE – EDIC<sup>12</sup>(already set up). As part of the EuroHPC Joint Undertaking, Germany will host one of the two EU's exascale supercomputers, and one of the quantum computers.

**Regarding EU funding, both Germany's Recovery and Resilience plan (DARP) and the cohesion funds support Germany's commitment to digitalisation.** The DARP focuses on digital investments, featuring two important projects of common European interest (IPCEIs), one on semiconductors and one on cloud. Germany allocates 48% of its total Recovery and Resilience plan to digital (EUR 13.5 billion)<sup>13</sup>. Under cohesion policy, an additional EUR 2.3 billion (12% of the country's total cohesion policy funding) is allocated to the country's digital transformation<sup>14</sup>.

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<sup>11</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>12</sup> Information last updated on 31 May 2024.

<sup>13</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>14</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 cohesion policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.



Digital Decade KPI <sup>(1)</sup>	Germany			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	DE	EU
Fixed Very High Capacity Network (VHCN) coverage	70.1%	74.7%	6.6%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage	19.3%	29.8%	54.2%	64.0%	13.5%	100%	-
Overall 5G coverage	93.2%	98.1%	5.3%	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		351		1 186		x	10 000
SMEs with at least a basic level of digital intensity	58.9%	61.4%	2.1%	57.7%	2.6%	91%	90%
Cloud	31.8%	38.5%	10.0%	38.9%	7.0%	x	75%
Artificial Intelligence	10.6%	11.6%	4.6%	8.0%	2.6%	x	75%
Data analytics	NA	37.1%	NA	33.2%	NA	x	75%
AI or Cloud or Data analytics	NA	58.0%	NA	54.6%	NA	75%	75%
Unicorns		67		263		122 <sup>15</sup>	500
At least basic digital skills	48.9%	52.2%	3.3%	55.6%	1.5%	80%	80%
ICT specialists	5.0%	4.9%	-2.0%	4.8%	4.3%	x	~10%
eID scheme notification		Yes					
Digital public services for citizens	78.4	75.8	-3.3%	79.4	3.1%	x	100
Digital public services for businesses	80.7	78.6	-2.6%	85.4	2.0%	x	100
Access to e-Health records	70.3	87.0	23.7%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

## National Digital Decade strategic roadmap

With respect to **Germany's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating **some ambition** and, based on this document, intends to allocate **very significant effort** to achieve the Digital Decade objectives and targets.

**More specifically, the targets set are ambitious, but not all targets are covered.** The roadmap sets 2030 **targets for 8 KPIs** (VHCN, FTTP, 5G, the AI or cloud or big data joint indicator (the three technologies together), digital intensity, unicorn companies, digital skills and e-health). It sets **no target and therefore also no trajectory for 7 KPIs**: ICT specialists, edge nodes, AI, cloud, big data (separately), digital public services for citizens and for businesses. All the national targets are aligned with the EU's 2030 targets, but **full trajectories are provided for only 2 KPIs**: SMEs with at least a basic level of digital intensity and e-health. **Trajectories with one or two datapoints are provided for 3 KPIs**: FTTP/VHCN and 5G. Although this is not required, the roadmap also provides a full trajectory on quantum, the joint AI or cloud or big data indicator and on e-ID.

<sup>15</sup> No concrete number was provided in the roadmap. The target is assumed by the European Commission, which uses Dealroom as database. For DESI 2023, the European Commission determined 61 unicorns in Germany. Germany does not have direct access to the data and therefore cannot take any responsibility for comparability with other countries or for completeness and accuracy. In the event of a change in the database, the target would have to be adjusted if necessary.

The roadmap briefly covers the objectives of the Digital Decade such as digital citizenship, promoting leadership and sovereignty and contributing to the green transition.

The total budget of measures **is estimated** at almost EUR 100 billion (about 2.4% of Germany's GDP), with 60% allocated to fibre roll-out, followed by 17% for semiconductors and 10% for unicorn companies/start-ups. Some aspects require more action, such as the aim to increase the current number of ICT professionals. The roadmap assesses the key challenges related to the targets and analyses the impact of the measures on areas where specific challenges exist.

### Recommendations for the roadmap

Germany should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the Digital Decade Policy Programme (DDPP) Decision:

- **TARGETS:** (i) Propose a target and a trajectory for ICT specialists, edge nodes, AI, cloud and data analytics (separately), digital public services for citizens and for businesses; (ii) Complement the trajectory and thus provide yearly datapoints for the following 5 KPIs: FTTP, VHCN, 5G, unicorns and basic digital skills.
- **MEASURES:** Provide **more information on the implementation of digital rights and principles** (and Digital Decade general objectives), including what national measures contribute to it.

### Digital rights and principles

The Special Eurobarometer 'Digital Decade 2024' provides insights into German perceptions of digital rights. Although 41% of Germans believe the EU protects their digital rights effectively, this is a decrease of 6 points from last year and is below the EU average of 45%. Concerns have intensified, with 58% worried about children's online safety, up 4 points, and 44% about control over personal data, up 2 points. On the positive side, 57% value freedom of expression online, re satisfied with the level of digital skills, both figures remaining below the EU average. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>16</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**Germany aims to become a technological leader and is investing massively in leading technologies (semiconductors, quantum etc.), but it should continue to increase its fibre network coverage, where it made a very positive progress in deployment over the past year.** On infrastructure, Germany is second last in the EU on FTTP coverage with 29.8%, well below the EU average, however, with a strong growth (more than 10 percentage points from last year). To reach 100% coverage by 2030, it must continue deployment at this high growth rate. The necessary funding will come from both public and private sources, with the private sector forecast to invest EUR 50 billion in the coming years. The share of broadband retail lines with above 1 Gbps speeds is still very low at 5.45%, well below the EU average of 18.5%. At 98.1%, Germany is close to reaching full overall 5G household coverage. German authorities reported 87.3% stand alone-ready 5G coverage of Germany's territory. However, the coverage in the 3.4-3.8 GHz band, which is needed for this technology to realise its full potential, is rather limited (43.8% household coverage). Moreover, only 16.5% of the German population uses 5G SIM cards in 2023, well below the EU average of 24.6%.

<sup>16</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

**The digitalisation of enterprises is slowly gaining traction in Germany, as almost all relevant KPIs indicate an above-EU-average performance.** Germany also hosts 67 unicorn companies, accounting for 25% of all EU unicorns. Innovative, technology-driven start-ups are supported by the 'Future Fund' with EUR 10 billion. Digital and technological sovereignty is one of the priorities Germany set in its Digital Strategy and the country is strongly involved in projects that will advance this goal in the area of semiconductors (IPCEI on microelectronics), data (Gaia-X) and cloud (IPCEI-CIS).

#### Recommendations – Germany should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) Maintain the recent higher pace of deployment of the fibre infrastructure to reach the Digital Decade target. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to continue the deployment of 5G stand-alone core networks.
- **CLOUD:** Ensure the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country-specific dissemination strategy (complementing what has already been committed under IPCEI-CIS); contributing to the additional dissemination activities led by the Cloud IPCEI Exploitation Office.
- **SMEs:** Continue supporting the digitalisation of SMEs.
- **CYBERSECURITY:** (i) Continue efforts in cybersecurity to address evolving threats and strengthen in this regard the collaboration between the state and the industry; (ii) Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

#### Protecting and empowering EU people and society

**Germany is committed to enhancing the digital skills of the population and to training ICT specialists, but progress is slow, and it will require sustained efforts to digitalise public services.** The level of digital skills of the population is slightly below the EU average, but slowly increasing. Skills development is a joint responsibility of the Federal Government and the Länder, meaning that a good cooperation is necessary. In recent years, Germany has launched several initiatives to develop digital skills. It included related measures in the Recovery and Resilience Plan and listed in its roadmap 17 measures that are relevant in this area with EUR 7.5 billion in support. The Digital Pact for Schools, with a budget of EUR 6.5 billion, supports the Länder in providing a minimum level of digital infrastructure and teaching-learning technologies in schools. However, this project is due to end in May 2024. A follow-up project (Digital Pact School 2.0) is being negotiated at the time of writing (March 2024). The proportion of ICT specialists in employment is slightly above the EU average. However, a challenge that Germany faces is the overall decline in the number of first year students due to demographical changes. The country will need to accelerate the pace of digitalisation of public services as it is below the EU average and even saw a slight decline in the related indicators.

**As of April 2024, there were 157<sup>17</sup> digital public services available nationwide out of the 575 services that Germany had proposed to digitalise by the end of 2022 based on the Online Access Act.** To promote the uptake of these services, Germany is increasingly focusing on the user friendliness of its digital public services. To this end, in February 2024, it adopted the Online Access Amendment Act (*Onlinezugangsgesetz*)

<sup>17</sup> <https://dashboard.digitale-verwaltung.de/>

[20/8093](#). Germany is below the EU average in digitalisation of public services both for citizens (score 75.8 versus the EU average of 79.4) and businesses (78.6 versus 85.4).

**Germany had an overall e-health maturity score of 87 in 2023, above the EU average of 79 and well above its score of 70 in 2022.**

#### Recommendations – Germany should:

- **BASIC DIGITAL SKILLS:** Step up cooperation at all levels of administration to boost the digital skills of the population by 2030.
- **ICT SPECIALISTS:** (i) Increase the attractiveness of STEM disciplines at school to boost the number of young people, including girls and women, interested in taking up ICT-related studies or careers; (ii) Design incentive schemes to attract/retain ICT specialists.
- **DIGITAL PUBLIC SERVICES:** Accelerate the digitalisation of public services for citizens and businesses.
- **E-HEALTH:** (i) Ensure that all data types are made available in a timely manner; (ii) Increase the supply of health data by onboarding more categories of healthcare providers.

#### Leveraging digital transformation for a smart greening

For Germany the green and digital twin transition is a top priority, underpinned by an action plan of the Federal Ministry of Education and Research (BMBF) '[Natural. Digital. Sustainable](#)'. This is the basis for the 'Digital Sustainability Innovations' initiative that creates specific funding to connect between digitalisation and sustainability.<sup>18</sup> German enterprises and people are generally sensitive to the green transition of the digital sector. Germany has brought a wealth of measures that aim to green the digital economy, ranging from the application of AI technologies, organising workshops to promoting implementation of the Blue Angel criteria. Germany is committed to monitoring the impact of ICT systems. The German National Regulatory Authority, the *Bundesnetzagentur* commissioned a [study](#), published in 2023, which resulted in a set of indicators assessing the environmental sustainability of the telecommunications infrastructure. Four digitalisation measures were launched in Germany providing direct support for the green transition and that will also have a positive impact on the environment.

#### Recommendations – Germany should:

- Continue developing a coherent approach to twinning the digital and green transitions. First, continue promoting improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, continue supporting the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Demonstrate leadership and continue monitoring and quantifying the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.
- Share its experience in developing resource-efficient AI technologies and its best practice in using AI to increase resource efficiency and material savings.

<sup>18</sup> [Digitalisierung und Nachhaltigkeit - BMBF](#)



# State of the Digital Decade 2024

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**Greece**

## 1 Executive summary

**Greece has scope to improve its performance to contribute** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Greece made notable progress** in rolling out Fibre to the Premises (FTTP) connectivity infrastructure, and digitalising public services. However, **important challenges** persist in the share of ICT specialists in employment and in the basic level of digital intensity of SMEs.

**Although Greece still has a relatively low level of digital maturity, it has reversed the trend over the last 5 years.** Greece's digital transition draws on a strong political commitment and an overall digital transformation strategy spanning 2020-2025. It started by focusing specifically on digitalising public services for people and businesses, and sustained efforts are yielding tangible results. Ongoing action is also directed towards digitalising other crucial public sectors such as education, justice, healthcare, and to economic sectors that still have great untapped potential. Overall, these initiatives, in line with the European Semester's country specific recommendations, benefited from funding under the Recovery and Resilience Facility at a crucial moment. However, since Greece started its digital transition late, some structural challenges are still pending. In particular, the lack of progress on digital skills of the population is a hurdle for digitalisation to steadily drive the country's competitiveness and prosperity, despite high investments in digital education and training.

According to the **special Eurobarometer survey 'Digital Decade 2024'**<sup>19</sup>, 75% of respondents in Greece said that the digitalisation of daily public and private services makes their life easier, slightly above the EU average of 73%.

**Greece is very active in collaborating at EU level.** Greece is a member of the Alliance for Language Technologies EDIC (ALT-EDIC) and of the EUROPEUM-EDIC on blockchain (both already set up). Greece is expected to be the hosting Member State of the possible future Connected Public Administration EDIC and of the possible future Cybersecurity Skills Academy EDIC. Greece is developing the Statute and other relevant documents of the possible future Genome EDIC, within an informal working group. It is also engaging in discussions on the setup of possible future Cancer Image Europe (EUCAIM) EDIC, within an informal working group<sup>20</sup>. Greece also participates in the IPCEI Microelectronics and Communication Technology (ME/CT) and in the EU Digital Wallet consortia: POTENTIAL, EWC, DC4EU.

**Greece's Recovery and Resilience Plan (RRP) allocates 22.1% of its total budget to the digital transition** (EUR 7.78 billion)<sup>21</sup> with a strong priority on the transformation of the public administration and on digitising the economy, particularly SMEs. It is also investing significantly in increasing the digital skills of the population. Under Cohesion Policy, an additional EUR 2.7 billion (13% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>22</sup>.

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<sup>19</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>20</sup> Information last updated on 31 May 2024.

<sup>21</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>22</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Digital Decade KPI <sup>(1)</sup>	Greece			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	EL	EU
Fixed Very High Capacity Network (VHCN) coverage	27.9%	38.4%	37.9%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage	27.9%	38.4%	37.9%	64.0%	13.5%	100%	-
Overall 5G coverage	85.7%	98.1%	14.5%	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		12		1 186		95	10 000
SMEs with at least a basic level of digital intensity	37.7%	43.3%	7.2%	57.7%	2.6%	79.7%	90%
Cloud	15.2%	18.1%	9.1%	38.9%	7.0%	56%	75%
Artificial Intelligence	2.6%	4.0%	24.0%	8.0%	2.6%	32%	75%
Data analytics	NA	25.0%	NA	33.2%	NA	40%	75%
AI or Cloud or Data analytics	NA	33.5%	NA	54.6%	NA		75%
Unicorns		3		263		20	500
At least basic digital skills	52.5%	52.4%	-0.1%	55.6%	1.5%	70.2%	80%
ICT specialists	2.5%	2.4%	-4.0%	4.8%	4.3%	4.5%	~10%
eID scheme notification		No					
Digital public services for citizens	64.6	75.9	17.5%	79.4	3.1%	98.2	100
Digital public services for businesses	73.7	86.2	17.0%	85.4	2.0%	100	100
Access to e-Health records	60.7	73.8	21.6%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

## National Digital Decade strategic roadmap

With respect to **Greece's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating a **very high ambition** and, based on this document, intends to allocate **significant effort** to achieve the Digital Decade objectives and targets.

**The roadmap is mostly complete and presents 14 national trajectories and targets to be achieved by 2030.**

The national targets set for connectivity, digital transformation of public services and e-health match the EU's 2030 targets, but the targets for digital skills and for the digital transformation of businesses are below the EU's 2030 targets. The roadmap contains a detailed analysis of the current state of play, and a comprehensive set of measures and initiatives designed to meet the objectives and targets of the Digital Decade to transform the country into a digitally advanced and inclusive society by 2030. It is based on the [Digital Transformation Bible 2020-2025](#), the country's current national digital strategy. Funding for the digital transformation relies heavily on EU funds (RRF and cohesion policy funding).

**The total public funding for the 104 measures in the roadmap is estimated at EUR 5 230.2 million (about 2.37% of GDP).** The priorities are on the digital transformation of the public sector including the health sector, the digital transformation of the economy, and the uptake of advanced digital technologies by businesses. The roadmap also gives a rough estimate of private investments for the coming years in data centres and gigabit connectivity of EUR 6 900 million.



### Recommendations for the roadmap

When adjusting the roadmap in accordance with Article 8(3) of the Digital Decade Policy Programme (DDPP) Decision, Greece should:

- **TARGETS:** Consider in due time reviewing all the national targets that are not aligned with the EU's 2030 targets, and in particular **the take up of cloud, data analytics and AI** by enterprises, the target for which is currently low on ambition.
- **MEASURES:** Review and reinforce the strategy and measures to contribute to the targets (i) that are the most challenging to reach, such as **digital infrastructure, ICT specialists**; and (ii) that have a low level of ambition, the **take up of cloud, data analytics and AI by enterprises**. Provide additional details on how existing and planned measures for the digitalisation of SMEs will contribute to reaching the target for 2030; (iii) Provide **more information on the implementation of digital rights and principles**, including the national measures that contribute to it.

### Digital rights and principles

The Special Eurobarometer 'Digital Decade 2024' provides insights into Greeks' perceptions of digital rights. Only 33% of Greeks believe that the EU protects their digital rights well, although this figure has increased by 1 point since last year, it remains significantly below the EU average of 47%. Concerns are escalating, with 62% worried about children's online safety, up 2 points, and 51% about control over personal data, while overall respondents seem to be more worried about their digital rights and principles than the EU average. On a positive note, 85% of respondents value digital technologies for connecting with friends and family, which is above the EU average of 83%. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>23</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**With significant support from EU funds, Greece is taking action to start upgrading its digital and research infrastructure and to develop ecosystems for innovation in cutting-edge technologies, which are currently in their infancy.** The country still faces several challenges. It lags behind on the deployment of fibre networks to deliver gigabit connectivity for all, although its National Broadband Plan 2021-2027 is starting to bear fruit. Moreover, all the indicators on the digitalisation of enterprises indicate a below EU average performance. Many SMEs have a relatively moderate level of innovation and a low level of digital maturity. In 2023, only 43.3% of SMEs had at least a basic level of digital intensity, below the EU average (57.7%). Businesses in Greece also have a low level of take up of advanced technologies such as AI, cloud, and data analytics in general. However, the dynamic start-up ecosystem is a positive sign of a digital ecosystem in development.

### Recommendations – Greece should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) closely monitor the progress on the gigabit coverage to identify early enough any remaining investment gaps to reach the target for 2030; (ii) ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

<sup>23</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.



- **CYBERSECURITY:** Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.
- **SEMICONDUCTORS, QUANTUM TECHNOLOGIES, EDGE NODES:** Develop additional measures in due time to accelerate the deployment of digital and data infrastructure and promote the use of digital capabilities and the access to digital technologies.
- **DIGITAL TRANSFORMATION OF BUSINESSES:** Consider reinforcing the framework conditions to enable (i) less digitally mature SMEs to adopt digital transition; and (ii) all enterprises to benefit from the data economy by a rapid adoption of advanced technology (AI, cloud, data analytics) as a competitive advantage; (iii) stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the coordinators and the Member States participating in the IPCEI-CIS.

### Protecting and empowering EU people and society

The concerted efforts made on digital transformation in recent years have resulted in a demonstrable and significant improvement in the public digital services available to citizens and businesses. This is expected to make a significant contribution to the country's resilience and competitiveness. However, in terms of empowering people to benefit from opportunities created by an increasingly digitalised society and economy, Greece has not yet met the challenge of training its population in the level of digital skills needed, despite several recent measures, investments and reforms. In 2023, only 52.4% of the population had at least basic digital skills (EU average 55.5%), indicating no progress since the previous data collection in 2021. The number of ICT specialists in terms of the share of employment is 2.4%, far below the EU average (4.8%). However, in 2023, information technology was [reported](#) to be the business sector in Greece with the highest score on intention to hire new professionals, with employment prospects reaching 27%.

#### Recommendations – Greece should:

- **DIGITAL SKILLS:** Review and consider whether additional targeted measures to train the population are sufficient to reach the target, boost the resilience of the economy and society and achieve inclusive growth.
- **ICT SPECIALISTS:** Reinforce the strategy and the measures to increase the number of ICT specialists and retain the best talents.
- **e-ID:** Greece should notify to the Commission an e-ID scheme under the eIDAS Regulation.
- **e-Health:** (i) Make the data types of medical imaging reports and medical images available to people through the online access service, (ii) Ensure that the online access service complies to web accessibility guidelines.

### Leveraging digital transformation for a smart greening

Greece national roadmap mentions some measures related to the green transition in addition to the measures related to establishing more sustainable, energy- and resource-efficient digital infrastructure and technologies (e.g., sovereign cloud, edge nodes and 5G infrastructure). Greece also set goals in its national energy and climate plan and in the RRP for which digital technologies can be used as smart agents to trigger the green transition (e.g., smart meters). In 2023, a programme supported by cohesion policy funding has been launched for the 'green transformation of SMEs' to support projects aiming at developing and using modern technologies to upgrade their products, services and processes in terms of energy upgrading, the circular economy and the adoption of clean energy sources. However, a more comprehensive approach to make the digital sector more environmentally friendly and sustainable is missing. According to the

Eurobarometer 2024 survey, 86% of respondents in Greece said that ensuring that digital technologies serve the green transition should be an important action for public authorities (above the EU average of 81%). In this regard the Data Centre that is operated by the General Secretariat of Information Systems and Digital Governance of the Ministry of Digital Governance has adopted and implemented the European Code of Conduct for Energy Efficiency in Data Centres

**Recommendations – Greece should:**

- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructure, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.



# State of the Digital Decade 2024

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**Hungary**

## 1 Executive summary

**Hungary has untapped potential to contribute** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Hungary made notable progress** in the area of broadband connectivity, enhancing basic 5G coverage, and in digitalisation of SMEs, in particular adoption to Cloud and Data Analytics. However, particularly important **challenges** persist in the area of digital skills, especially for the older generations, and in the adoption of advanced technologies such as AI at Hungarian enterprises.

Hungary has the very ambitious and challenging objective to be among the 10 leading EU economies in terms of digitalisation by 2030. This is reflected in the [National Digitalisation Strategy 2022-2030](#), which is aligned with the EU Digital Decade Policy Programme. Although, there have been several changes to the Hungarian institutional system responsible for implementing the Digital Decade (transformation of ministries and their background institutions in the field of ICT), the responsibility for coordinating the initiatives led by different ministries is below ministerial level, in the hand of the Digital Hungary Agency.

According to the '**Special Eurobarometer survey 'Digital Decade 2024'**<sup>24</sup>, 83% of respondents in Hungary said that the digitalisation of daily public and private services makes their life easier. This is the second highest score in the EU and significantly above the EU average of 73%.

Hungary is involved in 3 **European Digital Infrastructure Consortia** (EDICs) already set up or in development, including the already established Alliance for Language Technologies (ALT EDIC, already set up), the Local Digital Twins towards the CitiVERSE (already set up) and the Connected Public Administration (IMPACTS-EDIC in development).

The Hungarian **Recovery and Resilience plan** allocates EUR 1.7 billion (29.1% of the total allocation) to the digital transformation<sup>25</sup>, with priority given to e-Health and digital skills. Under Cohesion Policy, an additional EUR 2.5 billion (12% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>26</sup>.

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<sup>24</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>25</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>26</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Digital Decade KPI <sup>(1)</sup>	Hungary			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	HU	EU
Fixed Very High Capacity Network (VHCN) coverage	80.3%	84.1%	4.8%	78.8%	7.4%	95%	100%
Fibre to the Premises (FTTP) coverage	70.1%	76.2%	8.7%	64.0%	13.5%	X	-
Overall 5G coverage	57.9%	83.7%	44.6%	89.3%	9.8%	99%	100%
Semiconductors		NA					
Edge Nodes		5		1 186		X	10 000
SMEs with at least a basic level of digital intensity	34.5%	53.2%	24.2%	57.7%	2.6%	89%	90%
Cloud	20.6%	37.1%	34.2%	38.9%	7.0%	60%	75%
Artificial Intelligence	3.0%	3.7%	11.1%	8.0%	2.6%	24%	75%
Data analytics	NA	53.2%	NA	33.2%	NA	30%	75%
AI or Cloud or Data analytics	NA	65.6%	NA	54.6%	NA		75%
Unicorns		0		263		2	500
At least basic digital skills	49.1%	58.9%	9.5%	55.6%	1.5%	60%	80%
ICT specialists	4.1%	4.2%	2.4%	4.8%	4.3%	8.3%	~10%
eID scheme notification		No					
Digital public services for citizens	67.9	73.4	8.1%	79.4	3.1%	96.3	100
Digital public services for businesses	76.3	74.9	-1.8%	85.4	2.0%	97.2	100
Access to e-Health records	79.9	86.0	7.6%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

## National Digital Decade strategic roadmap

With respect to **Hungary's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating a high **ambition** however, based on this document, intends to allocate **some effort** to achieve the Digital Decade objectives and targets.

**The roadmap is overall realistic and comprehensive, but rather cautious when setting targets.** It sets 2030 **targets and trajectories for 12 KPIs** (VHCN, 5G, digital intensity, cloud, big data, AI, unicorns, digital skills, ICT specialists, digital public services for citizens and for businesses, and e-Health). The roadmap includes 2030 targets for all KPIs except for edge nodes. Two national targets (e-health, unicorns) fully correspond to the EU 2030 targets, while 4 national targets are very close to and overall line with the EU target (5G, digital public services for citizens and for businesses, SMEs with at least basic digital intensity). 6 targets are, however, below the EU targets (VHCN, digital skills, ICT specialists, Cloud services, data analytics and AI). In terms of measures, Hungary's roadmap, which was adopted and published in December 2023, presents a comprehensive overview of the nation's digital strategy. The total budget of measures amounts to EUR 2.4 billion (around 1.2% of GDP) with priority given to digital skills and digital infrastructure. In addition, some of the DDPP's objectives, such as those relating to the green transition, competitiveness, sovereignty, leadership, and resilience, including cybersecurity, were also reflected in the document.

### Recommendations for the roadmap

Hungary should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the DDPP Decision:

- **TARGETS:** (i) Propose national target values and trajectories for **edge nodes**, and formalise the trajectory for **FTTP**; (ii) Increase the **VHCN target, to be closer to the EU's target**, given the country's good starting point and its current rate of progress; (iii) Consider more **ambitious targets for the cloud and data analytics technologies take-up by enterprises to be closer to the EU's targets**, as the current performance of these indicators are already above the targets defined in the roadmap of Hungary; (iv) Define a more **ambitious target for digital skills** closer to the EU's target, as the current national target is almost achieved according to the 2023 value.
- **MEASURES:** Provide **more information on the implementation of digital rights and principles** (and Digital Decade general objectives), including what national measures contribute to it.

### Digital rights and principles

The Special Eurobarometer 'Digital Decade 2024' offers key insights into Hungarians' perceptions of digital rights. 60% of Hungarians believe that the EU protects their digital rights well, significantly above the EU average of 47%. While some concerns have grown, notably regarding the freedom of online association and online safety for children (both by 5 percentage points), Hungarians remain overall more confident compared to the EU average. On the positive side, a significant 70% is satisfied with the level of digital skills, and 68% appreciate aspects such as access to affordable high-speed internet or environmentally friendly online services. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>27</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**To underpin its technological leadership and competitiveness, Hungary is equipped with strong digital infrastructures and is making good progress on deployment. It should, however, focus more on the digitalisation of its businesses.** On infrastructures, Hungary is above the EU average for VHCN and is also very close to the EU's average for 5G. Thanks to the strategic agreements with the major telecommunication service providers, committing to coverage figures corresponding to the National Digitalisation Strategy of Hungary, the country is on track to reach the VHCN and 5G targets defined for 2030. Despite the significant increase in the take up of advanced technologies, most businesses, in particular SMEs, are not yet reaping all the benefits of these digital technologies, due to a lack of digital skills. This in turn has a negative impact on the competitiveness of the economy, however the favourable results in Data Analytics can potentially be a breakout point for the economy. Significant progress has been made in the digitisation of SMEs as a 24.2 % improvement can be seen approaching the EU average. The initiatives planned in the strategically important defence industry and cybersecurity will unfortunately not yield results in the next years.

### Recommendations – Hungary should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) Sustain and increase efforts to ensure full gigabit and 5G coverage, in line with the EU level of ambition. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C)

<sup>27</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

applications and encourage operators to speed up the deployment of 5G stand-alone core networks.

- **CYBERSECURITY:** Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.
- **SMEs:** Continue its efforts through initiating new supporting programmes and incentives- to support the digital transformation of SMEs and increase resources for existing schemes, including a focus on cloud adoption by SMEs.
- **AI/CLOUD/DATA ANALYTICS/EDGE NODES:** (i) Provide further support for capital investment in cloud computing, artificial Intelligence, data analytics, and other cutting-edge technologies; (ii) Ensure the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country-specific dissemination strategy (complementing what has already been committed under IPCEI-CIS); contributing to the additional dissemination activities led by the Cloud IPCEI Exploitation Office; (iii) Consider measures specific to edge nodes deployment, supplementary to the IPCEI-CIS participation.

### Protecting and empowering EU people and society

**Digital skills are increasingly becoming a requirement for people seeking employment in industry and services.** However, the gap is widening between routine users of digital tools and those who are not interested in taking courses to upskill, with the latter group accounting for almost half of the workforce. Although businesses have been focusing on optimising operations and retaining their talents, demand for specific ICT specialists is still huge, especially in the area of AI, Cloud and Cybersecurity. On the other hand, significant progress has been made in at least basic digital skills, showing a 9.5% increase, surpassing the EU average: 58.9% of people in HU have at least basic digital skills (EU average is 55.6%). Gaps remain significant, however, among the older generations and vulnerable groups.

**Although over 70% of the Hungarian population already possesses an e-ID, its use is limited to within the country.** Hungary's roadmap sets out several measures aimed at accelerating the transition to the new mobile e-ID solution, which should bring results by 2026, and which will be the key to cross-border use as well.

As regards the availability of key digital public services for citizens and businesses, Hungary remains below the EU average. On access to electronic health records, instead, Hungary is already well advanced. Its new mobile application, which provides access to Health records, has become the county's most widely used mobile digital public service. The main gaps in Hungary's eHealth maturity are the inability to authenticate with a (pre)notified e-ID and the fact that the access service does not follow guidelines on web accessibility.

### Recommendations – Hungary should:

- **BASIC DIGITAL SKILLS:** Accelerate its efforts to bridge the digital divide through developing and investing in inclusion policies focusing on vulnerable groups, such as the low-skilled, the unemployed, people over 55, persons with disabilities and the Roma.
- **ICT SPECIALISTS:** (i) Keep up their high rate of ICT graduates but focus more on attracting women to the study field; (ii) Monitor closely the implementation of existing measures to boost the number of ICT specialists in the shorter term and continue measures to increase the percentage of women in ICT careers; (iii) Increase efforts to reduce the cybersecurity skills gap.
- **KEY DIGITAL PUBLIC SERVICES:** Accelerate its efforts to digitalise public services for citizens and businesses.

- **e-ID:** Notify to the Commission an e-ID scheme under the eIDAS Regulation.
- **e-Health:** (i) Make the data type of medical images available to citizens through the online access service. (ii) Enhance the authentication method for logging in to the online access service by using a (pre)notified e-ID. (iii) Ensure that the online access service complies to web accessibility guidelines.

### Leveraging digital transformation for a smart greening

The green transition and sustainability are key trends within the digitalisation in Hungary, with the increased energy prices being the main forces behind the changes. As part of the modified Recovery and Resilience Plan submitted by Hungary in 2023, several measures set out in the **REPowerEU** chapter will address the challenges related to the green transition, including the digitalisation of the electricity grids.

#### Recommendations – Hungary should:

- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.
- Support digital players, including telecom service providers, to accelerate the transition of their network infrastructure to greener, less energy intensive solutions.





# State of the Digital Decade 2024

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**Ireland**

## 1 Executive summary

**Ireland brings a positive contribution** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Ireland made notable progress** in FTTP infrastructure and invested significantly in the digital literacy of its population. However, **significant challenges** persist in addressing the ICT specialists' gap and in advancing e-Health initiatives, where progress is still slow.

As stated in the national digital framework **Harnessing Digital**, Ireland's goal is to be a digital leader at the heart of European and global digital developments.

To reinforce the recognition of Ireland's digital prowess both internally and on the international stage, the country continues to prioritise strategic initiatives aimed at bolstering digital infrastructure, fostering innovation and ensuring digital sovereignty. In addition, Ireland's commitment to improving the digital literacy and skills of its population further solidifies its position as a global leader in the digital landscape. By collaborating with industry stakeholders, academia, and government agencies, Ireland is set to accelerate its digital transformation even further, to contribute significantly to the EU's Digital Decade objectives, and to strengthen its position as a digital frontrunner on the global stage.

While the deployment of 5G networks is progressing steadily and is in line with the EU average, Ireland has been slow in deploying 5G service in the 3.6 GHz band, which is the only spectrum band currently available to deliver high performance 5G services to a large proportion of the population and for business-to-business (B2B) communications. Irish operators should be encouraged to accelerate such 5G deployment in mid band.

According to the **Special Eurobarometer 'Digital Decade 2024'**<sup>28</sup>, 76% of the Irish respondents consider that the digitalisation of daily public and private services makes their life easier, above the EU average of 73%. Ireland is the third largest exporter of digitally delivered services in the world<sup>29</sup>.

The country is a member of the Alliance for Language Technologies **European Digital Infrastructure Consortium** (ALT-EDIC) which has already been established and addresses the scarcity of European language data needed for AI solutions<sup>30</sup>.

Ireland allocates 34% of its total Recover and Resilience plan to digital (EUR 313 million)<sup>31</sup>. Under Cohesion Policy, an additional EUR 54 million (5% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>32</sup>.

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<sup>28</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>29</sup> World Trade Organization (2023) Global Trade Outlook and Statistics.

<sup>30</sup> Information last updated on 31 May 2024.

<sup>31</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>32</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.

Digital Decade KPI <sup>(1)</sup>	Ireland			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	IE	EU
Fixed Very High Capacity Network (VHCN) coverage	83.8%	87.0%	3.8%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage	72.1%	78.5%	8.9%	64.0%	13.5%	x	-
Overall 5G coverage	83.9%	85.3%	1.7%	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		24		1 186		x	10 000
SMEs with at least a basic level of digital intensity	64.2%	66.1%	1.5%	57.7%	2.6%	90%	90%
Cloud	47.4%	53.1%	5.8%	38.9%	7.0%	75%	75%
Artificial Intelligence	7.9%	8.0%	0.6%	8.0%	2.6%	75%	75%
Data analytics	NA	37.1%	NA	33.2%	NA	75%	75%
AI or Cloud or Data analytics	NA	64.1%	NA	54.6%	NA		75%
Unicorns		12		263		x	500
At least basic digital skills	70.5%	72.9%	1.7%	55.6%	1.5%	80%	80%
ICT specialists	6.3%	6.2%	-1.6%	4.8%	4.3%	9.6%	~10%
eID scheme notification		Yes					
Digital public services for citizens	81.1	81.2	0.2%	79.4	3.1%	100	100
Digital public services for businesses	100.0	100.0	0.0%	85.4	2.0%	100	100
Access to e-Health records	0.0	11.4		79.1	10.6%	80	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics

## National Digital Decade strategic roadmap

With respect to Ireland’s contribution to the Digital Decade reflected in its roadmap, it is demonstrating a **high ambition** and, based on this document, intends to allocate **very significant effort** to achieve the Digital Decade objectives and targets.

Ireland’s national strategic roadmap is aligned with the EU Digital Decade Policy Programme and sets out a comprehensive plan with all sections completed. While the challenges, strengths, and assets are clearly indicated, important information, notably on targets FTTP, edge nodes, and unicorns are missing. The roadmap outlines 59 measures with an estimated budget of EUR 14.9 billion (2.9% of GDP) that are aligned with the targets and objectives of the Policy Programme and the European Declaration on Digital Rights and Principles. Building on existing strategies such as the national digital strategy ‘Harnessing Digital’, Ireland focuses on digital public services, ICT specialists, and connectivity, with a major emphasis on measures to support unicorns. The roadmap strikes a balance between private and public needs, aligning with the Digital Decade goals of enhancing competitiveness, cybersecurity, and citizen empowerment. Overall, Ireland’s roadmap is consistent and innovative, positioning the country on track to meet the EU’s digital targets.

### Recommendations for the roadmap

Ireland should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the DDPP Decision:

- **TARGETS:** (i) Prioritize setting clear and measurable targets for all key areas outlined in the national strategic roadmap, including FTTP, edge nodes and unicorns. (ii) Increase efforts to achieve the EU-level target on e-Health, in line with the requirements under the upcoming European Health Data Space regulation.
- **MEASURES:** (i) Enhance the analysis and evaluation of measures included in the national strategic roadmap by providing comprehensive information on expected impacts and budget allocations for each measure, including RRP contribution. (ii) Provide more information on the implementation of digital rights and principles (and Digital Decade general objectives), including what national measures contribute to it.

### Digital rights and principles

The Special Eurobarometer ‘Digital Decade 2024’ provides insights into Irish perceptions of digital rights. Although there is a decline of 7 points since last year, 62% of Irish respondents still believe the EU protects their digital rights, slightly above the EU average of 45%. Concerns have increased, with 41% worried about children's online safety, up 13 points, and 32% about control over their digital legacy, up 11 points. On the positive side, 70% appreciate the existence of digital skills, and 63% trust in the freedom of assembly online, both well above the EU averages. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>33</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

Ireland’s strategic initiatives are closely aligned with the EU’s goals of advancing digital infrastructure, fostering research and innovation, and safeguarding digital sovereignty. Initiatives like the National Broadband Plan and the deployment of high-speed fibre networks demonstrate Ireland’s commitment to meeting the EU’s Digital Decade targets for connectivity infrastructure and ensuring resilient and accessible digital systems for citizens and businesses alike.

By supporting EU-wide digital ecosystems and innovative enterprises with initiatives such as the Digital Transition Fund and the SME Growth Plan, Ireland demonstrates its dedication to competitiveness and digital sovereignty. By prioritising cloud, AI and data analytics technologies uptake, Ireland aims to accelerate the digital transformation and nurture potential digital leaders, in line with the EU's vision. Furthermore, Ireland’s focus on research and innovation underscores its commitment to driving digital progress and addressing key RDI challenges. With plans to set up a new research funding agency by 2024, Ireland is poised to further boost its position as a leader in digital innovation within the EU.

### Recommendations – Ireland should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) Continue efforts to ensure full gigabit and 5G coverage, including by addressing operational bottlenecks such as permissions for telecoms mast deployment to extend mobile coverage. (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.
- **EDGE NODES:** Explore opportunities for public-private partnerships and leverage funding mechanisms to support the rollout of edge nodes infrastructure.

<sup>33</sup> See SWD ‘Digital Decade in 2024: Implementation and perspective’ with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

- **CLOUD/AI/DATA ANALYTICS:** (i) Develop targeted programs and incentives to encourage enterprises and SMEs to adopt Big Data and AI and leverage their potential for innovation and growth; (ii) Stimulate the adoption of next generation cloud infrastructure and services by companies of all sizes, including by liaising with the Cloud IPCEI Exploitation office and/or the coordinators and the Member States participating in the IPCEI-CIS.
- **UNICORNS:** Increase funding mechanisms such as the Digital Transition Fund and Seed and Venture Capital Scheme to support digital entrepreneurship and nurture potential unicorns.
- **CYBERSECURITY:** Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.

### Protecting and empowering EU people and society

Ireland has made significant strides towards achieving the EU’s Digital Decade target for basic digital skills, with 72.9% of the population having at least basic digital skills, surpassing the EU average. Key initiatives such as Adult Literacy for Life and the Digital Strategy for Schools have played a vital role in promoting digital literacy across society. Efforts such as the STEM (*science, technology, engineering, and mathematics*) Education Implementation Plan demonstrate Ireland’s commitment to empowering people through education and skill development, while addressing the demand for ICT specialists reflects a concerted approach to bridging divides and fostering digital readiness in the workforce.

Ireland is also advancing its digital public services to enhance inclusion and accessibility. Initiatives such as a national procurement framework and setting up Shared Government Data Centre facility reflect the country’s efforts to modernise public services and promote efficiency. The investments in digital health initiatives further highlight Ireland’s dedication to leveraging technology for healthcare accessibility and patient empowerment, driving its digital transformation agenda forward.

#### Recommendations – Ireland should:

- **ICT Specialists:** Expand apprenticeship programs, reskilling, and upskilling initiatives to meet the growing demand for ICT specialists, through a structural reform of the National Training Fund. Efforts should be continued in bridging the gender gap.
- **e-ID:** Notify to the Commission an e-ID scheme under eIDAS Regulation, while leveraging digital schemes such as MyGovID and the EU Digital Identity Wallet to improve access to essential services under eIDAS.
- **e-Health:** (i) Expand the coverage of the online access service to ensure that all citizens can access their electronic health data online. (ii) Make further data types available to citizens through the online access service. (iii) Increase the supply of health data by onboarding more categories of healthcare providers.

### Leveraging digital transformation for a smart greening

The latest Eurobarometer results reveal strong public support in Ireland, with 89% of respondents emphasising the role of digital technologies in the green transition. To deliver on its commitment to reduce emissions, Ireland is focusing on integrating green and digital transitions into future enterprise policy. Initiatives such as the Circular Economy Act and the Build Digital project reflect the country’s efforts to promote sustainability in the digital sector. Challenges remain, with only 20% of businesses implementing energy-efficient measures for ICT equipment. However, government initiatives, such as the National Remote Work Strategy and the new data processing centre, aim to mitigate environmental impact while maximizing

digital benefits. Regulatory bodies contribute to sustainability efforts, highlighting a comprehensive approach to advancing environmental goals within the digital landscape.

**Recommendations – Ireland should:**

- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.



# State of the Digital Decade 2024

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**Italy**

## 1 Executive summary

**Italy has untapped potential** to the European Union's (EU) Digital Decade objectives and targets, in view of a successful digitalisation that fosters competitiveness, resilience, sovereignty, European values and climate action.

**In 2023, Italy made progress** in the area of e-government, in particular in e-health and key digital public services for businesses and continued to advance on gigabit networks roll-out. However, despite some progress, particularly important **challenges persist** in digital skills, while Italian enterprises lag behind in the adoption of advanced technologies such as AI.

In recent years, also building on the Recovery and Resilience Plan, Italy **put in place significant efforts for the digital transformation of the country**, intensifying initiatives to digitalise the public administration, support the digitalisation of enterprises and improve digital skills across the country. Additionally, Italy can count on a robust foundation in areas as such as semiconductors, edge computing and quantum, which are key for the **country's position and technological leadership**.

According to the **Special Eurobarometer 'Digital Decade 2024'**<sup>34</sup>, 71% of the Italians consider that the digitalisation of daily public and private services is making their life easier (73% in the EU), a figure that needs to be improved by bringing all citizens on board.

Participating in **joint efforts with other EU Member States** also remains crucial. Currently, Italy is involved in nine **European Digital Infrastructure Consortia** (EDICs) already set up or in the making<sup>35</sup>, and in the Important Projects of Common European Interest (IPCEI) in the area of cloud infrastructure and services and microelectronics.

**Italy allocates 25.6% of its total Recovery and Resilience Plan to digital (EUR 47 billion)**<sup>36</sup>, which represents a significant opportunity but remains insufficient to fully reach the Digital Decade targets and requires strong focus on implementation and alignment with the various existing strategic plans. Under Cohesion Policy, an additional EUR 5.5 billion (13% of the country's total Cohesion Policy funding) is allocated to the country's digital transformation<sup>37</sup>.

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<sup>34</sup> Special Eurobarometer 551 on 'the Digital Decade' 2024: <https://digital-strategy.ec.europa.eu/en/news-redirect/833351>

<sup>35</sup> Information updated on 31 May 2024.

<sup>36</sup> The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation.

<sup>37</sup> This amount includes all investment specifically aimed at or substantially contributing to digital transformation in the 2021-2027 Cohesion Policy programming period. The source funds are the European Regional Development Fund, the Cohesion Fund, the European Social Fund Plus, and the Just Transition Fund.



Digital Decade KPI <sup>(1)</sup>	Italy			EU		Digital Decade target by 2030	
	DESI 2023	DESI 2024 (year 2023)	Annual progress	DESI 2024 (year 2023)	Annual progress	IT	EU
Fixed Very High Capacity Network (VHCN) coverage	53.7%	59.6%	11.0%	78.8%	7.4%	100%	100%
Fibre to the Premises (FTTP) coverage <sup>(2)</sup>	53.7%	59.6%	11.0%	64.0%	13.5%	100%	-
Overall 5G coverage	99.7%	99.5%	-0.2% <sup>(3)</sup>	89.3%	9.8%	100%	100%
Semiconductors		NA					
Edge Nodes		77		1 186		946	10 000
SMEs with at least a basic level of digital intensity	60.3%	60.7%	0.3%	57.7%	2.6%	90%	90%
Cloud	51.9%	55.1%	3.0%	38.9%	7.0%	74%	75%
Artificial Intelligence	6.2%	5.0%	-10.2% <sup>(4)</sup>	8.0%	2.6%	60%	75%
Data analytics	NA	26.6%	NA	33.2%	NA	60%	75%
AI or Cloud or Data analytics	NA	63.1%	NA	54.6%	NA		75%
Unicorns		7		263		16	500
At least basic digital skills	45.6%	45.8%	0.2%	55.6%	1.5%	74.6%	80%
ICT specialists	3.9%	4.1%	5.1%	4.8%	4.3%	7.3%	~10%
eID scheme notification		Yes					
Digital public services for citizens	67.9	68.3	0.5%	79.4	3.1%	100	100
Digital public services for businesses	74.7	76.3	2.1%	85.4	2.0%	100	100
Access to e-Health records	71.3	82.7	15.9%	79.1	10.6%	100	100

<sup>(1)</sup> See the methodological note for the description of the indicators and other descriptive metrics.

<sup>(2)</sup> The indicator on VHCN coverage and the indicator on FTTP coverage coincide.

<sup>(3)</sup> The variation does not reflect a change in coverage, but it is the consequence of small refinements in criteria adopted to estimate the coverage.

<sup>(4)</sup> The variation between the two years is not considered statistically significant but in line with the stagnation of this indicator.

## National Digital Decade strategic roadmap

With respect to **Italy's** contribution to the Digital Decade reflected in its roadmap, it is demonstrating a **very high ambition** and, based on this document, intends to devote **significant effort** to achieve the Digital Decade objectives and targets. However, **the formal adoption and publication of the roadmap at the national level, which is crucial for the country to fully commit towards these ambitions, is still pending.**

The roadmap provides a **complete overview**, covering **all targets to 2030**. While targets are generally ambitious and in line with the EU targets, those on basic digital skills and ICT specialists and on the uptake of Artificial Intelligence (AI) and data analytics remain below the EU levels, reflecting only the measures currently in place. The roadmap outlines a total of over **60 policy measures with a budget of over EUR 32 billion (about 1.6% of GDP)**. Accent is on improving digital skills, ICT specialists and digital public services. However, some areas, including unicorns and uptake of AI, lack targeted measures. A more comprehensive approach could be taken regarding the country's position in key technology areas, such as semiconductors and quantum.

### Recommendations for the roadmap

Italy should, when submitting adjustments to its national roadmap in accordance with Article 8(3) of the DDPP Decision:

- **TARGETS:** (i) Provide a trajectory for the target on unicorns; (ii) Consider aligning the level of ambition of targets for basic digital skills, ICT specialists and technologies take up (AI, cloud, data analytics) to the EU's target.
- **MEASURES:** (i) Strengthen and/or better tailor the measures contributing to targets that are the most difficult to achieve, especially for **skills, ICT specialists, take up of AI and big data analytics**; (ii) Specify the measures that support the **target on unicorns**; (iii) Consider providing a more comprehensive analysis and overview of the measures and strategies for **semiconductors and quantum**; (iv) Review the **budget** description of all measures, ensuring completeness and accuracy; (v) Provide more information on the **implementation of digital rights and principles** (and Digital Decade general objectives), including what national measures contribute to it.
- **CONSULTATION:** Organize a consultation process on the roadmap, according to the national rules, and report on it.

### Digital rights and principles

The Special Eurobarometer 'Digital Decade 2024' reveals that, in Italy, 49% of the population believes the EU protects their digital rights well, and while it marks a 6-point decline from the previous year, still remains above the EU average of 45%. Confidence in digital privacy stands at 57%, also above the EU average. Concerns include the safety of digital environments for children, with 45% expressing worry, and 40% are concerned about control over personal data. Despite these concerns, 83% of Italians recognize the importance of digital technologies for accessing public services, and 81% for connecting with friends and family, highlighting a strong appreciation for digital advancements. The monitoring of the Declaration on Digital Rights and Principles shows that increasing the profile of the Declaration at national level and fostering better stakeholder engagement could help improve outcomes in the years to come<sup>38</sup>.

### A competitive, sovereign and resilient EU based on technological leadership

**The country is making progress in deploying connectivity networks, while advanced technologies such as edge, quantum and semiconductors are increasingly gaining attention. Sustaining this momentum should remain a priority in order to strengthen the country's capabilities and positioning.** While Italy is advanced in general 5G coverage, continued and rapid progress to deploy fixed Very High-Capacity Networks (VHCN), and specifically fibre-to-the-premises networks (FTTP), is needed, next to increased efforts to link the connectivity infrastructure with cloud and edge computing capabilities. In addition, more efforts should be devoted to improving the Quality of Service of 5G networks and provide on a large scale the superior performance that is needed for advanced use cases, especially for business-to-business (B2B) communications.

The presence of key projects and centres of excellence in quantum capabilities could boost Italy's ambitions in the field, but the level of investment needs careful assessment. The semiconductor sector is gaining attention with growing investments, requiring a coherent vision and sustained efforts.

<sup>38</sup> See SWD 'Digital Decade in 2024: Implementation and perspective' with annexes, SWD(2024)260: <https://digital-strategy.ec.europa.eu/en/news-redirect/833325>, Annex 4.

The uptake of technologies is relatively high among Italian enterprises, including SMEs. However, major gaps remain in the use of AI and in the area of innovative and high-growth enterprises (unicorns). Scaling up enterprises in Italy remains difficult, hindered by a generally weak ecosystem and limited venture capital investments.

#### Recommendations – Italy should:

- **CONNECTIVITY INFRASTRUCTURE:** (i) Continue to deploy FTTP ensuring a high growth rate and strengthen efforts to develop connectivity infrastructures coherently and jointly with cloud and edge computing capabilities exploiting the potential of the country's 5G network; (ii) Ensure sufficient access of new players to spectrum for innovative business-to-business (B2B) and business-to-consumer (B2C) applications and encourage operators to speed up the deployment of 5G stand-alone core networks.
- **SEMICONDUCTORS AND QUANTUM:** Continue the efforts in the semiconductors sector and increase investments in quantum technologies also within the frame of EU initiatives and in view of contributing to the European Chips Act.
- **CYBERSECURITY:** Continue the implementation of the 5G Cybersecurity Toolbox to ensure secure and resilient 5G networks.
- **AI/CLOUD/DATA ANALYTICS:**
  - o (i) Strengthen measures targeted to the adoption of technologies by enterprises, with particular attention to AI and looking at the barriers and drivers specific to the national context.
  - o (ii) Ensuring the broad uptake of the next generation of cloud infrastructure and services under development in the IPCEI-CIS by companies of all sizes, including by developing a country-specific dissemination strategy (complementing what has already been committed under IPCEI-CIS); contributing to the additional dissemination activities led by the Cloud IPCEI Exploitation Office.
- **UNICORNS:** Strengthen actions to sustain the ecosystem of start-ups and innovative enterprises, including boosting the availability of effective financial tools, initiatives to support the scale up of enterprises, in particular in strategic sectors, building synergies between research and industrial systems.

#### Protecting and empowering EU people and society

The country's major gaps remain in digital skills, impacting efforts to close the digital divides and hindering competitiveness. Despite the roadmap's focus and Italy's numerous recent initiatives, only 45.8% of people in Italy have at least basic digital skills and the share of ICT specialists in employment remains limited, while demand by enterprises for these skills is surging.

Italy performs well on the deployment of the Electronic Health Records and its action to strengthen access to key digital public services continued in 2023, but further efforts are needed. Italy has two certified eIDAS digital identity schemes and is contributing to the work for the deployment of the EU Digital Identity Wallet. The Electronic Health Record (EHR) has been introduced in all regions. However, the availability of digital public services for citizens was still below the EU average in 2023. The ongoing major e-government projects and investments are not yet showing their full impact.

**Recommendations – Italy should:**

- **BASIC DIGITAL SKILLS:** Increase efforts to boost digital skills across all target groups with tailored interventions, including by: (i) strengthening services to accompany citizens in the use of digital tools; (ii) expanding digital educational programmes in schools and increasing interest in STEM (Science Technology Engineering and Mathematics) and ICT disciplines; (iii) and incentivising reskilling and upskilling paths for workers.
- **ICT SPECIALISTS:** (i) Increase ICT programmes in higher education, including the strengthening of ITS Academies, in connection with the job market needs and in collaboration with industry; (ii) take specific measures to increase participation of women in ICT education and in the ICT careers; (iii) consider measures to attract and retain ICT specialists.
- **KEY DIGITAL PUBLIC SERVICES:** Continue efforts to digitalise public services, focusing on user-friendliness and interoperability to further increase simplification and re-use of information available to public administrations.
- **E-HEALTH:** (i) Increase the supply of health data by onboarding more categories of healthcare providers; (ii) build on existing legal provisions and implement access opportunities for legal guardians, authorised persons and disadvantaged groups; (iii) make all types of medical images available to citizens in a timely manner and in all regions through the online access service, including through mobile applications.

**Leveraging digital transformation for a smart greening**

**The Recovery and Resilience Plan is boosting initiatives twinning the green and digital transition.** The adoption of the 'Transition 5.0' plan, part of the REPowerEU chapter, promotes the transition of enterprises through investment to reduce their energy consumption. The plan also includes measures on advanced climate change monitoring and support for smart transport systems in three pilot cities. These efforts complement existing initiatives in urban energy management, strategic asset utilisation, and innovative public procurement.

**Recommendations – Italy should:**

- Continue and intensify the efforts to join up the twin green and digital transition, also leveraging advanced technologies and scaling up successful initiatives.
- Develop a coherent approach to twinning the digital and green transitions. First, promote improvements in energy and material efficiency of digital infrastructures, in particular data centres. Second, support the development and deployment of digital solutions that reduce the carbon footprint in other sectors, such as energy, transport, buildings, and agriculture, including the uptake of such solutions by SMEs.
- Monitor and quantify the emission reductions of the deployed digital solutions in line with the relevant EU guidance and with the support of the methodology developed by the [European Green Digital Coalition](#), in view of future policy development, as well as of attracting relevant financing.