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PART 3/27

COMMISSION STAFF WORKING DOCUMENT

Digital Decade 2025 country reports

Accompanying the document

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

State of the Digital Decade 2025: Keep building the EU's sovereignty and digital future

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European Commission

DIGITAL DECADE 2025
COUNTRY REPORTS

Bulgaria

Bulgaria

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Executive summary

Bulgaria has a well-developed connectivity infrastructure and is strengthening its role in critical technologies, like semiconductors and quantum computing. However, its competitiveness potential is hampered by a fragmented ecosystem; persistent R&D gaps; weak innovation and tech uptake by SMEs and start-ups; and cybersecurity concerns. While the country is advancing in digital public services, challenges remain in digital skills, inclusion, and integrating sustainability into its digital infrastructure.

Bulgaria's contribution to the Digital Decade is moderately ambitious, with 12 national targets, half of which are aligned with the EU 2030 targets. The country is following its trajectories well with 75% of them being on track (based on the 2024 trajectories established for 8 KPIs out of 8 analysed). Bulgaria did not address the 13 recommendations issued by the Commission in 2024 through new measures.

Bulgaria excels in assigning 5G spectrum and is gradually bridging geographical divides in access to high-speed connectivity. The country positions itself as a growing player in critical technologies, with initiatives in semiconductors and quantum computing. While enterprise digitalisation is progressing, particularly in AI adoption, the overall adoption of advanced digital technologies remains below par. Recent actions, such as the launch of an AI Factory at Sofia Tech Park confirm Bulgaria's ambition to enhance its tech ecosystem. Despite its ongoing reliance on Chinese telecommunication components, Bulgaria is orienting its digital policies towards greater sovereignty by strengthening European partnerships in critical technologies.

Digital Decade KPI (1)	Bulgaria				EU		Digital Decade target by 2030	
	DESI 2024 (year 2023)	DESI 2025 (year 2024)	Annual progress	National trajectory 2024 (3)	DESI 2025	Annual progress	BG	EU
Fixed Very High Capacity Network (VHCN) coverage	88.6%	90.4%	2.0%	93.0%	82.5%	4.9%	100.0%	100%
Fibre to the Premises (FTTP) coverage	88.6%	90.4%	2.0%	93.0%	69.2%	8.4%	100.0%	-
Overall 5G coverage	78.9%	81.3%	3.1%	91.0%	94.3%	5.9%	100.0%	100%
Edge Nodes (estimate)	5	10	100.0%	-	2257	90.5%	-	10000
SMEs with at least a basic level of digital intensity (2)	-	49.9%	2.9%	-	72.9%	2.8%	60.0%	90%
Cloud	14.2%	-	-	-	-	-	15.0%	75%
Artificial Intelligence	3.6%	6.5%	78.7%	5.0%	13.5%	67.2%	11.0%	75%
Data analytics	21.9%	-	-	-	-	-	9.0%	75%
AI or Cloud or Data analytics	29.3%	-	-	-	-	-	-	75%
Unicorns	0	0		-	286	4.4%	-	500
At least basic digital skills	35.5%	-	-	-	-	-	52.0%	80%
ICT specialists	4.3%	4.6%	7.0%	4.2%	5.0%	4.2%	5.0%	~10%
eID scheme notification		Yes						
Digital public services for citizens	67.5	68.0	0.8%	83.0	82.3	3.6%	100.0	100
Digital public services for businesses	91.9	94.0	2.4%	92.0	86.2	0.9%	100.0	100
Access to e-Health records	77.2	87.5	13.3%	82.8	82.7	4.5%	100.0	100

(1) See the methodological note for the description of the indicators and other metrics.
(2) DESI 2025 reports the version 4 of the Digital Intensity Index, that is comparable with the DII value from DESI 2023 (referring to year 2022) for the calculation of the annual progress. It is not comparable to the national trajectory that is based on version 3 of the index.
(3) National trajectory value if present in the national roadmap and if the indicator was measured in DESI2025 (year 2024).

Bulgaria

According to the 2025 special Eurobarometer on the Digital Decade, 76% of Bulgarian citizens consider that the digitalisation of daily public and private services is making their lives easier. Concerning the action of the public authorities, 86% consider it important to counter and mitigate the issue of fake news and disinformation online, and regarding competitiveness, 82% consider it important to ensure that European companies can grow and become 'European Champions' able to compete globally.

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

Bulgaria boasts a robust connectivity infrastructure. It excels in assigning 5G spectrum and in rolling out gigabit networks to progressively bridge geographical divides. In 2024, Bulgaria's total VHCN and FTTP coverage outperformed the EU averages. Overall, 5G coverage lags behind EU coverage, and is growing at a slower pace. However, Bulgaria's coverage for households in sparsely populated areas shows improvement. Bulgaria is making strides in improving its broadband take-up indicators, with growth rates outpacing EU growth rates, but remaining below EU averages. The country is strengthening its position in **critical technologies**, notably through its integration in the European semiconductor ecosystem and initiatives in quantum computing. Despite these advancements, Bulgaria faces challenges in fully realising its **tech ecosystem**'s potential. This is true particularly for SMEs and start-ups, due to persistent R&D and innovation gaps compared with the rest of the EU. Recent government initiatives and the establishment of European Digital Innovation Hubs (EDIHs) are positive steps, but the broader ecosystem issues constrain the ICT sector's growth. EU funding has supported Bulgaria's **enterprise digitalisation**, including the growing adoption of AI, the forthcoming AI Factory at Sofia Tech Park, and the development of supercomputers and Centres of Excellence in ICT and Big Data under Cohesion Policy. However, the overall uptake of digital technologies in the country still lags behind the EU average. Moreover, Bulgaria's **cybersecurity preparedness remains a concern**, and a significant part of its telecommunications infrastructure continues to depend on Chinese components, raising strategic and security-related challenges.

Protecting and empowering EU people and society

Bulgaria's approach to digital inclusiveness shows promise, with targeted investments in education, digital infrastructure, and improvements in the digitalisation of public services for both businesses and citizens. However, its **journey towards a fully inclusive digital society is complex and might require sustained effort.** Despite ongoing and well-targeted measures, Bulgaria still faces a host of educational challenges, including digital skills proficiency, persistent digital divides, and a lack of scientific research capacity. In 2023, the **basic digital skills** of Bulgaria's population trailed behind the EU average. Adult learning participation is also alarmingly low and declining. **Bulgaria's ICT training provision and ICT specialist workforce** are below the EU average, although the country is showing positive growth in these areas. Bulgaria has a **strong legal framework for digital services**, a well-developed e-government system, and is digitalising more services. It is progressively **improving its administrative processes** to alleviate the burden for citizens and enterprises. **However, and despite substantial Cohesion policy support in the field, Bulgaria lags behind in overall digital public services for citizens, and only one third of Bulgarians use e- government services.** A low proportion of public services is fully online, and the lack of digital inclusion for minorities and people living in remote areas remains a major obstacle to the wider use of online services. **Bulgaria's performance on e-ID use is currently very poor** – the lowest in the EU – but there are positive signs of improvement thanks to recent regulatory changes in 2023. The population's access to **e-Health** records is steadily improving, with some areas already surpassing EU averages. Digital democracy based on public participation, the

protection of children online and the fight against disinformation is also expanding, with scope for further acceleration.

Leveraging digital transformation for a smart greening

Bulgaria's progress in its **twin transition** is hampered by the lack of a practical, integrated approach to making digital infrastructure greener or tracking emission reductions.

National Digital Decade strategic roadmap

Bulgaria did not submit a revised national roadmap. Instead, it presented minor updates to the roadmap initially submitted on 8 April 2024, primarily correcting clerical errors and updating dates, but **without introducing significant changes or new measures.** The roadmap aligns with the values and measures in the National Recovery and Resilience Plan and the European programmes. Bulgaria addressed most of the State of the Digital Decade 2024 recommendations through written responses and references to existing measures. A full stakeholder consultation was conducted. The roadmap continues to prioritise: the digitalisation of secure, interoperable, human-centred public services; basic digital skills; and the digitalisation of businesses (SMEs, smart farming). It contains **60 measures** and has a budget of EUR 2.19 billion (equivalent to 2.11% of GDP) that covers all the Digital Decade objectives, such as digital inclusion; cybersecure and resilient infrastructure; sovereignty; and governance of the digital transformation.

Funding & projects for digital

Bulgaria allocates 23% of its total recovery and resilience plan to digital (EUR 1.3 billion)[1]. In addition, under cohesion policy, EUR 1.3 billion, representing 12% of the country's total cohesion policy funding, is dedicated to advancing Bulgaria's digital transformation[2].

Bulgaria is a member of the 'Alliance for Language Technologies' EDIC. It is also a member of the European High-Performance Computing Joint Undertaking (JU) and of the Chips JU.

Bulgaria has not yet contributed to the Digital Decade's **Best Practice Accelerator**[3].

Digital rights and principles

According to a support study, Bulgaria has been relatively active in implementing the **European Declaration on Digital Rights and Principles**, with 79 initiatives overall and 4 new initiatives launched in 2024. Bulgaria is most active in the area of putting people at the centre of the digital transformation. Less activity has been identified with regards to privacy and individual control over data. Measures in the area of putting people at the centre of the digital transformation appear to have most impact on the ground, in contrast to those addressing safety, security and empowerment.

[1] The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

[2] 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.

[3] The Best Practice Accelerator (BPA) is a platform that enables Member States to share successful measures and challenges encountered in their efforts to meet their Digital Decade targets and objectives. Best practices are made available to Member States via the BPA Repository and showcased in regular workshops, currently focused on three thematic clusters: Digital Skills, Green IT, and the Uptake of Digital Technologies.

Recommendations

- **Digitalisation of SMEs and take-up of advanced technologies:** Improve the business climate and investment in R&D, notably strengthen Bulgaria's public science base and its linkages with the business ecosystem, while boosting private R&D efforts through well-calibrated public support tools.
- **Artificial Intelligence:** Continue the initiatives to promote AI development and adoption, with a focus on collaboration, ethical considerations, and policy alignment with the EU and across sectors.
- **Basic digital skills:** Leverage the strong performance of women in basic digital skills to reduce disparities linked to education, age, and geography, and to raise the overall level of digital competence. Prioritise targeted investments in teacher training, curriculum reform, and the development of digital and green skills.
- **ICT specialists:** Develop clear, targeted measures to help companies hire ICT experts in less populated areas. Set out a strategy addressing broader factors like infrastructure, economic conditions, and researcher mobility, and identify the most effective funding strategies. Expand ICT training and increase the number of female ICT specialists to help close the gap.
- **Cybersecurity:** Increase efforts in cybersecurity, particularly by supporting the development and deployment of cybersecurity capabilities, and by increasing awareness amongst private and public entities.
- **Key public services:** Continue the efforts to improve the digitalisation and user-friendliness of public procedures and to reduce the administrative burden, also by expanding the use of e-ID. Address the persisting societal and regional imbalances in the delivery of online services by, for example, cooperating with local stakeholders. Focus on accelerating the number of digital public services for citizens, particularly in cross-border services.
- **e-Health:** Ensure the timely and full availability of all types of medical images via the e-Health platform and app and provide clear information to the public. Expand online access to e-Health data to the entire population. Introduce technical functionalities that authorise persons to access this data on behalf of others. Strengthen communication to raise awareness of platform functionalities, especially among vulnerable groups.
- **Fixed and mobile connectivity:** Accelerate the expansion of both VHCN/FTTP and 5G coverage, with a focus on ensuring that deployment pace in sparsely populated areas is maintained. Continue investment to consolidate Bulgaria's strong position, especially in 5G deployment.
- **Green and digital transitions:** Set up clear mechanisms for measuring and promoting the environmental benefits of digital solutions across sectors. Work towards fully integrating green and digital priorities into the country's development strategy, through better alignment between political agendas, funding allocation, and private sector engagement.

A competitive, sovereign and resilient EU based on technological leadership

Bulgaria's digital competitiveness remains modest and places it in the lower-performing segment of the EU's tech landscape. Its digital transformation is supported by a well-developed telecommunications sector, rapidly expanding 5G networks and significant investments in fibre-optic infrastructure. These factors, combined with the growing start-up ecosystem and venture capital landscape, make Bulgaria a promising destination for investment and innovation. ICT sector growth, AI adoption among SMEs and the expansion of digital innovation hubs all signal progress. However, persistent underinvestment in research and development (R&D), weak science-business collaboration and the absence of unicorn enterprises are limiting its innovation potential. According to the European Innovation Scoreboard 2024, Bulgaria's innovation performance has improved but more slowly than the EU average. Sustaining this positive trajectory will be essential to closing the widening gap with the rest of the EU.

Bulgaria's ICT sector has shown strong growth, contributing **7.42%** of the country's gross value added in 2022 – above the EU average of 5.46% – and maintaining a rather steady upward trend since 2012[4]. That same year, R&D in this sector represented **35.22%** of total R&D expenditure by businesses, one of the highest shares in the EU. Despite this progress, **Bulgaria continues to face challenges in research and innovation**. ICT R&D personnel represented only 23.69% of the country's total R&D workforce in 2022 – relatively lower than in other Member States for which data is available.

Bulgaria has a dual funding approach for R&D, using both public funding (national budget) and EU funds (European Structural and Investment Funds and the European Regional Development Fund (ERDF)). **Public R&D spending remains insufficient**, limiting the development of a strong research base. Moreover, **institutional fragmentation further weakens the efficiency of funding**, because resources are spread too thinly across multiple institutions, preventing key players from achieving critical mass. **Another key obstacle is the weak link between academia and businesses**, which hampers innovation and the commercialization of research.

Bulgaria performs well on **connectivity infrastructure** roll-out, outperforming the EU on 5G spectrum assignment and Fixed Very High-Capacity Network (VHCN) and Fibre to the Premises (FTTP) coverage, although 5G coverage and broadband take-up still lag behind the EU averages.

Regarding critical technologies, Bulgaria is strengthening its resilience through its role in the EU's semiconductor ecosystem (notably via the Sofia Tech Park) and is continuing to promote quantum computing and the quantum research community.

The tech ecosystem for SMEs and start-ups shows potential, thanks to support from government initiatives and the establishment of European Digital Innovation Hubs (EDIHs), but a significant innovation gap with the rest of the EU remains.

[4] Most of the indicators mentioned in the country report are explained in the DESI 2025 Methodological Note accompanying the State of the Digital Decade report 2025.

Bulgaria

Bulgaria's ICT sector is a bright spot, but broader ecosystem challenges continue to constrain its growth.

Cybersecurity preparedness remains a concern, particularly given the continuing reliance on Chinese components in many of Bulgaria's telecommunications networks.

According to the 2025 Eurobarometer[5], 84% of Bulgarian people think that building efficient and secure digital infrastructures and data processing facilities should be a priority for the public authorities (an increase of three percentage points compared to last year).

Building technological leadership: digital infrastructure and technologies

Bulgaria's internet infrastructure is resilient overall thanks to strong growth in **Fixed Very High-Capacity Network (VHCN)** and **Fibre to the Premises (FTTP)** coverage as well as to assets such as affordable high-quality mobile connectivity. Performance nevertheless remains below the EU average in areas such as 5G take-up and 1 Gbps broadband subscriptions.

Bulgaria is strengthening its **semiconductor and quantum** computing sectors through new competence centres and research initiatives. However, it is lagging in overall **5G coverage and digital technology adoption**, requiring further efforts to enhance R&D, SME innovation, and enterprise digitalisation.

Connectivity infrastructure

Bulgaria's digital infrastructure has had a mixed performance compared with the EU average. It leads in certain areas such as VHCN and FTTP coverage as well as 5G spectrum assignment for pioneer bands, but it is lagging behind in overall 5G coverage and growth rates in most areas. Bulgaria's performance in sparsely populated areas is particularly noteworthy, with high coverage rates and growth in some areas. **Bulgaria's broadband take-up indicators show a mixed picture.** In 2023, 53.41% of fixed broadband subscriptions in Bulgaria were at speeds of 100 Mbps or higher – a lower share than the EU's overall 65.9%. This figure rose to 63.84% in 2024 and was still below the EU's 71.88%, but the year-on-year growth rate of 19.5% was more than double the EU's 9.1%. Bulgaria lagged behind the EU for subscriptions at speeds of 1 Gbps or higher, with 1.01% in 2023 and 2.02% in 2024 (compared with the EU's 18.47% and 22.25% respectively). Bulgaria's growth rate was 100.0%, almost five times faster than the EU (20.5%.)

The share of 5G SIM cards in Bulgaria was 14.53% in 2023 and 24.41% in 2024 (both lower than the EU's 21.7% and 35.56% respectively). Bulgaria's growth rate of 68.0% exceeded the EU's 63.9%.

VHCN and FTTP

Bulgaria has made very good progress on fixed broadband connectivity, and its Gigabit networks (VHCN and FTTP) are expected to reach 99% in 2030. The country is on track according to its national trajectory for these two indicators. The latest figures and measures in place suggest that it is realistic to expect that Bulgaria will reach its national target of nearly 100% VHCN and FTTP coverage.

Bulgaria is at 90.36% of VHCN coverage (2030 national target at 99%) after a progression of +1.75% in 2024 and stands above the EU average. However, Bulgaria's growth rate of 2% in this area was lower than the EU's 4.9%. **A similar trend is observed for households in sparsely populated areas,**

[5] Special Eurobarometer 566 on 'the Digital Decade' 2025: https://digital-strategy.ec.europa.eu/en/news-redirect/883227

where Bulgaria's coverage was 72.56% in 2023 and 79.1% in 2024, both higher than the EU's 55.61% and 61.89% respectively, but with a growth rate of 9% compared to the EU's 11.3%.

Bulgaria is at 90.36% of FTTP coverage (2030 national target nearly 100%) after a progression of +1.75% in 2024 and stands above the EU average. The growth rate of 2% is lower than the EU's 8.4%. **For households in sparsely populated areas**, Bulgaria's FTTP coverage was 72.56% in 2023 and 79.1% in 2024, compared to the EU's 52.55% and 58.78% respectively, with a growth rate of 9% against the EU's 11.9%.

Bulgaria is accelerating its connectivity efforts through a measure in its Recovery and Resilience Plan (RRP) which focuses on deploying VHCNs in sparsely populated, remote and rural areas. This measure has a budget of EUR 240 million (including EUR 200 million from the Recovery and Resilience Facility (RRF)). It aims to reduce the digital divide, ensure gigabit connectivity for all, and improve access to high-quality digital services.

Bulgaria is accelerating its connectivity efforts through a measure in its Recovery and Resilience Plan (RRP), focusing on the large-scale deployment of digital infrastructure. With a budget of EUR 270 million from the RRF, the initiative aims to reduce the digital divide, ensure gigabit connectivity for all, and improve access to high-quality digital services.

Bulgaria's good performance and encouraging deployments across its territory meant that it did not propose any new measure in its adjusted roadmap in 2024.

2024 recommendation on fixed connectivity: Stimulate demand in view of reaching full FTTP coverage.
In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures.

Given the dynamic growth of FTTP subscribers using speeds of 1 Gbps and above, the Bulgarian telecom regulator – Communications Regulation Commission (CRC) expects FTTP network coverage to continue expanding to meet the growing demand for higher speeds. The demand for ultra-high-speed connectivity (particularly gigabit speeds) is increasing significantly. The share of subscribers using speeds above 1 Gbps remains relatively small, but the trend suggests a strong interest in high-speed networks that is likely to continue growing. The steady increase in subscribers within the 100 Mbps to 1 Gbps range indicates that these speeds still meet the connectivity needs of many businesses. In the short term, businesses are expected to increasingly focus their demand on gigabit connectivity.

Regarding copper switch-off, the CRC reports that it has no legal instruments to impose a plan, because the local access market was deregulated in June 2019. Wholesale copper services were last used in 2012, so no undertakings are affected by the process.

By mid-2024, no changes were observed in the positions of the top three undertakings, which account for the largest share of broadband subscribers.

5G

Bulgaria is at 81.33% of overall 5G coverage (2028 national target 100%) after a progression of +3.1% in 2024 and stands below the EU average. **In sparsely populated areas**, Bulgaria is at 38.25% of 5G coverage (2028 national target 100%) after a progression of +34.3% in 2024 and stands far below the EU average (79.57%). Bulgaria is lagging behind compared to its national trajectory. Bulgaria's growth

rate for its overall 5G coverage could be supported by additional measures and/or accelerated investment.

Bulgaria is at 81.33% of 5G coverage in the 3.4–3.8 GHz band after a progression of +33.8% in 2024 and stands above the EU average (67.72%). **In sparsely populated areas**, Bulgaria is at 38.25% of 5G coverage in the 3.4–3.8 GHz band after a progression of +184.4% in 2024 and stands above the EU average (26.19%).

In 2025, Bulgaria has fully assigned 96.67% of its harmonized spectrum for 5G pioneer bands, same value as last year, outperforming the EU's 74.63%.

2024 recommendations on mobile connectivity: (ii) Accelerate efforts to increase 5G coverage; (iii) 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.
In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures. Regarding the implementation of Multi-Vendor Strategies, two Bulgarian mobile operators have informed the CRC of their plans to introduce a standalone 5G (SA) architecture in their networks. Publicly available information indicates that both architectures are based on Nokia solutions.

The CRC reported that just under 7.9 million subscribers were using mobile broadband access in mid-2024, a slight decrease of 1.5% since the end of 2023. The total number of mobile broadband subscribers exceeded 1.5 million and increased by 12.3% in the first half of 2024. On 1 July 2024, they represented almost 20% of the total number of mobile broadband subscriptions. The CRC believes that 5G subscriptions will become the largest group within the total number of mobile access subscriptions in the next few years.

On 1 July 2024, Bulgaria still had three major mobile operators, which each had stable market shares. 5G traffic accounted for 28% of total mobile broadband traffic in the first half of 2024.

Conditions have been established in Bulgaria to ensure the successful implementation of 5G.

Bulgaria has more than 4 400 5G base stations and the number of base stations has consistently grown over the years.

Bulgarian law allows operators to transfer or lease radio frequency spectrum in the 700 MHz, 3.6 GHz, and 26 GHz bands, subject to a decision by the CRC. However, the CRC did not receive any applications for the transfer or lease of the allocated radio frequency spectrum in 2024.

Semiconductors

Bulgaria is strengthening its semiconductor sector with C3BG, a national competence centre. The Ministry of Innovation and Growth and the Bulgarian SMEs Agency announced the establishment C3BG in September 2024. It will be part of the European Network of Competence Centres, providing technical expertise, design support, and skills development for SMEs. C3BG will receive EUR 8 million over four years with 50% aid intensity (50% of the funding will come from public sources). The winning consortium is led by the Technical University of Sofia and includes participants from other leading universities in Bulgaria, the Microelectronics and Industrial Electronic Systems Cluster, and Belgium's Imec. The project has been assessed and approved by the Chips Joint Undertaking and the implementation contract is due to be signed in 2025.

Sofia Tech Park is also involved in the Chips of Europe project, tackling workforce shortages by fostering industry-academia collaboration to attract talent to semiconductor careers. Through these initiatives and others reported in last year's Digital Decade report, Bulgaria is ensuring that its semiconductor sector not only follows an industry-driven approach but also integrates national R&D strengths, workforce development, infrastructure growth, and policy support – thus reinforcing Bulgaria's contribution to the EU's semiconductor ecosystem.

Based on the objectives of the Strategic Technologies for Europe Platform (STEP) and the outcomes of the mid-term review of the 'Research, Innovation and Digitalisation for Smart Transformation' (PRIDST) programme, **Bulgaria has proposed revising PRIDST**. The revision aims to foster the development of critical technologies in areas such as deep tech and biotechnology, including through the establishment of technology infrastructures. It will also integrate measures for skills development related to the manufacturing of critical technologies in these fields. The ERDF's financial support for the proposed STEP measure under PRIDST is currently estimated at EUR 81.5 million.

Similarly, based on the same objectives of STEP and the outcomes of the mid-term review of the Programme 'Competitiveness and Innovation in Enterprises' 2021-2027 (PCIE), **Bulgaria has proposed revising PCIE**. This revision would encourage the development and manufacturing of critical technologies, focusing on investment in SMEs and large companies in the area of 'clean and resource-efficient technologies'. The ERDF's financial support under this proposed STEP measure within PCIE is estimated at EUR 30 million.

Edge nodes

According to the Edge Node Observatory, Bulgaria is estimated to have deployed a total of 10 edge nodes by 2024, a progression of +100% since 2023. This is doubling (+5 edge nodes) the amount estimated for 2023 (5, number revised since SDDR 2024).

Bulgaria has presented forecast data for the edge nodes metric, which shows a trend of rapid expansion with an emphasis on reducing the distances between nodes. This suggests that the accessibility of services and the efficiency of the network have improved, so the network is likely to expand in suburban regions and local centres of economic activity.

BRAIN++ and Edge-Enabled AI Robotics at Sofia Tech Park, a key initiative in Bulgaria's AI strategy, are advancing AI-powered robotics by integrating robotic foundation models with digital twins. This approach accelerates automation across manufacturing, R&D, healthcare, logistics, and urban planning, reducing traditional robotics' cost and complexity. By focusing on modular, scalable AI models, BRAIN++ ensures adaptability across diverse environments. AI-powered drones use 3D-scanned public spaces to create digital twins, thus allowing robots to refine their skills in realistic simulations before physical deployment. Collaboration with Sofia Tech Park's robotics lab further strengthens this ecosystem, ensuring seamless training, validation, and real-world integration.

Crucially, this initiative embodies edge computing principles. Robots trained on digital twins require real-time AI inference and decision-making at the edge, rather than relying solely on centralized cloud systems. Distributed AI processing at edge nodes enhances responsiveness, reliability, and autonomy, particularly in dynamic, human-interactive environments. To address safety and ethics, BRAIN++ emphasizes Trustworthy AI, developing the COMPL-AI framework to ensure AI systems operate safely, transparently, and reliably. By offering an open-source AI robotics platform to the EU's AI factories, BRAIN++ fosters collaboration and competitiveness in the EU's AI ecosystem, and also reinforces edge computing as a foundation for next-generation robotics.

Quantum technologies

Bulgaria continues to promote quantum computing, in particular with the 'Increasing the Capacity in the Field of Quantum Informatics' national programme.

The Ministry of Education and Science (in cooperation with notable and leading scientists in the field of quantum technologies) approved this project last year (the public consultations have now closed). The national programme aims to build a **highly skilled and cohesive quantum research community** in Bulgaria by attracting **at least 40 PhD students, postdoctoral researchers and young scientists** to conduct **cutting-edge research** in **quantum computing, simulation, metrology, sensing and communication**. The programme is expected to be implemented in 2025-2031 with up to BGN 12 million (EUR 6.1 million) earmarked from the budget of the Ministry of Education and Science.

The Centre for Quantum Technologies (CQT) at Sofia University St. Kliment Ohridski was officially established in late 2023 to coordinate and advance quantum research within the physics faculty. It focuses on four key areas: quantum computers, sensors, and control; quantum simulations and metrology; quantum algorithms; and quantum control. Through these research groups, the CQT will aim to strengthen Bulgaria's position in quantum technology development. The CQT's building is currently being constructed on the campus of the Faculty of Physics with funding provided by the Rectorate of Sofia University, which is expected to be ready in the spring of 2025. The building will enable the creation of jobs for 25-30 researchers and will include a seminar hall. The work of the CQT is funded by one project under the RRP for BGN 1.1 million (EUR 562 444) for 42 months (until June 2026); one project under Horizon Europe for EUR 360 000 (until September 2025); and several smaller projects of young scientists.

Supporting EU-wide digital ecosystems and scaling up innovative enterprises

Bulgaria's adoption of digital technologies remains significantly below the EU average, despite recent progress on the uptake of cloud services by SMEs.

Regarding the tech ecosystem and R&D, Bulgaria is sustaining its involvement in several EDIHs, and consolidating funding for R&D infrastructure such as **centres of excellence (CoEs) and centres of competence (CoCs)**. Recent developments are encouraging, with growing awareness among enterprises of the importance of digitalisation and acceleration in their use of AI, as well as the recently announced AI factory to be hosted by Sofia Tech Park.

Total R&D intensity increased from 0.43% of GDP in 2007 to 0.79% in 2023, but R&D investment – both public and private – remains critically low (among the lowest in the EU) and is still far below Bulgaria's 2% target for 2025. In addition to a **fragmented research system and weak science-business ties**, this underinvestment is weighing heavily on Bulgaria's innovation potential.

Science-business cooperation remains at the low end of the scale. This is reflected in the share of public-private scientific co-publications and in the share of public R&D expenditure that is financed by businesses, which is also well below the EU average. Knowledge transfer and the commercialisation of research results is hampered by the **lack of an effective technology transfer ecosystem** (with properly funded technology transfer structures); the **lack of incentives for researchers to engage in collaboration** with the private sector; and the **lack of formalised relationships between academia and businesses**. This is despite the fact that several organisations supporting start-ups and innovative businesses have been established in Bulgaria over time (e.g. the Bulgarian Entrepreneurial Association

(BESCO); the Bulgarian Association for Equity and Risk Investment; and the Business Angel com platform).

Bulgaria has reported some recent developments that suggest that, with the emergence of widely available generative intelligence, many SMEs have realised that they need to develop their own strategy for holistic digitalisation and use of new technologies. In this regard, under the national RRP, Bulgaria's government has provided financial resources for innovation and digitalisation for smart transformation for almost all business activities – from a voucher scheme for improving staff skills to the development and localisation of IT solutions for the benefit of competitiveness.

SMEs with at least basic digital intensity

In 2024, 49.93% of SMEs showed at least a basic level of digital intensity (2030 national target 60%) after a progression of +2.9% annually between 2022 and 2024. The country stands far below the EU average of 72.91%, and ranks **last among EU Member States**. More specifically, only 16.46% of Bulgarian SMEs had a high or very high digital intensity, compared to the EU average of 32.66%, highlighting the need for further digital development among SMEs.

To address this issue, the Bulgarian RRP includes an investment to support the deployment of digital technologies in SMEs and improve their readiness for the subsequent adoption of Industry 4.0 technologies. The cohesion policy investment would primarily focus on supporting SMEs in achieving higher levels of digitalisation and deploying Industry 4.0 technologies.

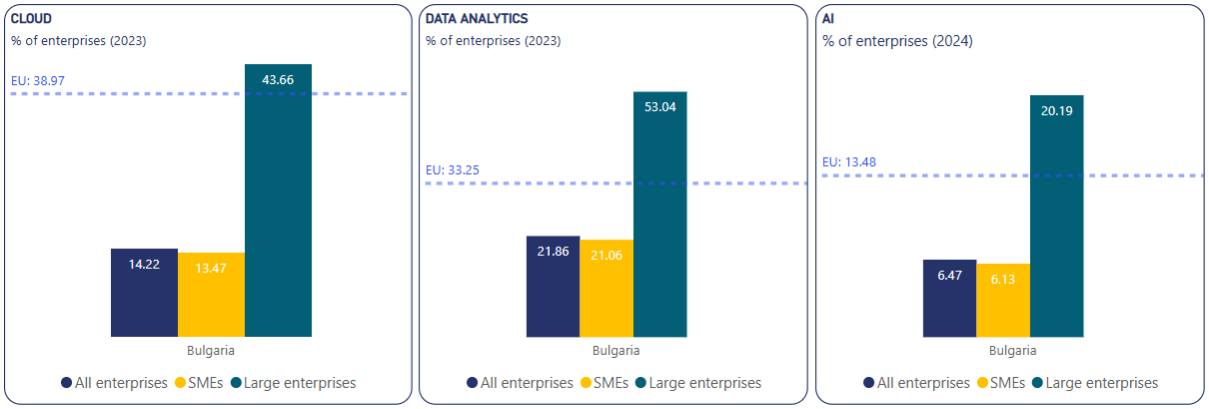
2024 recommendation on digitalisation of SMEs: Accelerate its efforts with more measures aiming to increase SMEs' uptake of technologies, including measures to stimulate investments in technology transfers, such as through more lab-to-market measures, and support to its innovative start-ups.
In 2024, Bulgaria continued the implementation of existing measures but did not take any new measures. Bulgaria reported that the intended measures described in the roadmap aim precisely at achieving the above objective and addressing the 2024 recommendation. New measures could be expected after analysing the results of the implementation of these and in the development of the new European programmes.

In **October 2023**, Bulgaria's **Ministry of Innovation and Growth** approved funding of **BGN 82 million (EUR 41.9 million)** to establish **eight European Digital Innovation Hubs (EDIHs)**. The programme is part of the Research, Innovation and Digitalisation for Smart Transformation (PRIDST) 2021-2027 and is consistent with the Digital Europe Programme's focus on EDIHs. The initiative aims to assist BGN 51.8 million (EUR 26.4 million) in fostering technological transformation in Bulgaria, with a focus on AI, digitalisation and smart solutions. The most ambitious of these hubs, 'Mechanica', plans to support 507 businesses and organisations. Others, like the 'RIC Gabrovo' hub (serving 22% of organisations), will play a more modest role. RIC launched the European Digital Innovation Hub in October 2024 and the deadline for the project's implementation is October 2027. **Bulgaria's sustained involvement in the EDIHs will accelerate the adoption of AI, digital, and green technologies.** This will bridge the gap between research, development and real-world AI deployment. It will also reinforce Bulgaria's contribution to the digital transformation of EU industries.

Bulgaria is seeking to ensure that public R&D investment contributes effectively to technological advancements and economic growth by **fostering an integrated research and innovation ecosystem**. In particular, to strengthen the national R&D ecosystem, Bulgaria adopted the **Act on the Promotion of Scientific Research and Innovation (ZNNII)** in May 2024. This law lays the foundation for

sustainable research funding and alignment with the European Research Area; establishes a national framework programme to improve coordination between government, academia, business and society; creates a national innovation fund to finance R&D projects; and enhances science-business linkages through the National Roadmap for Scientific Infrastructure. The NRSI covers 51 R&D sites (including CoEs and CoCs).

Take-up of cloud/AI/data analytics



Bulgaria has a mixed performance in the adoption of cloud computing, data analytics and AI technologies. It is lagging significantly behind the EU averages in all three areas. There is also a significant disparity between SMEs and large enterprises when it comes to the adoption of technology. Large enterprises have relatively high levels of adoption, but SMEs have trailed behind (particularly in AI adoption and cloud computing) and there is a sizeable gap in data analytics uptake. This mirrors trends in the EU as a whole (where large enterprises consistently outpace SMEs in technology adoption) and has significant implications for Bulgaria's economy. In 2022, SMEs in Bulgaria accounted for 42.7% of the total value added in the economy, while large enterprises generated 37.6%. SMEs represented 97.4% of the enterprises with more than 10 employees, while large enterprises made up just 2.6%.

- **Artificial intelligence or cloud or data analytics**

According to new data collected in 2024, 6.47% of Bulgarian enterprises adopted AI (2030 national target 11%) after a progression of +78.73% in a year; despite significant growth, this performance remains significantly below the EU average of 13.48%. More specifically, uptake among SMEs was slightly lower at 6.13%, while large enterprises reported a higher usage rate of 20.19%. This corresponds to a gap of 14.06 percentage points between SMEs and large enterprises, which is lower than the EU gap of 28.53 percentage points. **Bulgaria is on track according to its national trajectory.**

Adoption of cloud, data analytics, and the three technologies together were not measured in 2024.

In 2023, only 14.22% of Bulgarian firms adopted cloud technologies (2030 national target 15%), which is considerably lower than the EU average of 38.97%. Among these, a notable disparity existed between SMEs, which had an uptake of 13.47%, and large enterprises, among which 43.66% adopted cloud services. This reflects in a 30.19 percentage point gap between SMEs and large enterprises in Bulgaria, which aligns with the EU level gap of 31.68.

Data from 2023 showed that 21.86% of Bulgarian firms adopted data analytics technologies (2030 national target 9%), which corresponds to a considerably lower share than the EU average of 33.25%. Among these, approximately 1 out of 5 (21.06%) SMEs used data analytics, whereas 1 out of 2 (53.04%) large enterprises conducted data analytics. This resulted in a gap of 31.98 percentage

points between SMEs and large enterprises, which was lower than the EU gap of 39.72 percentage points.

When taking the three technologies together in 2023, 29.34% of enterprises in Bulgaria engaged with either AI, cloud, or data analytics technologies (2030 national target of 35%), considerably below the EU average of 54.7%. Among SMEs, the uptake was slightly lower at 28.34%, compared to a much higher rate of 68.22% among large enterprises. This indicates a percentage point difference of 39.88 in uptake between SMEs and large enterprises in Bulgaria, which is higher than the EU level gap of 32.97.

- **Cloud**

There are no specific developments to report that are relevant to the 2025 Digital Decade report.

- **Data Analytics**

There are no specific developments to report that are relevant to the 2025 Digital Decade report.

- **Artificial Intelligence**

Bulgaria is taking steps that will likely elevate AI use among Bulgarian enterprises. The 2024 Digital Decade report included BgGPT, an open AI model in Bulgarian language, as one of the country's best practices. It was developed and launched in 2024 by the INSAIT research institute.

In March 2024, Bulgaria announced that it will host BRAIN++, an AI training factory at Sofia Tech Park, as part of a EUR 485 million initiative by the Commission to fund seven sites. Construction of this modern GPU AI data centre will begin in 2026. The EUR 90 million project, with 50% funded by the Bulgarian government, is a joint effort by Sofia Tech Park and the Institute for Computer Science, Artificial Intelligence and Technology (INSAIT). BRAIN++ will tap into the EU's supercomputing network, exchanging computing power, data, and talent across Europe, and contributing to a united European AI ecosystem that promotes ethical and responsible practices. It will also integrate a cloud solution called **BulgAI Sandbox**, providing a secure space for SMEs and researchers to develop, test, and deploy AI solutions. This hybrid approach combines Bulgaria's Discoverer+ EuroHPC supercomputer with cloud-based features, offering a flexible and accessible environment for AI innovation.

Bulgaria's government is closely monitoring the AI adoption and innovation levels of its enterprises, categorising them into four distinct groups. The 'leaders' group represents 14% of Bulgarian enterprises, which are the most innovative and seamlessly integrate AI into various business functions with dedicated budgets and a strong commitment to innovation. The 'catch-up' group comprises 23% of enterprises, which are rapidly adopting AI and experimenting with multiple tools. They are often involved in warehouse automation and AI-driven management systems but are slightly less innovative than the leaders. The 'laggards' group is the largest with 41% of enterprises that have minimal AI adoption and limited understanding of its potential, and that only rare and superficially use AI. The 'I Want To' group consists of the 22% of enterprises that are enthusiastic about AI but have limited actual implementation, often allocating budgets but lacking the necessary processes and expertise for effective adoption.

2024 recommendation on AI: Leverage activities as part of the ALT-EDIC and build on its capabilities such as BgGPT to design new measures aiming at developing the AI ecosystem and fostering AI adoption.

Bulgaria

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. The establishment of forms of cooperation between the government, the ICT sector and civil society (such as the established Advisory Council of the ICT Community and the thematic working group 'AI – Guarantees of equal access and respect for human rights' of the Ministry of Electronic Governance (MEG)) is helping to unite resources, share best practices and drive AI innovation. It also facilitates dialogue about the ethical implications and policy considerations associated with AI systems. Bulgaria's Digital Decade roadmap includes measures related to AI development. Integration of AI into different sectoral strategies allows a more balanced and efficient allocation of resources in order to better target activities contributing to specific policy projections. A project proposal within the Commission's Technical Support Instrument aims to build-up administrative capacity for AI governance in the context of the new EU AI Act and the Council of Europe's Convention on AI, Human Rights, Democracy and the Rule of Law.

Unicorns, scale-ups and start-ups

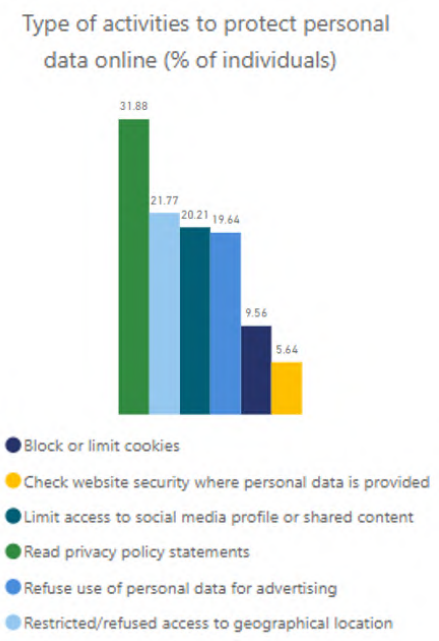
At the beginning of 2025, Bulgaria had no unicorns, which is equal to last year. A national forecast trajectory was not provided. However, the development of enterprises in the country in this field will continue to be monitored.

Bulgaria's business environment has experienced significant growth, particularly in its start-up ecosystem and foreign investment landscape. In January 2025, Bulgaria received EUR 338 million in FDI, which highlights its rising appeal to investors. Sofia hosts over 800 start-ups and ranks 37th globally as a start-up hub. In 2023, Bulgarian start-ups secured EUR 264 million in investment, supported by EUR 500 million from local VC funds via the Fund of Funds (FoF) – a fourfold increase over five years. In January 2025, the FoF allocated EUR 100 million to the 'Entrepreneurship Fund'. Government initiatives like the Variable Capital Company aim to streamline business structures, despite challenges such as a skills shortages and regulatory issues.

Strengthening Cybersecurity & Resilience

Bulgaria's overall cybersecurity preparedness remains a concern. The country continues to lag behind in the adoption of ICT security measures, employee awareness, and the deployment of key secure internet standards.

Approximately 1 in 2 (50.75%) individuals in Bulgaria reported that they had taken at least one precautionary action to protect their personal data online in 2023. This was well below the EU average of 69.55%. Only 16% of individuals in Bulgaria took three or more such actions and can therefore be considered as having above-basic digital safety skills. The most common protective action was reading privacy policy statements before providing personal data (31.88% of individuals did this). By contrast, only 5.64% checked that the websites where their personal data were held were secure (this was the least common precautionary step).



The number of Bulgarian enterprises that experienced ICT security incidents leading to unavailability of ICT services due to attack from outside (e.g. ransomware attacks and denial of service attacks)

decreased slightly from 1.96% in 2022 to 1.79% in 2024. It is still below and is only half the EU average (3.43%). Bulgarian enterprises are also less subject to incidents related to hardware or software failures (9.18%) than enterprises in the EU as a whole (17.97%).

83.23% of enterprises deployed some ICT security measures (this was below the EU average of 92.76% and was the lowest score). Only 48.62% of enterprises made their employees aware of their obligations regarding ICT security (below the EU average of 59.97%).

Concerning the deployment of secure internet standards, Bulgaria is below the EU average in the roll-out of the Internet Protocol version 6 (IPv6) for end users (Bulgaria: 16%, EU average: 36%) It is also the lowest performer on the server side (Bulgaria: 2%, EU average: 17%). IPv6 is important because it ensures the scalability, stability and security of the internet. The deployment of this new version is becoming increasingly urgent because traditional IPv4 addresses have long since been used up. Domain Name System Security Extensions (DNSSEC) is also an important standard that should be rolled out because it introduces security features to DNS. Bulgaria's DNSSEC validation rate was 46% in Q3 2024 (only slightly below the EU average of 47%).

Bulgaria has not yet transposed the provisions of the NIS2 Directive into its national legislation but has started the process of adopting the necessary legislation for this. The National Assembly passed government-sponsored amendments to the Cybersecurity Act on first reading in February 2025 and a second reading is was expected in the spring. Bulgaria will have to take steps to implement this legislation once it has been implemented.

According to the Digital Decade Eurobarometer 2025, 76% of Bulgarian citizens think that improved cybersecurity, better protection of online data, and safety of digital technologies would facilitate their daily use of digital technologies. An increase of two percentage points compared to last year reflects the growing concern of the Bulgarians about this subject. Additionally, 82% believe that having access to affordable, high-speed internet would further improve their daily use of digital technologies (above the EU average of 80% and stable compared to last year).

A number of ongoing policy efforts are set to significantly improve Bulgaria's ability to prevent, detect, and respond to cyber threats across multiple critical sectors.

- Bulgaria's **Network and Information Security Directorate** at the Ministry of Electronic Governance (MEG) has launched or followed up several key initiatives to enhance national cybersecurity: **National cybersecurity infrastructure**: Strengthening cybersecurity measures across all digitalisation programmes.
- **5G cybersecurity**: Continuing implementation of the 5G cybersecurity toolbox for secure and resilient networks. However, 65% of Bulgaria's networks remain dependent on Chinese components (according to data on the percentage of national EU telecommunication networks set on Chinese technologies).
- **Cyber Incident Monitoring & Response Centre**: Established at strategic sites under the Internal Security Fund.

Several projects have recently been launched, starting in 2024.

- **National Coordination Centre (NCC-BG)**: Supporting cybersecurity innovation; funding opportunities; and collaboration between industry, academia, SMEs and public organisations. Financial support is provided to SMEs to enhance cybersecurity.
- **Cybersecurity Training Centre** (Ministry of Electronic Governance): A new centre for cybersecurity training, awareness, and incident management. It will include a **Cyber Training**

Area with interactive simulations for real-world attack scenarios, boosting the response capabilities of both public and private stakeholders.

- **Healthcare Cybersecurity Initiative** (Ministry of Health): Strengthening national cybersecurity in the health sector through a dedicated **Cyber Incident Response Team (CSIRT)** and integration with other national cybersecurity systems.
- **Energy Sector Cybersecurity** (Ministry of Energy): A project funded under the **Research, Innovation and Digitalisation for Intelligent Transformation Programme 2021-2027** and worth BGN 1.4 million. It aims to enhance cybersecurity infrastructure, implement vulnerability scanning tools and establish an incident-response system.
- The Ministry of Health has, when reporting on the steps Bulgaria is taking further to the European action plan on cybersecurity of hospitals, highlighted its commitment to ensure a secure national health system for all citizens. Several cybersecurity measures have been developed, including the implementation of VPNs. Bulgaria is currently carrying out a project focused on incident response in the healthcare sector and is preparing another project to enhance cybersecurity in hospitals.

2024 recommendation on cybersecurity: Establish a national cybersecurity infrastructure to increase the efficiency of cybersecurity measures and integrate cybersecurity into all digitalisation programmes and projects.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria has demonstrated a clear commitment to enhancing national cybersecurity infrastructure, with initiatives outlined in its roadmap. Measures and activities in the cybersecurity sector described in the roadmap are aimed precisely at the establishment of national cybersecurity infrastructure to increase the efficiency of cybersecurity measures. However, Bulgaria has acknowledged challenges in integrating cybersecurity into all digitalisation projects at this stage.

On 5G cybersecurity, Bulgaria reports that 5G networks are entirely private and that their operators are fully responsible for ensuring their security. The Bulgarian's state's limited role in this area might require further clarification or adjustments in the future, particularly in the light of EU frameworks and obligations.

The CRC has consistently emphasised (including during the provision of information for the NIS WS 5G/Telecoms Cybersecurity – BG country fiche update in November 2024) that it has fulfilled all its obligations in accordance with the Law on Electronic Communications.

Further to Decision No 162 of 19 May 2022 and pursuant to Article 243(3) of the Electronic Communications Act, the CRC has adopted the 'Rules for the Minimum Security Requirements of Public Electronic Communication Networks and Services and Risk Management Methods for Their Security'. These new rules enable the CRC to address a broad range of security issues related to public electronic communication networks and services, as well as methods for managing associated risks. These rules authorise the CRC to require operators to conduct audits and risk assessments; implement technical and organisational measures for risk mitigation; and report incidents. The rules are fully consistent with measures from the 5G Cybersecurity Toolbox, the relevant guidelines provided by ENISA (specifically the Guideline on Security Measures under the EECC) and the Technical Guideline on Incident Reporting.

Protecting and empowering EU people and society

Bulgaria is working to foster an inclusive digital transition. This involves various educational and vocational initiatives to address divides in gender, age, education as well as rural-urban disparities. Significant challenges nevertheless remain. 64.5% of the population lacks **basic digital skills and there is a low uptake of e-Government services**. The **uptake of digital public services** is promising because, although the delivery of online public services remains low among citizens, it is accelerating among enterprises. The country's National Health Information System (NHIS) is making it easier for citizens to access their health records. A new national strategy is driving **strong improvements for e- Health overall**. Bulgaria's online environment remains a concern, but current efforts to address risks online are having encouraging results.

Empowering people and bringing the digital transformation closer to their needs

Bulgaria is taking steps to foster an inclusive digital transition, recognizing the need to address various divides within its society. The strategic framework 'Digital Transformation of Bulgaria 2024-2030' aims to bridge gaps related to gender, rural-urban disparities, age, education levels, and socio-economic status. Significant challenges nevertheless remain. Initiatives such as the 'Increasing the Competences of Academic Teachers' and 'Digital Qualification' programmes are enhancing digital skills in higher education. Vocational training through the Network of Bulgarian Educational Enterprises is providing hands-on digital literacy. However, the impact of these programmes has yet to be fully realised, and their reach is still limited, particularly in rural areas.

Despite these efforts, Bulgaria faces substantial hurdles in digital skills proficiency. The fact that women in Bulgaria have slightly higher digital skills than men should not be allowed to obscure deeper issues, such as significant disparities between different education levels and age groups. Rural areas and older people are particularly affected, so more targeted interventions are needed. The upcoming school education initiative in 2025 aims to address some of these gaps by upgrading infrastructure and training teachers, but its success will depend on effective implementation and sustained support. Bulgaria faces challenges in terms of the **overall level of ICT training provision and the percentage of ICT specialists**, but its growth rates in these areas are encouraging. The decline in the growth rate of female ICT specialists is a concern that needs to be addressed in order to ensure a balanced and inclusive ICT workforce.

Bulgaria's e-Government system is well-developed and **ongoing efforts are being made to digitalise public services** and reduce administrative burdens. The Single Digital Gateway and other digital tools aim to simplify access to regulatory information and procedures. However, **while digital public services for businesses have improved**, citizens' uptake of **e-Government services** remains low, which indicates a need for greater public awareness and trust in digital platforms. **Bulgaria's performance on eID use is the lowest in the EU**, but regulatory changes might improve the situation. **Bulgaria's performance on e-Health is improving** and the National Health Information System is making it easier for citizen to access health records. However, the full integration of digital tools in healthcare remains a work in progress.

Bulgaria

According to the 2025 Eurobarometer, 81% of Bulgarian people think that accessing public services online will be important for their daily life in 2030. Concerning human support to help access and use digital technologies and services, 78% consider it would improve their daily use of digital technologies, and 87% think public authorities should consider it important to ensure that people receive proper human support to help them adapt to the changes in their lives brought about by digital technologies and services (an increase of four percentage points compared to last year).

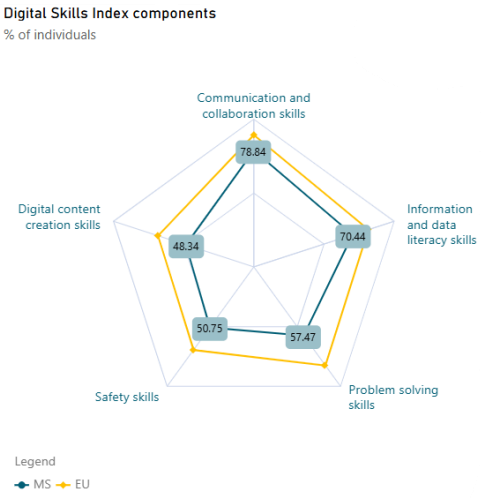
Equipping people with digital skills

Basic Digital Skills

According to data from 2023, Bulgaria had 35.52% of its population having basic digital skills (2030 national target 52%) trailing behind the EU average of 55.56%. There was no new data collection in 2024, yet a deeper analysis can reveal new areas of improvement:

- **Gender Gap**: Interestingly, Bulgaria defies the common trend with 36.19% of females having basic digital skills compared to 34.83% of males, resulting in a negative gender gap of -1.36 percentage points. This is not only below the EU average gender gap of 2.23pp but also indicates an unusual situation where women are more digitally skilled than men.
- **Education Level**: There is a considerable disparity when it comes to education levels. Among those with high formal education, only 65.28% possess basic digital skills, significantly below the EU average of 79.83%. The situation is more dire for those with low or no formal education, where only 14.56% have basic digital skills, with a gap of 20.96pp compared to the national average, narrowly smaller than the EU average gap of 21.95pp.
- **Living Areas**: The digital skills gap is particularly pronounced in rural areas, where a mere 20.93% of residents have basic skills, starkly below the EU average of 47.50% for rural zones. The rural-urban digital divide in Bulgaria is substantial, with a 14.59pp difference from the national average, which is much greater than the EU average gap of 8.06pp.
- **Age Groups**: Young Bulgarians (16 to 24 years) are the most digitally competent, with 53.15%, yet this figure falls short of the EU average of 69.98%. The elderly (65 to 74 years) are at the lowest end of the spectrum, with only 7.30% having basic digital skills, which is significantly lower than the EU average of 28.19% for the same age group.

Digital Skills Index Components: Across the board, Bulgaria scores below the EU average in all five areas of the Digital Skills Index. Its highest performance is in communication and collaboration skills at 78.84%, but this is still not up to the EU average of 89.33%. The lowest score is in digital content creation skills (48.34%), significantly lower than the EU average of 68.28%.



Bulgaria's RRP includes investments to boost digital skills among its citizens. A nationwide digital skills training campaign is underway. To support those with limited digital access, a network of staffed digital clubs equipped with laptops will be established. The RRP also invests in improving STEM education in schools by building and equipping STEM labs and high-tech classrooms to promote digital literacy and modern teaching methods.

Bulgaria

2024 recommendations on basic digital skills: (i) Take additional support measures to compensate for the deficit of basic to advanced digital skills, reviewing the approach on Bulgaria talent retention and providing attractive conditions; (ii) Ensure the implementation of measures that can enhance digital inclusion of vulnerable populations, raise awareness of people about their rights through guidance, and stimulate digital competence/culture from early childhood and throughout working life.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria has reported that the measures described in the roadmap are intended to achieve the above objective and address the 2024 recommendation. New measures could be expected after analysing the results of their implementation and when developing the new EU programmes. Bulgaria's current efforts in the roadmap are consistent with the objectives of improving digital skills and inclusion. However, it does not specify concrete immediate actions for talent retention or a detailed current strategy to compensate for the digital skills deficit.

Bulgaria faces significant challenges in education and skills development. **Over 50% of 15-year-olds lack basic proficiency in maths or reading.** Nearly **50% lack basic proficiency in science**. These are among the lowest rates in the EU. **The situation is particularly severe for disadvantaged students.** 62% of disadvantaged students fail to achieve minimum competency levels in all three subjects. Key factors include **poor teaching quality, an ineffective curriculum, socio-economic segregation in underperforming schools, and inadequate measures to address poverty-related disadvantages**. In addition, **digital skills among young Bulgarians are among the lowest in the EU**, further limiting their future opportunities.

Adult learning participation is also **alarmingly low and declining**, dropping from **11.6% in 2016 to 9.5% in 2022** – the lowest in the EU. Even when in employment, only **28% of adults engage in on-the-job training** (the **EU average is 53.9%**).

In order to achieve its 2030 targets and objectives, Bulgaria has launched several initiatives to **bridge digital gaps between urban and rural areas, generations and socio-economic groups** (particularly in education and vocational training). The plans mentioned in the following paragraphs were already included in the 2023 roadmap but have only recently begun to be put into practice.

Two national programmes aim to **enhance digital competencies in higher education**: 'Increasing the Competences of Academic Teachers' and 'Digital Qualification'. These initiatives focus on improving the digital skills of over **1 200 academic teachers and 800 teachers**; funding study programme updates; establishing **23 university centres for innovative educational technologies**; and providing training materials, video lectures and virtual libraries.

Higher education institutions are also integrating **digital technologies, virtual reality and interdisciplinary approaches** into their teaching and assessment. The aim is to **enhance digital skills and employability** by aligning education with modern technological trends.

In vocational education, the **Network of Bulgarian Educational Enterprises** supports digital literacy through hands-on training. 5 000 students receive simulated workplace training in over 124 educational enterprises every year, covering areas such as banking, IT, insurance and consulting. The annual Young Entrepreneur Fair also promotes skills development by connecting students with local and international business networks.

A major initiative for school education will be launched in 2025 (led by the Ministry of Education and Science) with a digital transformation budget of BGN 246.5 million (EUR 126 million). Its objectives

include: (i) **upgrading digital education infrastructure**, including the 'Digital Backpack' platform (described in last year's report); (ii) **training 3 897 teachers** in digital skills, media literacy and digital content creation, alongside support for 202 839 children and students, and 212 539 parents and educational mediators; and (iii) supporting **students' digital literacy** through **enhanced general education, extracurricular training and practical lab experience** in areas such as IT, virtual reality and analytical skills, as well as the use of automated processes and the integration of AI into school education.

The lack of ICT competences and the need to enhance the workforce's technological knowledge and digital skills remain critical challenges for education and training systems at all levels. To address these issues, the MEG has introduced national measures for acquiring and improving digital skills. These were included in the 2023 roadmap to the the strategic framework 'Digital Transformation of Bulgaria 2024-2030'. **A national skills policy plan was finalised in 2024**.

Bulgaria has also recently proposed the 'Capacity building of the MEG as competent authority for developing public policy for AI for implementing AI Act' project as part of the Technical Support Instrument (TSI) programme. The aim is to ensure compliance with the AI Act and enhance civil servants' AI literacy. Bulgaria will produce an institutional mapping to ensure that public administration can adapt to the regulatory environment and swiftly implement new and future digital legislation. Further to the needs highlighted by the mapping, Bulgaria will increase administrative capacity by means of training. It will also enhance the literacy and trust of the public administration by sharing of good practices and targeted workshops to inform civil servants about AI and its use. This proposal has been pre-approved. At the time of reporting, the procedure for the official approval of the project was expected to be completed by the end of March 2025.

Regarding training activities and the development of competencies and skills, the Institute of Public Administration's 2025 training catalogue now includes a new programme titled **'Intelligent Data Management and Artificial Intelligence'**. This programme covers topics related to the application of AI in the public sector and offers both in-person sessions and online modules. It aims to equip civil servants with both foundational and advanced knowledge of AI technologies. Additionally, in April, the IPA launched a study to assess the readiness of public administrations for AI adoption and to identify the training needs of civil servants. The results of this study are currently being analysed and will be published in due course.

The 'New Skills' initiative was funded by the European Social Fund+ (ESF+) and launched in early 2025. It will train 14 000 employees in digital, business and soft skills, and will be completed by the end of 2026. Applications to the 'New Skills' initiative closed on 5 March 2025. It has a budget of BGN 74 million (EUR 37.8 million). Employers can apply for grants ranging from BGN 20 000 (EUR 10 226) to BGN 5.9 million (EUR 3 million) to train employees (including in digital skills).

Since early 2024, targeted digital skills training has been funded via the national RRP and ESF+. Online testing and certification is available for those learning independently or on the job. 67 060 digital skills certificates had been issued by 9 February 2025 (65 716 through courses and 1 344 via independent assessment).

The 2024 project 'Addressing Labour Market Challenges' (ESF+ funded) is updating labour market forecasts in order to improve training strategies. This includes **analysing the impact of digital and green transitions on jobs and skill needs**. **The results are expected by 2026. A national survey in 2025** will examine barriers to adult learning among individuals aged 25-64.

To support disadvantaged learners, 760 digital clubs with computers, internet access, and mentors will be established. In addition, the Employment Agency runs training programmes (including a training programme on 'Digital Skills' that offers digital upskilling for unemployed and employed individuals based on training vouchers.

ICT specialists

Bulgaria is at 4.6% of ICT specialists in total employment (2030 national target 5%) after a progression of +7.0% in 2024; its stands below the EU average of 5.0%. In 2023, ICT specialists made up 4.3% of total employment, compared to the EU's 4.8%. Bulgaria's growth rate of 7.0% exceeded the EU's 4.2%, suggesting a positive evolution. **The country is on track according to its national trajectory.**

The percentage of female ICT specialists in Bulgaria was 29.1% in 2023, higher than the EU's 19.4%. This figure decreased by 7.2% to 27.0% in 2024 but was still above the EU's 19.5%. However, Bulgaria's year-on-year 7.2% decrease compared unfavourably with the EU's 0.5%year-on-year increase. **Bulgaria nevertheless continues to perform very well with respect to women in ICT jobs**, partly thanks to education policies and organisations like Women in Tech Bulgaria and Rails Girls Sofia, which actively support women entering and excelling in the field In 2022, 9.06% of enterprises with 10 or more employees provided ICT training, significantly lower than the EU's 22.37%. This figure increased slightly to 9.11% in 2024, but was still well below the EU's 22.29%. However, Bulgaria's annual growth rate of 0.3% did outperform the EU's -0.2%. This indicates that, even if Bulgaria's overall level of ICT training provision is still low, Bulgaria is making progress in this area.

Systemic loss of scientific capacities is hampering Bulgaria's competitiveness and transition towards a knowledge-based economy. Bulgaria's pool of available workers for R&I (as measured by the share of new graduates in science and engineering in the population) has been on a downward trend since 2010 and is well below the EU average. This is further exacerbated by one of the lowest shares of people aged 25-34 who have successfully completed tertiary education (35.8% compared with the EU average of 43.1%) along with an ageing and numerically insufficient research staff due to low career projections. This is reflected in the low number of researchers (full-time equivalents) employed by the public sector per thousand of the active population, which has remained among the lowest of all EU Member States (2.8 in 2022 compared with the EU average of 4.1).

In terms of labour market demand, Eurostat experimental statistics based on web-scraping show that in Bulgaria the **profiles of 'software and applications developers and analysts' are the most sought after, representing 39.5% of online job advertisements for ICT specialists (58.0% at EU level)**. Two types of profiles are more in demand in Bulgaria than in the EU as a whole: 'information and communications technology service managers' (5.3% of online job advertisements for ICT specialists), and 'information and communications technology operations and user support technicians' (11.7%).

Participation in higher education remains low (particularly in **STEM fields**) despite policy efforts. **The declining number of STEM graduates** is aggravating skills shortages. The especially low level of enrolment among disadvantaged groups (including Roma students) is limiting their early skill development and career prospects.

2024 recommendation on ICT specialists: Develop measures including through EU programmes to support companies to hire experts in the least populated areas where technology uptake and the skills gap are pressing issues.

Bulgaria

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure.

Key digital public services and solutions – trusted, user-friendly, and accessible to all

Bulgaria's digital public services overall and access to e-Health records have steadily improved, with some areas already surpassing EU averages. Bulgaria lags behind in overall digital public services for citizens, but it excels in digital public services for businesses and is rapidly improving in access to e-Health records. Bulgaria's growth rates in these areas often outpace the EU's, indicating a positive development path. **Bulgaria's performance on e-ID use is the lowest in the EU** – but there are positive signs of improvement thanks to 2023 regulatory changes.

Bulgaria's institutional framework poses challenges to its competitiveness, with low public trust, complex administration and an unstable legal environment. Productivity in public administration is hindered by low skills and pay disparities; and, unlike other EU Member States, Bulgaria lacks a dedicated pro-productivity institution. Corruption and judicial independence issues also affect the business environment.

The situation could improve as Bulgaria strengthens it legal framework for digital services and builds on its e-Government system by incentivising more of its population to use online services. Bulgaria is making efforts to digitalise registers, enhance interoperability, and apply the Once Only principle to streamline administrative processes.

Bulgaria's RRP contains numerous measures to digitalise public administration. This includes enhancing the justice system's IT infrastructure, the digitalisation of healthcare (e.g. the development of the National Health Information System and of a National digital platform for medical diagnostics), employment and social services, and cultural collections. In addition, the RRP promotes the digital transformation of energy and transport systems, as well as agriculture, to streamline data exchange between farmers and the administration.

Only one third of Bulgarians use e-government services. The share of people using government internet websites or apps has been increasing every year in Bulgaria: from 31.74% in 2022 and 35.39% in 2023 to 36.48% in 2024. Engagement nevertheless remains far below the EU average of 74.71% in 2024 and is the second lowest in the EU. This is partly due to the very low share of public services which are fully online. Moreover, insufficient digital inclusion of minorities and people living in remote areas is a further obstacle to the use of online services. In addition, **the e-Government benchmark indicator for mobile friendliness** indicates a decrease of over 5 pps between 2024 and 2025 (from 95.7% to 90.5%) as several websites for services under the family life event were found to be unresponsive to smaller (mobile) screens.

The most popular reason for accessing public websites or apps in 2024 was to get information about services. The online public service usage data relates to a time when the Bulgarian parliament was debating the budget account in February 2025, when it was proposed to allocate some BGN 56 million (EUR 28.6 million) to the Ministry of Electronic Governance.

e-ID

In 2023, 6.09% of Bulgarian people had used their eID to access online services for a private purpose in the last 12 months. This was the lowest EU Member State performance in the EU and well below the EU average (41.11%). Use of eID for accessing services provided by national public authorities or public services was slightly lower at 5.36% (well below the EU average of 36.14%).

2024 recommendation on e-ID: Further develop and improve the architecture of e-Government, beyond digitisation, to enhance public procedures' user-friendliness while minimising administrative burden, such as by considering implementing the Once Only Principle.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria is making progress in digital identity infrastructure and alignment with EU regulations, but it has not addressed key aspects of the recommendation (e.g. making public procedures more user-friendly or adopting the 'Once Only' principle.

Bulgaria is implementing the amended eIDAS Regulation to establish a European Digital Identity framework that will enable the use of the European Union Digital Identity Wallet (EUDIW).

Bulgaria currently has two main digital identity solutions for online public services: **EvrotrustID** (a private-sector solution controlled by the MEG) and the **national electronic identity card** (issued by the Ministry of the Interior). The MEG oversees digital identity policies. The Ministry of the Interior manages the national eID card. Regulatory changes introduced in 2023 are significantly improving the Evrotrust eID.

Bulgarian stakeholders are participating in one of the large-scale pilots (LSPs) consortia, namely the EU Digital Identity Wallet Consortium (EWC), which is proceeding to the grant-agreement preparation stage. This includes government ministries and agencies (both national and local).

Digitalisation of public services for citizens and businesses

For digital public services for citizens, Bulgaria scored at 67.98 (2030 national target of 100) after a small growth of +0.8% in 2024, below the EU average of 82.32. The country is lagging behind compared to its national trajectory. In 2023, Bulgaria's total score for digital public services for citizens was 67.47, falling short of the EU's 79.44. Bulgaria's growth rate of 0.8% was significantly lower than the EU's 3.6%. In the cross-border category, Bulgaria scored 45.71 in 2023 and 47.81 in 2024, both below the EU's 68.37 and 71.28, respectively. Nevertheless, Bulgaria's growth rate of 4.6% outpaced the EU's 4.3%.

For digital public services for businesses, Bulgaria scored at 94.04 (2030 national target of 100) after a progression of +2.4% in 2024 and stands well above the EU average of 86.23. The country is on track according to its national trajectory. In 2023, Bulgaria's total score was 91.88, surpassing the EU's 85.42. This lead widened in 2024, with Bulgaria at 94.04 and the EU at 86.23. Bulgaria's growth rate of 2.4% also exceeded the EU's 0.9%. In the cross-border category, Bulgaria scored 90.0 in 2023 and 92.5 in 2024, both higher than the EU's 73.13 and 73.76, respectively. Bulgaria's growth rate of 2.8% again surpassed the EU's 0.9%. Bulgaria is developing the necessary infrastructure towards seamless, automated exchange of authentic documents and data across the EU. There are still additional steps to be taken for Bulgaria to become technically ready to connect to the Once-Only common services, part of the EU Single Digital Gateway.

2024 recommendation on key public services: Continue collaborations with local public or private actors, to address the pronounced regional imbalances which hinder the access to, use and awareness of digital services, in particular regarding the delivery of online services for citizens.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria reported that it is actively improving the availability and efficiency of digital public services. However, it did not sufficiently address regional imbalances or highlight collaborations with local actors. Leveraging the successful strategies used in digital public services for businesses and

access to e-Health records could serve as a model for the enhancement of services provided to citizens online.

Bulgaria is continuing work to improve its policymaking process. The Ministry of Economy and Industry reports that a set of measures in the government's programme has been put in place to improve strategic planning; the monitoring of policy implementation; and the use of evidence, data and innovative methods in policymaking. These measures complement **investments in IT tools for better strategic planning made under the national RRP**. Bulgaria has also reported that, in line with the obligation for administrative authorities to align their registers with the Electronic Government Act (EGA) by 31 March 2025, **the MEG was implementing a project to digitalise 5 pilot registers and configure 60 more pilot registers using the centralised creation and maintenance of registers (ISCCMR)**. These registers will comply with updated EGA requirements and secondary legislation. They will support the successful register reform and enable fully electronic administrative services. Users will therefore no longer need to submit documentary proof of facts that have already been recorded in the registers. Administrative bodies can use the system to create and maintain electronic registers free of charge. In addition, the reform introduces an obligation to provide electronic services for a reduced fee and establishes the role of an intermediary for requesting administrative services electronically.

To meet the growing demand for electronic identification solutions, State policy encourages private-sector involvement in developing electronic identification schemes. **Work is also underway to establish a national electronic identification system** that is regulated by the Electronic Identification Act. Electronic identifiers will be integrated into citizens' personal cards but may also be available on other platforms, including as a mobile application. The provision of electronic identifiers is expected to begin by mid-2025.

The implementation of the single model for requesting, payment and delivery of electronic administrative services (the Single Model) is continuing. The number of administrative bodies that have joined the e-government systems maintained by the MEG (e-Authentication, e-Payment, e- Delivery, Registry Information Exchange System RegiX, e-Forms) has grown significantly in recent years. 503 administrations at all levels are currently providing centralised e-services through the e- Government Portal (egov.bg). These services are provided via the Single Model, which ensures high-quality and affordable electronic services through a single point and significantly reduces the administrative burden on businesses and citizens.

e-Health

Bulgaria scored at 87.47 for access to e-Health records (2030 national target of 100) after a growth of +13.3% in 2024 and stands above the EU average of 82.7. In 2023, Bulgaria's score was 77.21, slightly below but close to the EU's 79.12. The 2024 score not only caught up with but also exceeded the EU average. Bulgaria's impressive growth rate of 13.3% significantly outpaced the EU's 4.5%. **The country is on track according to its national trajectory.**

The National Health Strategy 2030 prioritises e-Health and aims to digitally transform the sector through the development of cloud technologies, wireless communication networks (4G/5G) and high-speed optical data transmission networks. The National Strategy for e-Health and Digitalisation of the Health System 2030 was adopted to achieve these goals. It envisages the creation of a single health data space through the National Health Information System. This data space will facilitate citizens' access to their health records and assist medical specialists in diagnosis and treatment.

Patients can access information about available specialists online and through the Bulgarian Medical Association's register of doctors (eBLS – Doctor Search), which enhances people empowerment.

According to the 2025 Eurobarometer, 81% of Bulgarian people think that digital technologies will be important when accessing or receiving healthcare services (e.g., telemedicine, artificial intelligence for diagnosing diseases) during their daily life by 2030.

2024 recommendations on 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 the data type of medical images available to citizens through the online access service; (iii) ensure that all data types are made available in a timely manner.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Through ongoing policy actions, the country partially addressed the recommendations, notably by expanding online access and improving the timely availability of certain health data.

- Bulgaria has reported that citizens can access their electronic health record (EHR) via the https://my.his.bg website and the e-Health mobile application. Parents can also access their children's health data through their profiles (this responds to the recommendation to expand coverage). However, only 40-59% of the national population are technically able to access the service, so facilitating nationwide access remains a major task. Moreover, while legal guardians can access their wards' data, data subjects cannot generally delegate access to a person of their choice.
- Regarding data availability, Bulgaria has highlighted the point that citizens can access prescriptions, referrals and medical notes; and can receive messages about preventive examinations and referrals. This indicates that efforts have been made to ensure the timely provision of information. However, there was no explicit confirmation that **all** data types – such as lab results, medical imaging, and treatment plans – are fully available and delivered in a timely manner. Allergies, in particular, were noted as an exception.
- Bulgaria has not reported that it has made medical images (e.g. X-rays and MRIs) accessible via the online service. This lack of clarity suggests that the recommendation to make all data types (including medical images) available to citizens has not yet been fully addressed.

Bulgaria has made important progress in expanding access and ensuring timeliness for certain health data types, but significant gaps remain concerning the full nationwide coverage, the inclusion of medical images, and the availability of all health data categories in a timely manner.

In June 2024, Bulgaria reached a significant milestone with the completion of 'phase 3' in the development of its national immunisation system. This phase focused on optimising medical and statistical reporting for all medical institutions. These statistics are now available electronically on a monthly and annual basis. The COVID-19 vaccination register has been upgraded to include all vaccine types, thus allowing better analysis of vaccine coverage and availability, and thereby strengthening the national immunisation programme.

In addition, the e-Health mobile app was enhanced in September 2024 to send notifications for upcoming preventive exams and vaccinations. Specialised modules such as 'Child Health' have been developed and the 'Electronic Prescription' module has been upgraded to improve the control of medicinal product prescriptions. E-Hospitalisation modules have also been improved, simplifying the admission and stay processes for citizens and healthcare providers. The Data Warehouse module has been upgraded to support 25 use cases, thus enabling analysis of critical health indicators such as

morbidity, mortality, vaccination rates, hospitalisations and the spread of infectious diseases. The eRx application has been upgraded and now has new prescription-related functionalities.

June 2024 also saw the completion of the 'CEF-TC-2019-2: Setting-up Generic Cross Border eHealth Services in Bulgaria' project. This initiative is intended to enable seamless cross-border care and the exchange of patient information, particularly for summarised patient data and electronic prescriptions. The project timeline has been extended to 2026, supported by national funding, to further enhance the implementation of cross-border health services.

Building a safe and human centric digital environment and preserving our democracy

In the realm of digital democracy and online safety, Bulgaria is taking some steps to combat disinformation and protect children online through initiatives such as the National Safer Internet Centre. However, while **the prevalence of hostile and degrading online messages** is lower than the EU average, it does still underscore the need for continued vigilance and education. Bulgaria's efforts to improve digital literacy and critical thinking are crucial, but further action and broader public engagement are needed in order to truly empower individuals to navigate the online environment effectively.

According to the Digital Decade Eurobarometer 2025, only 39% of respondents in Bulgaria said that, prior to the interview, they were aware that the rights which apply offline should also be respected online — well below the EU average of 59% — highlighting the limited awareness of digital rights among the Bulgarian population. However, this marks an increase from the 34% recorded in last year's survey. 90% of Bulgarian citizens believe it is urgent for public authorities to protect children online from the negative impact of social media on their mental health. Similarly, 89% consider it urgent to address cyberbullying and online harassment, and to implement age assurance mechanisms to restrict access to age-inappropriate content.

Online participation in political and civic life is growing steadily in Bulgaria. In 2024, 21.07% of people used the internet to participate in consultation, for voting or sharing opinions online. This share is above the EU average and is trending upwards (the proportion was 17.86% in 2022), which is in line with the trend observed at the EU level (17.59% in 2022 and 20.45% in 2024).

Individuals encountering hostile and degrading online messages: in 2023, in Bulgaria, 23.83% of individuals came across online messages that were considered to be hostile or degrading towards groups based on factors such as religion, ethnicity or disability. This figure was notably below the EU average of 33.5%. Young people (16-24) (26.55%) and adults (25-64) (26.88%) had equal exposure levels. Similarly, males (24.13%) and females (23.54%) encountered such messages at almost identical rates.

Individuals evaluating data, information and digital content: in 2023, 32.21% of individuals in Bulgaria stated that they had seen untrue or doubtful information on the internet. This was well below the EU average of 49.25%. However, only 11.78% of these individuals checked the truthfulness of the content they encountered. This suggests that, despite a lower incidence of misleading content, a relatively small proportion of individuals engaged in fact-checking. Young people (16-24) (32.6%) and adults (25–64) (36.84%) reported close levels of exposure. Similarly, their verification rates were almost the same, with 12.18% of youth verifying content compared with 13.53% of adults. In terms of gender differences, males (32.99%) and females (31.46%) reported very similar exposure rates and their verification rates were the same (11.88% for males and 11.68% for females).

Bulgaria

The 2023 data on online interactions in Bulgaria suggest a relatively lower incidence of hostile and degrading online messages and potentially misleading information than the EU average. However, the data also indicate a worrying lack of critical engagement, with only a relatively small proportion of individuals taking steps to verify the accuracy of the information they encounter.

The 2025 Eurobarometer shows that 80% of Bulgarian people think that public authorities should prioritise shaping the development of Artificial Intelligence and other digital technologies to ensure that they respect our rights and values. This is slightly below the EU average (83%) but represents an increase of four percentage points compared to last year, reflecting the growing interest of the citizens in this respect.

Bulgaria remains vulnerable to disinformation and external interference in elections. A report by the Disinformation Observatory suggests that Bulgaria has been heavily targeted by disinformation from Russian networks and especially impacted by disinformation campaigns that have focused on the EU, NATO, the euro adoption process, the war in Ukraine, migration and COVID-19. However, the Foundation for Humanities and Social Studies has published a survey showing that propaganda and disinformation against the EU in Bulgaria has decreased over the past year. The number of publications – even when amplified by a special network of bots – was 50% lower in 2024 than in 2023 and has returned to the level it was at in the first year of the aggression against Ukraine.

Since last year, Bulgaria has aimed to combat disinformation and protect children online. This has included events at the National Safer Internet Centre (NSIC) on Safer Internet Day as well as ongoing efforts to enhance digital literacy, assist families and tackle illegal content (especially child pornography). The NSIC has received an award for long-term support in protecting children's rights in the digital environment. In 2024, the NSIC processed **1.7 million signals or calls (such as from parents seeking help on issues related to, for example, video games) through its advisory helpline**, with **79 000 signals** received from international INHOPE partners about illegal content hosted on Bulgarian servers. A key success in 2024 was the closure of a Telegram channel with over **100 000 child pornographic images**.

Bulgaria has also been actively addressing foreign influence and disinformation through international conferences; strategic communications initiatives by the Ministry of Defence; and collaboration with NATO and EU partners to strengthen resilience against hybrid threats. Recent measures are aimed to counter foreign influence on public opinion. In June 2024, an international conference organised in Sofia by the **Centre for the Study of Democracy** and the **Embassy of the Republic of Korea** focused on countering disinformation and foreign influence. A study presented at the event showed that **40% of Bulgaria**ns believe disinformation, especially on topics like military aid to Ukraine and Schengen membership. The conference discussed the monetisation of disinformation and its impact on voter behaviour.

The Digital Services Act (DSA) has formally designated Bulgaria's CRC as the national digital services coordinator (DSC). The CRC has launched national-level implementation activities that include publishing information, setting up complaint mechanisms, handling complaints and notices, and identifying intermediary service providers. It has also engaged with stakeholders through meetings and workshops. New organisational rules and regulations for the CRC entered into force on 1 November 2024 in order to align it with the DSA.

Leveraging digital transformation for a smart greening

Bulgaria's green transition is a complex and evolving process that is driven by the need to align with EU climate goals while addressing significant domestic challenges. **Bulgaria faces substantial obstacles, including political instability** and **public scepticism towards the green agenda.** In addition, Bulgaria's energy sector is **heavily reliant on coal**, and the transition to renewable energy sources is crucial to meeting EU climate targets and reducing greenhouse gas emissions. Bulgaria can nevertheless benefit from the green transition through enhanced competitiveness, improved public health and increased resilience to climate hazards.

The green transition is linked to the digital transformation as part of Bulgaria's broader reforms and investments. Bulgaria's RRP includes measures to support both the green and digital transitions, aiming to strengthen economic and social resilience. However, the focus remains on overcoming immediate political and economic challenges before fully integrating digital solutions into the green transition. **Bulgaria has received significant EU funding to support the green transition, but political uncertainty and public resistance have slowed progress.**

The CRC is a member of BEREC's Working Group on sustainability and has participated in other similar discussions at EU level.

The CRC attributes the scarcity of comprehensive studies on the environmental impact of digital technologies in Bulgaria to the absence of harmonised and comprehensive methodologies at EU level for measuring the various components of a digital ecosystem's impact, including data centres and networks. Obstacles include a lack of standardised data on the environmental impact of ICT, particularly in relation to ECNs (electronic communications networks) and ECSs (electronic communications services); and technical challenges inherent in the sector (such as the complexity and globalisation of value chains and the difficulty of assessing systemic effects).

In Bulgaria, mobile service providers have proactively developed and adopted sustainability strategies for telecommunications, with specific measures and goals aimed at reducing their carbon footprint.

In 2024, only 8.24% of people in Bulgaria considered energy efficiency as important when purchasing ICT devices (well below the EU average of 19.35%) and only 4.10% considered the eco-design of the device as important by 4.10% (also well below the EU average of 12.04%). Those two eco-friendly criteria were less important for Bulgarian buyers than the price, performance (speed) and design of the ICT device.

Bulgarian people tend to recycle their devices much less than the EU average. 3.78% recycle laptops or tablets, 4.78% recycle desktop devices and 6.44% recycle mobile phones (the corresponding EU averages are 11.31%, 14.66% and 10.93%). Most of these devices are still in use or kept in the household.

Just 35% of Bulgarians feel that they are equipped to contribute to the green transition, compared with an **EU average of 54%**.

Bulgaria

According to the Digital Decade Eurobarometer 2025, 67% of Bulgarian people consider digital technologies important to help fight climate change (standing below the EU average of 74% and showing an decrease of seven percentage points since last year), while 74% of Bulgarian respondents think that ensuring that digital technologies serve the green transition should be an important action for public authorities (below the EU average of 80%).

2024 recommendations on green & digital: (i) 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; (ii) 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.

In 2024, Bulgaria continued the implementation of existing measures but did not take any new measure. Bulgaria acknowledged the importance of digitalisation and innovation but lacked a concrete integrated approach to linking the digital and green transitions. Regional programmes support innovation and industrial development, but they miss opportunities to focus on green IT improvements or the use of digital solutions for carbon reduction. Moreover, no methodology has been introduced to monitor or quantify emission reductions from digital solutions, and there has been no alignment with EU guidance or the European Green Digital Coalition's approach.

Bulgaria has taken digital initiatives for climate action and smart cities, but no additional measures have been reported for this year. In March 2024, **the Commission approved Bulgaria's national industrial strategy in March 2024 (EU-funded)**, outlining measures for transitioning to a green economy and digitalising production by enhancing energy efficiency and promoting circular economy models. Bulgaria continues to build on the key funding initiatives under its current programme for 2021-2027 on 'Competitiveness and Innovation in Enterprises'. This includes BGN 71.5 million (EUR 36.6 million) for **clean technology innovation and circular economy projects**; BGN 151.9 million (EUR 77.7 million) for improving **resource efficiency, recycling, and waste management in enterprises**; and BGN 149.1 million (EUR 76.2 million) for integrating **digital technologies for low-carbon development.**

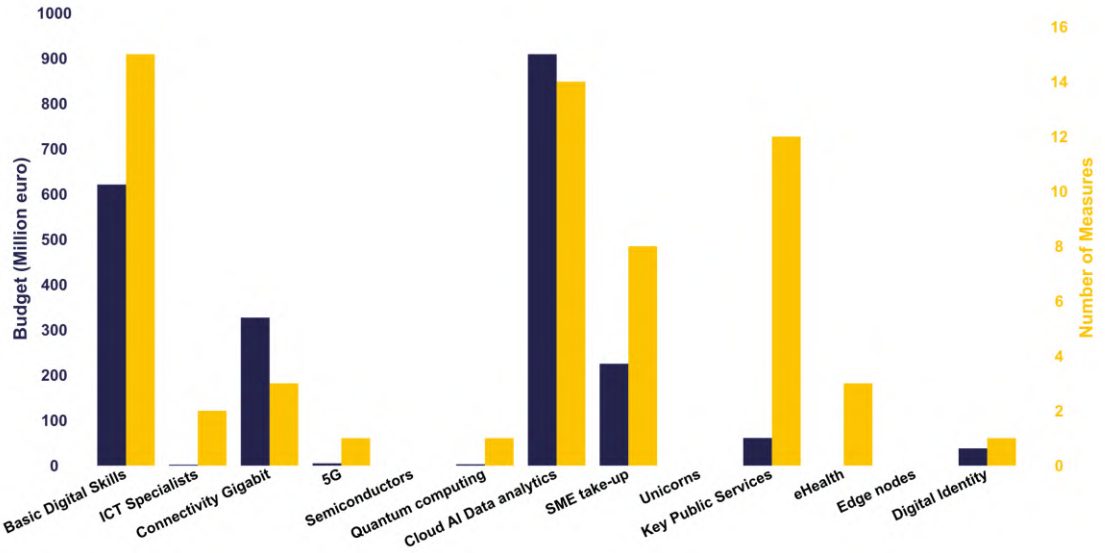
Annex I – National roadmap analysis

Bulgaria's national Digital Decade strategic roadmap

Bulgaria did not provide a national roadmap adjustment to address the roadmap recommendations issued in 2024:

- ***Targets:*** *(i) Provide national targets for the following KPIs: unicorns, edge nodes and e-ID; (ii) Present national projected trajectory for unicorns; (iii) Align the level of ambition of the national targets for basic digital skills, ICT specialists, digitalisation of SMEs, take up of advanced technologies (cloud, AI, data analytics) by enterprises.*
- ***Measures:*** *(i) Clarify the budget description of all presented measures, highlighting EU sources such as the RRF; (ii) Indicate clearly whether the measures are investments or reforms; (iii) Include more targeted, specific measures and policies that contribute to synergising the digital transformation and the green transition; (iv) 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 with more detail the results of the consultation process and include more information about the stakeholders invited.*

Measures and budget in national roadmap[6]



Bulgaria's roadmap is composed of **60 measures** and stands at EUR 2.19 billion (equivalent to 2.11% of GDP). No significant changes and novelties were made but Bulgaria did propose minor adjustments to the roadmap, such as by updating few dates and correcting few clerical errors, and provided targeted responses and justifications to the Commission. Values and/or trajectories for measures are agreed upon within the national RRP and the various European programmes, and will not be changed. **No new measures were updated or added**.

[6] When referring to national roadmaps, data used in this report are those declared by the Member States in their national roadmaps, on the basis of the Commission's guidance (C(2023) 4025 final). Data might reflect possible variations in reporting practices and methodological choices across Member States. No systematic assessment of the extent to which Member States followed the guidance was carried out.

Bulgaria

Bulgaria's written feedback addresses most of the SDD24 recommendations. Those specific to Bulgaria have been addressed through clarifications or references to what the roadmap already includes that can best be directed or 'answered' to recommendations at this stage.

Bulgaria has provided the detail of the full stakeholder consultation conducted for the roadmap, involving an advisory council of over 35 ICT sector representatives (established at the Ministry of Electronic Governance (MEG)) and input from various institutions. In addition, the document was agreed with all members of Bulgaria's Council of Ministers and the heads of other institutions (the National Statistical Institute, the Communications Regulation Commission, the Archives State Agency and the Bulgarian Institute of Public Administration), whose proposals were also taken into account during the preparation of the map. All stakeholders in the ICT and construction sector have been consulted when drawing up the measures. The measures are written down and published in the national strategic document 'Digital transformation of Bulgaria for the period 2024-2030'; as well as in the National Strategy for the Digital Transformation of the Construction Sector 2030 and the roadmap for its implementation. These documents were created with the active participation of national representative ICT organisations and of a national task force, which included members from all interested parties. The documents were published for public consultation before their approval by the Council of Ministers. All feedback was taken into account when working on the draft documents. All feedback received during the public consultations was then taken into account.

Bulgaria has clarified the budget description of measures and highlighted EU sources such as the RRF in line with the 2024 recommendations. As regards aligning the level of ambition with the national targets for basic digital skills, ICT specialists, digitalisation of SMEs and take-up of advanced technologies (cloud, AI, data analytics) by enterprises, Bulgaria has reported that the measures and activities set out in the roadmap are aligned with the budget period until 2027, and that their financing was defined before the DDPP entered into force. It will therefore be possible to change them (even if this entails a change to the trajectories) during the development of the new EU programmes.

In terms of governance, Bulgaria continues to show commitment to the EU's digital policy and the Digital Decade's targets.

- **The MEG intends to develop a national strategy for digital transformation**, which will build on the currently valid framework document 'Digital Transformation of Bulgaria for the period 2024-2030'. An internal working group has been created for this purpose at the MEG. Its work has resulted in strategic goals being defined, including in the areas of competence of the MEG.
- **The targets and objectives of the Digital Decade are promoted at both the national and regional levels in Bulgaria.** For instance, the government's dedicated Digital Decade Council includes a representative of the National Association of Municipalities. Bulgaria also contributes to work on the digital transformation at the level of the Balkan region. In February 2025, for instance, Sofia was chosen to host a renowned local government forum in the Balkans (the B40 Balkans Cities Network). The summit's theme was: 'The Future of the Balkans: Innovation and Growth'. In 2025, Sofia will also take on the leading role of four working groups made up of representatives from Balkan cities that will work on topics such as Cooperation and Smart Cities, and Digital Transformation and Local Democracy.

Annex II – Factsheet on multi-country projects (MCPs) and funding

Multi-country projects and best practices

Bulgaria is a member of the Alliance for Language Technologies EDIC, and is working towards setting up an EDIC in the area of genomics. Bulgaria is a participating state of the EuroHPC Joint Undertaking (JU) and of the Chips JU.

Bulgaria is not actively participating in the Digital Decade's Best Practice Accelerator (BPA). However, its great success with respect to women in ICT jobs could be a **valuable contribution to the 'Digital Skills' Cluster**. Bulgaria's advances in chips, quantum and connectivity, along with AI initiatives like the AI Factory and BgGPT, put it in a good position to further inform the 'Tech Uptake' Cluster. Bulgaria is nevertheless facing challenges such as enterprises' limited take-up of AI, data analytics and the Cloud, so **it could therefore benefit, through involvement in this Cluster, from learning** how other Member States have tackled similar challenges and improved their situation.

EU funding for digital policies in Bulgaria

Bulgaria allocates 23% of its total recovery and resilience plan to digital (EUR 1.3 billion)[7]. In addition, under cohesion policy, EUR 1.3 billion (representing 12% of the country's total cohesion policy funding), is dedicated to advancing Bulgaria's digital transformation[8]. According to JRC estimates, EUR 1.6 billion directly contribute to achieving Digital Decade targets (of which EUR 0.9 billion comes from the RRF and EUR 0.7 billion from cohesion policy funding)[9].

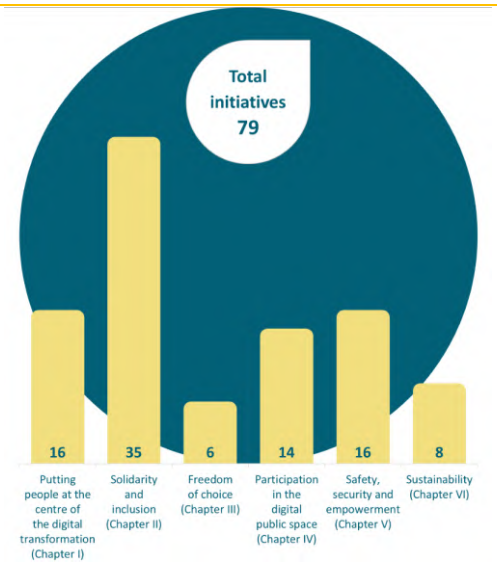
Under its RRP, Bulgaria prioritises investments in digital public services, Gigabit network coverage, as well as digital skills. Under Cohesion Policy, most funding allocated to the country's digital transformation is directed to digital late adopters and unicorns, as well as digital public services, followed by adoption of cloud, AI, and data analytics.

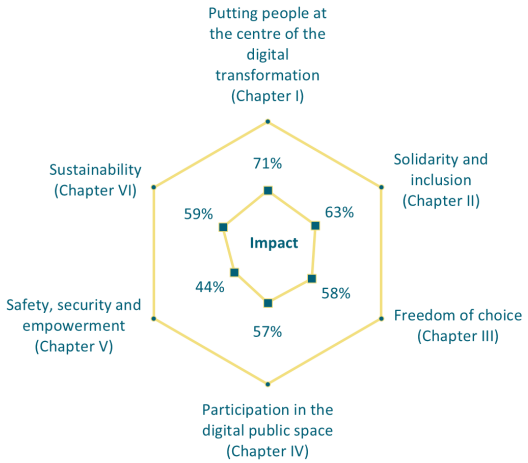
[7] The share of financial allocations that contribute to digital objectives has been calculated using Annex VII to the Recovery and Resilience Facility Regulation. Last data update: 16 May 2025.

[8] 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.

[9] Joint Research Centre, Nepelski, D. and Torrecillas, J. Mapping EU level funding instruments 2021-2027 to Digital Decade targets – 2025 update, Publications Office of the European Union, Luxembourg, 2025, JRC141966. Last data update: 10 March 2025.

Annex III – Digital Rights and Principles[10]





Activity on Digital Rights and Principles (figure 1)

Bulgaria has been relatively active in implementing digital rights and principles, with 79 initiatives overall and 4 new initiatives launched in 2024, showing limited progress towards its commitments. **Bulgaria is most active in the area of Putting people at the centre of the digital transformation** (I). There is room for improvement, especially with regards to Privacy and individual control over data (V) where less activity has been identified.

Impact of Digital Rights Initiatives (figure 2)

Quantitative impact indicators, developed by the support study, Quantitative impact indicators, developed by the support study, illustrate the level of implementation of digital rights initiatives on the ground. Based on available data, they estimate the impact of measures implemented by key stakeholders in Bulgaria (mainly national government) and how these are perceived by citizens.

The indicators suggest that Bulgaria **is most successful in implementing commitments related to Putting people at the centre of the digital transformation** (I). Bulgaria should review and strengthen efforts in areas where the impact of digital rights initiatives appears to be limited despite relative activity, notably on Safety, security and empowerment (V).

According to the Special Eurobarometer 'Digital Decade 2025', **40% of citizens in Bulgaria think that the EU protects their digital rights well** (no evolution since 2024). This is below the EU average of 44%. Citizens are particularly confident about getting basic and advanced digital education, training and skills (67%, above the EU average of 60%). They are most worried that their right to a safe digital environment and content for children and young people to is not well protected (55%, above the EU average of 48%).

[10] Based on a study to support the Monitoring of the Implementation of the Declaration on Digital Rights and Principles, available here. For a more detailed country factsheet accompanying the study, click here.