Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence (Volume 1)

Member States' Actions

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BETTER POLICIES FOR BETTER LIVES

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Foreword

This report corresponds to Output 4 “Progress report on the implementation of the Coordinated Plan” of the Contribution Agreement D09829 “Monitoring Progress in Implementing the European Union’s Coordinated Plan on Artificial Intelligence” between the European Commission – DG CONNECT – and the Science Technology and Innovation (STI) Directorate of the OECD.

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Abbreviations and acronyms

1+MG	EU 1+ Million Genomes project
AI	Artificial intelligence
AV	Automated vehicle
EU	European Union
EU-HIP	European Health Interoperability Project
EUMaster4HPC	European Master for High Performance Computing
EUR	EURO
EuroHPC JU	European High Performance Computing Joint Undertaking
EV	Electric vehicle
GDHP	Global Digital Health Partnership
GDI	Genomic Data Infrastructure
HDAB	Health data access body
HPC	High performance computing
IoT	Internet of Things
IT	Information technology
KPI	Key performance indicator
LLM	Large language model
NexSys	Next Generation Energy Systems
NRRP	National Recovery and Resilience Plan
OECD	Organisation for Economic Co-operation and Development
R&D	Research and development
R&I	Research and innovation
RRF	EU Recovery and Resilience Facility
SMEs	Small and medium-sized enterprises
STEM	Science, technology, engineering and mathematics
TEF	Testing and experimentation facility
VC	Venture capital
WHO	World Health Organization
WPAIGO	Working Party on Artificial Intelligence

Executive summary

The European Union (EU) Coordinated Plan on Artificial Intelligence (AI) is a strategic initiative by the European Commission and EU Member States to promote AI development, investment and co-operation. Launched in 2018 and revised in 2021, the plan seeks to increase annual AI investments from both public and private sectors to at least EUR 20 billion by 2030. It focuses on mobilising investments across the European Union; aligning policies across EU Member States; and reinforcing the global position of the European Union in developing sustainable, secure and trustworthy AI technologies. This report takes stock of implementation of the national strategies and policy initiatives established by EU Member States in line with the EU Coordinated Plan on AI.

Nearly all EU Member States have adopted AI strategies. While they vary, most draw on the Coordinated Plan and broader frameworks such as the EU Digital Agenda. Several EU Member States have revised or are revising their strategies in response to regulatory developments, rapid technological advancements, and shifting policy priorities.

Monitoring and evaluation of national AI strategies vary widely. Some EU Member States have structured frameworks with key performance indicators, while others rely on broader digital transformation metrics or EU Digital Decade targets. Few have conducted external evaluations or ensure regular public reporting, making assessment of collective progress difficult. Establishing common EU-level indicators would enhance comparability and facilitate monitoring progress towards shared AI objectives.

Tracking AI-specific public investment remains challenging. In most EU Member States, AI funding is embedded within wider digitalisation strategies, making it difficult to isolate dedicated expenditures. Less than half of EU Member States have dedicated budgets for national AI strategies, while others finance initiatives through sectoral ministries or targeted programmes. EU programmes support national AI activities, but the absence of AI-specific tagging complicates budget monitoring and cross-country comparisons.

Across the EU, countries are pursuing initiatives to leverage data as a driver of innovation, efficiency and growth. National data strategies link data governance to administrative modernisation, promote open data policies, and create secure environments for data sharing. Although not always AI-specific, these initiatives underpin AI development by improving data availability, interoperability and access to high-quality datasets.

As AI systems grow more sophisticated, the demand for secure, high-performance digital infrastructure is accelerating. EU Member States are enhancing data processing, storage and cloud capabilities to meet AI's computational needs. Efforts include cloud-first approaches, sovereign cloud models and federated data infrastructure for digital services. High Performance Computing (HPC) infrastructure is becoming a central component of national AI ecosystems, supporting advanced model training and deployment. Simultaneously, countries are strengthening semiconductor design and production capabilities to reduce dependencies. These efforts are supported by EU initiatives like the Euro HPC and Chips Joint Undertakings and the Important Projects of Common European Interest.

EU Member States are strengthening AI research through broad-based initiatives, targeted sectoral programmes and AI excellence centres. Many have launched large-scale, multi-year AI research and development (R&D) funding schemes, while a growing number focus on specific areas and sectors. More than half have established national AI centres serving as innovation hubs, some integrated into formal networks. These are complemented by smaller, university-led institutions specialising in niche or interdisciplinary domains. However, cross-border co-operation remains limited.

Many EU Member States focus on broad digital literacy, gradually including AI-specific education. Efforts include embedding AI concepts in school curricula, offering adult reskilling programmes, and introducing AI-focused training programmes. While less widespread, dedicated AI education programmes are emerging.

Efforts to attract AI talent remain limited and primarily focused on academia. About one-fourth of EU Member States reported programmes to attract and retain AI researchers and postgraduate students through scholarships or grants. Despite private sector demand, only one country reported an initiative supporting non-academic institutions in recruiting AI professionals, indicating a significant gap in addressing broader workforce needs.

AI adoption remains uneven, particularly among small and medium-sized enterprises (SMEs). To address this, EU Member States combine infrastructure, financial support and capacity-building. European Digital Innovation Hubs (EDIHs) provide SMEs with technical expertise, training, testbeds and AI-specific support services, while grants, vouchers and advisory programmes offer financial support to lower barriers to AI uptake. EU Member States are also developing testing and experimentation facilities that enable companies to design, validate and scale AI solutions, while navigating regulatory requirements.

EU Member States are supporting innovative AI start-ups and scale-ups through various initiatives, often as part of broader innovation programmes. These include national VC initiatives, equity financing, early-stage grants and deep tech funds. Some countries also run AI-specific programmes offering technical expertise, R&D funding, and commercialisation assistance, and promote collaboration between academia and industry.

EU Member States are increasingly prioritising AI in sectors of national strategic importance. Healthcare and the public sector are the most consistently targeted in national AI strategies, followed by mobility, climate and environment, and agriculture. Other priority sectors reflect national economic structures and signal efforts to harness AI for sector-specific transformation.

Despite these efforts, EU Member States face common challenges, including fragmented policies, limited cross-border co-ordination, and underdeveloped data-sharing frameworks:

- In **healthcare**, AI's transformative potential remains underutilised due to fragmented cross-border policies, varying interpretation and application of EU legislation, and limited co-ordination. Enhanced collaboration – e.g. through the European Health Data Space (EHDS) – could help create a more resilient, safe and innovative EU AI health sector.
- **Environmental** AI applications are rising, but efforts to address AI's environmental footprint remain limited. Few EU Member States report initiatives to optimise AI's energy use.
- **Public sector's** AI use focuses on workflow automation, citizen services and tax administration. Greater investment in skills and workforce training is nevertheless required.
- In the **mobility sector**, although a few countries have developed federated data spaces, most lack structured frameworks. Strengthening interoperability and open data protocols could enable smoother AI integration across national and cross-border transport networks.
- In **agriculture**, AI use is being supported through testbeds, innovation hubs and agri-tech start-ups. Efforts to improve farmer access to AI tools, particularly through the EDIH network, are growing, but data-sharing initiatives remain limited.

1 Overview

The European Union Coordinated Plan on Artificial Intelligence is a strategic initiative developed by the European Commission and EU Member States to promote development, deployment and use of AI technologies across the European Union. This chapter introduces the four pillars of the plan, as well as the methodology and objectives of this report. It also provides an overview of the key findings across the four thematic areas: actions undertaken by EU Member States to create the enabling conditions necessary for timely and effective AI development and uptake in the European Union; their efforts to strengthen and mobilise AI research capacities, to facilitate AI innovation and commercialisation, and support the adoption of AI-based solutions by EU firms; their initiatives to nurture talent and enhance the availability of AI-related skills within AI ecosystems; and their measures to build strategic leadership in high-impact sectors.

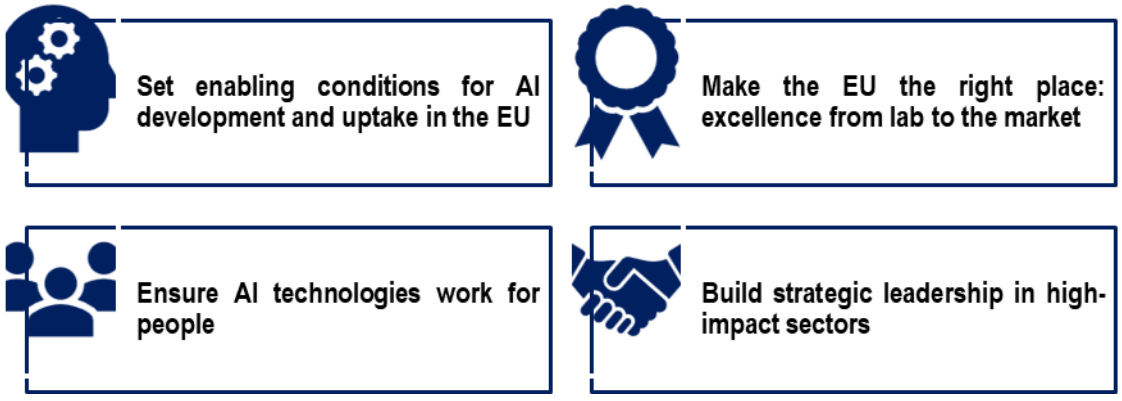
Introduction

This report is the main deliverable of Work Package 1 of Monitoring Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence (hereafter "EU Coordinated Plan on AI"), which is a collaboration between the Organisation for Economic Co-operation and Development (OECD) and the European Commission. Its main objective is to take stock of implementation of the national strategies and policy initiatives established by European Union (EU) Member States to support the development and uptake of artificial intelligence (AI), in line with the actions presented in the EU Coordinated Plan on AI, which was launched in 2018 and reviewed in 2021 (EC, 2018[1]).

The EU Coordinated Plan on AI is a strategic initiative to promote development, deployment and use of AI technologies across the European Union. It represents a joint commitment between the European Commission and EU Member States to maximise the impact of investments in AI, foster synergies and encourage co-operation across the European Union. The plan outlines a series of concrete actions to facilitate investment decisions, aligning AI policy in the European Union to remove fragmentation. It also aims to contribute to strengthening the global position of the European Union regarding the development and adoption of human-centric, sustainable, secure, inclusive and trustworthy AI technologies and applications.

The plan is organised around **four key pillars** (Figure 1.1), each addressing crucial aspects of AI development and implementation across the European Union. A key target in the plan relates to increasing the combined annual investment in AI by EU public and private sectors to at least EUR 20 billion by 2030. At the EU level, the Digital Europe Programme, Horizon Europe, and the Recovery and Resilience Facility provide funding opportunities to build strategic digital capacities, foster AI research and innovation, and support Member State investments and reforms.

Figure 1.1. The four pillars of the EU Coordinated Plan on AI



The first pillar focuses on creating the **enabling conditions necessary for AI development and adoption across the European Union**. It emphasises the importance of building a robust ecosystem that fosters AI innovation and deployment. A key area of action within this pillar involves establishing effective governance and co-ordination frameworks to facilitate the acquisition, accumulation and sharing of policy insights on AI. The pillar further includes initiatives to improve the availability, sharing and access to high-quality data – essential for training AI systems – as well as efforts to enhance critical computing infrastructure to support advanced AI applications. These efforts also comprise strategic investments in semiconductors to ensure the technological foundation needed for cutting-edge AI development.

The second pillar aims to **make the European Union the right place for AI excellence** – from laboratory research to market applications. This involves substantial support for research and innovation in AI

technologies, including funding mechanisms for promising ideas and solutions. The pillar also emphasises the importance of scaling up AI innovations, particularly supporting start-ups and small and medium-sized enterprises in bringing their AI solutions to market. Furthermore, it includes plans to establish world-reference testing facilities, enabling rigorous evaluation and refinement of AI technologies before widespread deployment.

The third pillar is centred around **ensuring that AI works for people and is a force for good in society**. This human-centric approach underscores the commitment of the European Union to developing AI that aligns with EU values and ethical standards. The pillar encompasses initiatives to nurture AI talent and improve relevant skills across the workforce, preparing EU citizens for an AI-driven future. It also involves developing an AI regulatory framework to ensure trust and accountability in AI systems, while promoting the EU human-centric approach to AI on the global stage. A notable achievement under this pillar is the adoption of the EU AI Act in June 2024 (Regulation (EU) 2024/1689).

The fourth pillar concentrates on **building strategic leadership in high-impact sectors**. Recognising the transformative potential of AI across various industries, this pillar targets the application of AI in critical sectors, namely climate and environment, healthcare, robotics, public sector, law enforcement, mobility and agriculture. By focusing on these key areas, the European Union aims to leverage AI to address pressing societal challenges while also strengthening its competitive position in strategically important domains.

Objectives

Implementing the EU Coordinated Plan on AI is a joint responsibility of the European Commission and EU Member States. This report discusses actions to be implemented by EU Member States, with a primary focus on initiatives adopted since 2021 (i.e. the year in which the EU Coordinated Plan on AI was reviewed). However, certain foundational initiatives adopted earlier are mentioned for ease of reference. Two separate reports present findings related to the AI investment target (Fonteneau et al., 2025[2]) and AI uptake in four sectors (agriculture, healthcare, manufacturing, and mobility) (OECD, Forthcoming[3]).

Methodological approach

The OECD developed the methodology in close co-ordination with the European Commission to provide a comprehensive account of implementation progress of EU Member States. The methodology also aims at identifying and showcasing relevant initiatives that may be replicated more broadly. It combined i) desk research; ii) a targeted online survey; and iii) group online interviews with relevant authorities in EU Member States. These elements are briefly outlined in Table 1.1.

Table 1.1. Methodological approach

Desk research	Online survey	Group online meetings
Exploratory and background research on AI-related initiatives of EU Member States, notably regarding budgetary amounts and monitoring of implementation and results	Systematic and comprehensive collection of information on how EU Member States support development and uptake of AI technologies	Semi-structured interviews with the main government entities responsible for implementing the national AI strategy and policies
Identifying key knowledge gaps for subsequent phases	Closed-ended and open-ended questions to combine comparable information and free-text description of initiatives	Discussion of responses to the survey to address outstanding questions and potential inconsistencies, and gather supplemental information on reported initiatives
Compiling a list of follow-up items for each EU Member State to help share available knowledge across the OECD team and structure online meetings (based on triangulating desk research findings and available survey responses)		

The survey took place between July and October 2024, with interviews held between September and December 2024. Based on these consultations, country notes were compiled for each EU Member State[1] and validated with the respective authorities. All EU Member States responded to the survey and a large majority (23 of 27) participated in interviews. However, the level and depth of information provided varied significantly across countries. Where possible, gaps in information were supplemented through desk research.

The main report draws from information collected and validated up to December 2024, which serves as the cut-off date. The report and country notes were presented at the meetings of the Working Party on Artificial Intelligence Governance (AIGO) and of the EU AI Board's Artificial Intelligence innovation sub-group meeting of June 2025 and considers delegate feedback received. Targeted updates referring to developments in 2025 were incorporated based on this input.

Overview of key findings

The following sections discuss the key findings by each thematic area, with a summary provided in Table 1.2.

Set enabling conditions for AI development and uptake in the EU

Nearly all EU Member States have adopted national AI strategies

As of December 2024, 24 of the 27 EU Member States had adopted national AI strategies, with the remaining three in the process of developing such strategies. Implementation progress varies considerably. Since the revision of the EU Coordinated Plan on AI in 2021, most national AI strategies have been updated or are being reviewed to align more closely with emerging technological trends, regulatory developments and national priorities. In particular, the rise of generative AI has elevated AI on national policy agendas. Recent updates in 2023 and 2024 focus on expanding AI infrastructure, fostering public-private collaboration and addressing the opportunities and risks presented by generative AI. Moreover, as foundational research capabilities and policy frameworks mature, EU Member States are increasingly focusing on promoting uptake.

Only 12 of 27 EU Member States have dedicated AI strategy budgets with specific financial allocations. The remainder finance AI through specific initiatives led by relevant ministries or rely on AI funding integrated into broader digitalisation strategies. All EU Member States reported multiple initiatives aligned with each thematic area of the EU Coordinated Plan on AI, financed through national budgets or EU-level programmes.

Most EU Member States considered the EU Coordinated Plan on AI in their national strategies, and several pointed to the Digital Decade programme (EC, 2025[4]), including its targets, as a useful reference. Although they widely regarded overarching goals of the EU Coordinated Plan on AI as valuable, national authorities expressed the need for more detailed, practical guidance on how to achieve these objectives. In practice, the content of national AI policies remains largely driven by domestic agendas, with limited evidence of structured cross-border or regional collaboration. Notable exceptions include areas of strategic EU interest that have been important enablers of cross-border co-operation. These include cloud computing, high-performance computing (HPC) and health-related initiatives like the 1+Million Genomes and Genomic Data Infrastructure projects.

Oversight of national AI policies is being strengthened

Governance structures for AI policy vary across EU Member States but generally combine centralised leadership, inter-ministerial co-ordination and multi-stakeholder engagement. National AI strategies are typically led by ministries responsible for digitalisation, innovation, economy or research, with several countries also placing certain responsibilities at the Centre of Government. Moreover, some countries have introduced dedicated bodies to oversee AI compliance and governance, while stakeholder engagement in the formulation and revision of national AI strategies is a growing priority. Monitoring and evaluation practices of AI policies vary significantly across EU Member States in both approach and level of ambition. Co-ordination challenges have been reported in cases where monitoring responsibilities are scattered across various ministries in charge of specific projects or initiatives. Although more than half of EU Member States reported having evaluated their national AI strategies, relatively few of them have made evaluation results publicly available.

National-level efforts to unlock the value of data and strengthen compute capacity are gaining momentum

Fifteen EU Member States have adopted dedicated national data strategies, thereby acknowledging data as both a public good and a strategic economic asset. Open data initiatives represent a key area of focus across several EU countries, with varying approaches to increase transparency, accountability and data re-use. A growing number of countries are developing shared data environments to enable secure and standardised data exchange across sectors.

Strengthening compute capacity has become a key priority in EU Member States' AI policies. EU Member States are increasingly investing in high-performance computing (HPC), edge computing, secure cloud environments, and connectivity networks to support the growing demand for AI workloads and decentralised data processing. These efforts align with EU-level frameworks such as Gaia-X, a European initiative aimed at developing a common data infrastructure, EuroHPC Joint Undertaking (JU), the Important project of Common European Interest (IPCEI) on Next-Generation Cloud Infrastructure, and the European Chips Act.

Make the EU the right place: excellence from lab to market

EU Member States are scaling up investments in AI research and development

Many national AI strategies prioritise long-term research and development (R&D) investment, with funding increasingly channelled through flagship programmes, research centres, and thematic calls aligned with societal and industrial goals. More than half of EU Member States have established national or regional AI centres of excellence that typically host cutting-edge R&D, support high-level talent development, and enable collaboration with industry. Many are further institutionalising R&D governance, e.g. through national R&D strategies, oversight councils, and formalised monitoring.

Several EU Member States reported investments in large language models and linguistic data resources. Moreover, the rise of generative AI has triggered a reassessment of research priorities and infrastructure needs while sparking new R&D challenges to which several EU Member States are responding by funding responsible AI frameworks in tandem with generative AI advances.

EU Member States support adoption of AI solutions by firms and commercialisation of AI innovations

AI, together with other digital technologies, can contribute significantly to the competitiveness of the EU economy by enhancing productivity and value creation. A key EU Digital Decade target consists of reaching 75% of businesses using digital technologies, including cloud, data analytics and AI, by 2030. Despite recent progress, AI adoption by EU firms remains however relatively modest and uneven.

About two-thirds of EU Member States have launched initiatives to promote AI uptake by firms, particularly SMEs. Although those initiatives are often part of broader digitalisation support efforts, several AI-specific programmes have been introduced to provide dedicated guidance and funding. In addition, platforms are being set up to facilitate collaboration between SMEs and AI solution providers, thereby addressing skills and expertise gaps and fostering knowledge transfer. European Digital Innovation Hubs (EDIHs) provide AI guidance, training, and SME support.

Around two-thirds of EU Member States reported initiatives aimed at helping AI start-ups and scale-ups access funding, which is crucial for accelerating deployment of advanced AI solutions and remain competitive internationally. Reported initiatives generally belong to broader innovation or entrepreneurship programmes. Support measures aimed at AI or deep tech ventures through venture capital (VC), incubators or accelerators are however gradually expanding.

Ensure AI technologies work for people

EU Member States are embedding AI into digital literacy programmes and expanding university-level AI education

EU Member States are introducing a growing number of measures to equip students with foundational digital and AI-related skills. More than half have launched digital literacy programmes for primary and secondary education often including AI components such as coding, robotics, or algorithmic thinking. AI-specific teacher training and university-level AI education are also gaining momentum, with growing efforts to integrate AI into fields such as humanities, business and governance. Initiatives to attract AI talent tend to focus on academia (researchers and doctoral candidates) rather than on attracting private sector professionals.

Many EU Member States are integrating AI into broader adult learning and digital skills strategies. At least 14 countries have adopted national strategies that include AI literacy as a key pillar. In addition, 12 have reported structured AI-specific upskilling schemes. Despite noteworthy efforts in these areas, relatively few EU Member States engage in systematic national-level monitoring of AI courses and graduate numbers.

Many EU Member States are promoting gender inclusion in STEM fields, laying important groundwork for more diverse participation in AI. However, examples of targeted efforts to promote gender inclusion in AI specifically remain scarce.

Build leadership in high-impact sectors

Sectoral priorities in national AI strategies are consistent with the EU Coordinated Plan on AI, but they also reflect national contexts

Sectoral priorities in national AI strategies are generally consistent with the EU Coordinated Plan. Strong focus is placed on healthcare, the public sector and mobility. Several countries are also aiming to leverage AI to support energy efficiency and the green transition. Education and skills are emerging areas of focus, with countries integrating AI into learning systems and workforce development. Agriculture, in turn, features primarily in the strategies of countries with strong farming sectors.

Despite growing efforts to foster AI use in these areas, EU Member States face common challenges, including fragmented policies, limited cross-border co-ordination, human capital constraints, and underdeveloped data-sharing frameworks.

In **healthcare**, AI is emerging as a transformative tool that the Coordinated Plan encourages EU Member States to capitalise upon by contributing to better, interoperable data, working with medical professionals to increase understanding of potential benefits (better diagnostics, enhanced patient experience, more efficient management and operations, higher R&D productivity…) and address skills requirements, co-operate towards common standards, and support investment in several key projects and focus areas. This transformative potential remains however underutilised due to fragmented policies across borders, varying interpretation and application of EU legislation, and limited co-ordination between national initiatives. Enhanced collaboration – e.g. through the implementation of the European Health Data Space (EHDS) – could help create a more resilient, safe and innovative AI health sector that builds on EU Member States' individual strengths while reinforcing the Union's position in the global health landscape.

Most EU Member States have taken steps to advance AI-based solutions that contribute to **environment and climate** policy goals. Fifteen EU Member States have introduced initiatives using AI to address sustainability challenges, ranging from energy efficiency and resource optimisation to waste management and disaster resilience. Comparatively fewer are however acting to improve environmental data infrastructures or mitigate AI's resource intensity: seven EU Member States reported measures addressing AI's environmental footprint, e.g. by improving the energy efficiency of AI models and data centres and promoting frugal AI research.

Sixteen EU Member States identified AI adoption in the **public sector** as a priority in their national AI strategies. Efforts in this area focus on workflow automation, citizen services, tax administration and regulatory compliance – with a total of 91 initiatives reported across 24 EU Member States. Some of these initiatives focus on specific topics, such as generative AI use, or levels of government, such as municipalities. Governance frameworks, ethical guidelines and transparency mechanisms also remain important priorities, while innovation hubs and regulatory sandboxes are being developed to support safe experimentation and deployment of AI solutions, and some countries are establishing incubators for public sector AI solutions. Enhanced efforts to build AI-related skills and capacity in the public workforce, including more investment in training and talent development, are nevertheless required. In addition, EU Member States continue to grapple with data fragmentation and infrastructure gaps that limit effective integration. Interoperability remains another significant challenge, particularly for federated AI systems and cross-border services.

Seventeen out of the 27 EU Member States reported specific initiatives to advance AI in **mobility** (49 in total). AI is increasingly embedded in broader strategies for sustainable mobility transformation, with eight countries reporting to have integrated AI into strategies or programmes for sustainable and resilient mobility system to help attain objectives ranging from traffic optimisation and multimodal integration to digital infrastructure upgrades. Coverage is however uneven. Automated mobility, for instance, has received substantial attention (with 11 countries reporting targeted initiatives including regulatory

adaptations, testing infrastructure, and safety frameworks). In contrast, areas such as data sharing are seldom a core component of policy initiatives, e.g. only three EU Member States reported dedicated initiatives for mobility data sharing. Structured policies and strengthening interoperability and open data protocols could therefore unlock further benefits, enabling more seamless AI integration across national and cross-border mobility networks.

Two-thirds of EU Member States have launched initiatives to foster adoption of AI in **agriculture**, although the distribution of these efforts remains uneven across countries due to factors such as geography, barriers to adoption, farm type and size, agriculture's relative economic weight, and digital literacy levels. The focus on agriculture varies depending on the sector's economic importance within each country. Countries where agriculture plays a central role in the economy are more likely to prioritise AI integration in farming practices. AI is being leveraged in the sector to boost productivity, efficiency, and resilience through initiatives like testbeds, innovation hubs and support for agri-tech start-ups. Efforts are also underway to facilitate knowledge transfer and improve access to AI tools among farmers, particularly through the EDIH network. However, data-sharing initiatives remain limited. Few EU Member States reported either having integrated AI components into their rural development strategies or adopted initiatives focused on AI applications in forestry. This situation indicates untapped potential for developing comprehensive approaches to AI integration that extend beyond farm level applications as well as across the complete agricultural and environmental management spectrum.

Table 1.2. Overview of key findings by thematic area

Set enabling conditions for AI development and uptake in the EU	Make the EU the right place: excellence from lab to the market
National AI Strategies • 24 adopted, 3 under development. Most updated since 2021, several under review. • Around half of EU Member States report that developments in generative AI influenced recent strategy updates. **Governance** • Central ministries or government offices typically lead AI strategies; some countries use specialised agencies. • Most EU Member States pursue inter-ministerial co-ordination through dedicated structures. **Monitoring and evaluation** • Less than half of EU Member States use well-defined KPIs for AI strategies, while others track progress within broader digital transformation frameworks. • More than half of EU Member States have conducted evaluations, but their scope, frequency and transparency vary. **Data policies** • 15 EU Member States have national data strategies. • Two-thirds of EU Member States have national cloud strategies, often aligned with EU initiatives like Gaia-X and the European Open Science Cloud. **High Performance Computing (HPC)** • Over two-thirds of EU Member States are strengthening HPC capacity, often as part of the EuroHPC JU. **Semiconductors** • More than half of EU Member States support semiconductor R&D or manufacturing.	**Build and mobilise research capacities** • 23 EU Member States report initiatives to support AI R&D, including large-scale national programmes, sector-specific investments, and AI research centres. • EU Member States increasingly fund AI R&D in thematic areas such as language technologies and areas like healthcare and manufacturing. • Although more than half of EU Member States have established large-scale AI research centres, few of them are connected through national networks of excellence and cross-border collaboration remains limited. • Nearly half of EU Member States complement national centres with specialised, university-led or domain-specific AI research institutes to strengthen capacity and foster innovation in niche areas. **Fund and scale innovative ideas and solutions for AI** • Nearly half of EU Member States report initiatives supporting testing and experimentation, mainly in EC-prioritised sectors. Some have launched cross-cutting or broader experimentation facilities. • EDIHs are active in all EU Member States, with several of them focusing exclusively on AI adoption support. • Two-thirds of EU Member States support SME AI adoption through national or regional programmes, often embedded in broader digitalisation strategies. • Around two-thirds of EU Member States support AI start-ups and scale-ups, mostly as part of broader innovation or entrepreneurship frameworks. • Support to AI or deep tech ventures through VC, incubators and accelerators is expanding.
Ensure AI technologies work for people	**Build strategic leadership in high-impact sectors**
AI-related skills in primary and secondary education • Most EU Member States have digital literacy programmes, and these often integrate AI; AI-specific initiatives are less widespread. • Several EU Member States report AI-focused teacher training. **AI in higher education** • University-level AI education is expanding through graduate and doctoral-level AI programmes. • AI is being increasingly integrated into fields such as humanities, business and governance. • Comprehensive monitoring of AI courses and number of graduates is not systematic. **Broader participation in AI** • One-third of EU Member States have launched initiatives to broaden participation in STEM fields, but few are AI-specific. **Workforce upskilling and reskilling** • More than half of EU Member States have digital upskilling strategies including AI. • Several EU Member States report dedicated AI workforce training initiatives, and continuous learning options are expanding. **AI talent attraction and retention** • Initiatives to attract AI talent focus predominantly on academia (researchers and doctoral candidates) rather than on industry and the private sector.	**Climate and the environment** • More than two-thirds of EU Member States report initiatives leveraging AI to address climate and environmental challenges. • Initiatives to enhance environmental data systems or reduce the environmental footprint of AI are scarcer. **Healthcare** • Few EU Member States are deploying AI in healthcare at scale. • Initiatives increasingly focus on health data quality, interoperability and secondary use, but to a lesser extent on trust or understanding and acceptance of AI by the public and healthcare professionals. **Public sector** • 14 EU Member States report developing AI-powered administrative systems and services; fewer are using AI to support regulatory compliance or policymaking processes. • 11 EU Member States report initiatives on AI training for civil servants. **Mobility** • 11 EU Member States report initiatives on automated mobility, focusing on testbeds, legislative reform and AI safety. • One-third have launched AI projects in urban mobility. • Only three EU Member States report initiatives on data sharing. **Agriculture/forestry/bioeconomy** • Two-thirds of EU Member States have launched initiatives to foster adoption of AI in agriculture; few in forestry or the bioeconomy. • Few EU Member States have integrated AI into rural development.

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OECD (Forthcoming), *Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence (Volume 2): AI uptake in high-impact sectors*. [3]

Note

[1] Due to insufficient information in the survey response, a full country note could not be compiled for Estonia.

2 Set enabling conditions for AI development and uptake in the European Union

The European Union Coordinated Plan on Artificial Intelligence is a strategic initiative developed by the European Commission and EU Member States to promote development, deployment and use of AI technologies across the European Union. This chapter discusses how EU Member States are creating the enabling conditions for AI development and uptake in line with the Coordinated Plan. It examines how emerging technologies and shared policy goals have shaped national AI strategies and policies across the European Union. It also looks at governance models used to steer and oversee AI policy, as well as allocation and reporting of public funding for AI initiatives. Finally, the chapter reviews how EU Member States are tapping into the potential of data and fostering critical computing capacity.

Introduction

The EU Coordinated Plan on AI is a strategic initiative to promote development, deployment and use of AI technologies across the European Union. It represents a joint commitment between the European Commission and EU Member States to maximise the impact of investments in AI, foster synergies and encourage co-operation across the European Union. The plan outlines a series of concrete actions to facilitate investment decisions, aligning AI policy in the European Union to remove fragmentation. It also aims to contribute to strengthening the global position of the European Union regarding the development and adoption of human centric, sustainable, secure, inclusive and trustworthy AI technologies and applications.

Within this framework, this chapter discusses how EU Member States are creating the enabling conditions for AI development and uptake in line with the Coordinated Plan. It examines how emerging technologies and shared policy goals have shaped national AI strategies and policies across the European Union. It also looks at governance models used to steer and oversee AI policy, as well as allocation and reporting of public funding for AI initiatives. Finally, the chapter reviews how EU Member States are tapping into the potential of data and fostering critical computing capacity.

Acquire, pool and share policy insights

The EU Coordinated Plan on AI recognised that sharing knowledge, co-ordinating actions and aligning investments in AI can provide a critical competitive edge. Member States were encouraged to adopt dedicated national AI strategies or incorporate an AI dimension into existing national strategies and share these with the European Commission and with one another. In parallel, the European Commission committed to monitoring developments and mobilising relevant expertise.

Building on the achievements in the first phase of the plan, the 2021 review of the EU Coordinated Plan on AI identified key actions to guide Member States:

> ***Make best use of relevant EU funding possibilities, including the Recovery and Resilience Facility (RRF),*** *to support and reinforce development and uptake of AI technologies at both the national and local levels, based on the national strategies, including by crowding in private investment.*
>
> ***Review and update national AI strategies*** *as necessary to ensure that identified actions and investments are fully realised in practice and inform the European Commission about the progress accordingly.*
>
> ***Develop and promote instruments that allow regular monitoring, co-ordination, evaluation and exchange of experience*** *and best practice across a broad spectrum of stakeholders.*
>
> ***Reinforce support for and investment in joint actions*** *identified in the EU Coordinated Plan on AI.*
>
> ***Share, develop and implement actions at the national/regional level that proved to be successful in other Member States****, for example, successful national initiatives to develop and promote a virtual warehouse of data.*

This section discusses the actions by EU Member States to acquire, pool and share policy insights, in line with the EU Coordinated Plan on AI. Table 2.1 summarises key findings from the survey and complementary interviews.

Table 2.1. Acquire, pool and share policy insights: Key findings

Dimension of survey	Description	Key findings
National Artificial Intelligence (AI) strategy	National strategies adopted to guide the development and uptake of AI	Twenty-four EU Member States have adopted a national AI strategy. The remaining three are developing one. In parallel, several EU Member States have updated their strategies or are in the process of doing so to reflect technological advancements, regulatory developments and evolving national priorities.
Alignment with the EU Coordinated Plan on AI	Use of the EU Coordinated Plan on AI as a reference point in national strategy development	Most EU Member States consider the EU Coordinated Plan on AI in their AI strategies, although depth of alignment varies.
Influence of generative AI on strategy revisions	Role of recent AI developments in prompting updates or revisions	Around half of EU Member States report that developments in generative AI influenced recent strategy updates.
Leading entity for AI governance and implementation	Public bodies responsible for the implementation of national AI strategies	Central ministries or government offices typically lead AI strategies; some countries use specialised agencies.
Cross-government co-ordination mechanisms for AI policy	Mechanisms for whole-of-government alignment on AI policy	Most EU Member States pursue inter-ministerial co-ordination through dedicated structures such as committees or working groups. However, co-ordination effectiveness varies, with some countries reporting challenges in ensuring cross-sector coherence.
Monitoring mechanisms for AI policy initiatives and use of key performance indicators (KPIs)	Systems to track progress on AI strategies and programmes, including the use of KPIs to assess progress	Some EU Member States use monitoring mechanisms, but comprehensive frameworks remain limited. Fewer than half use well-defined KPIs for AI strategies, while others track progress within broader digital transformation frameworks.
Evaluation of AI initiatives or strategy implementation	Formal reviews of implementation and impact	More than half of EU Member States have conducted evaluations, but their scope, frequency and transparency vary.
Public-private stakeholder engagement structures	Mechanisms to involve public and private stakeholders in AI strategy development and implementation	Many EU Member States have public-private coalitions or advisory groups to support policy design and implementation.
Regional AI networks	Regional initiatives to support AI development	Several EU Member States have regional AI networks, typically embedded in broader regional efforts to support innovation and digital transformation.

National AI strategies and policies evolve across the European Union, shaped by emerging technologies and shared policy goals

As of December 2024, 24 of the 27 EU Member States had adopted national AI strategies, demonstrating a strong and growing commitment to AI development, governance and adoption across the European Union (Table 2.2). EU Member States exhibit different levels of progress in implementing their national AI strategies. Early adopters have already achieved significant results and advanced substantially. Others remain in the initial stages or have paused or revised strategic approaches due to shifting priorities. Since the revision of the EU Coordinated Plan on AI in 2021, most national AI strategies have been updated or are being reviewed to align more closely with emerging technological trends, regulatory developments and national priorities. In particular, the rise of generative AI has elevated AI on national policy agendas. Recent updates in 2023 and 2024 focus on expanding AI infrastructure, fostering public-private collaboration and addressing the opportunities and risks presented by generative AI.

The EU Coordinated Plan on AI has informed policy in most EU Member States

National AI strategies differ, but the EU Coordinated Plan on AI has influenced most EU Member States in some way. While national AI strategies differ in their priorities, governance models and levels of AI readiness, the EU Coordinated Plan on AI has informed the strategic orientation of AI policymaking and investment in most EU Member States. The vast majority (21) indicated that they considered the plan in

some, most or all parts of their strategies. Several EU Member States also mentioned the Digital Decade programme (EC, 2025[1]), including its targets, as a useful reference. Although they widely regarded overarching goals of the EU Coordinated Plan on AI as valuable, national authorities expressed the need for more detailed, practical guidance on how to achieve these objectives. In practice, the content of national AI policies remains largely driven by domestic agendas, with limited evidence of structured cross-border or regional collaboration. Notable exceptions include areas of strategic EU interest that have been important enablers of cross-border co-operation. These include cloud computing, high-performance computing (HPC) and health-related initiatives like the 1+Million Genomes and Genomic Data Infrastructure projects.

Many EU Member States have updated, or are updating, their national AI strategies

The evolution of national AI strategies across the European Union reflects rapid advancements in AI technology and lessons learnt from prior implementation. Many countries that introduced their strategies before 2020 have updated them to ensure alignment with AI advancements, regulatory changes and national priorities.

For example, **Austria** published its national AI strategy in 2021 and reviewed it in 2024, introducing a complementary implementation plan (Federal Chancellery of Austria, 2024[2]). Similarly, **Czechia**, which introduced its AI strategy in 2019, revised it in 2024 with a clear focus on harnessing AI for the benefit of the country's economy and society (komunikace, 2024[3]). **Denmark**, which first published an AI strategy in 2019, introduced its 2024-2027 Strategic Approach to Artificial Intelligence. It focuses on ethical AI, competitiveness of Danish companies and AI adoption in the public sector, with dedicated funding and new initiatives (Digitaliseringsministeriet, 2024[4]).

France, an early mover with its 2018 AI strategy, initially focused on interdisciplinary AI research and computing capacity (2018-2022). In its second phase (2022-2025), the strategy has shifted towards AI adoption across the economy – particularly among small and medium-sized enterprises (SMEs). At the same time, it seeks to enhance training, research and sovereign AI technologies, as well as incorporate new measures for generative AI development.

Ireland, following the publication of its 2021 AI strategy, introduced a revised version in 2024 to reflect major advancements in AI technology and regulation. A progress report assessed the strategy's implementation and a high-level "refresh" introduced actions to support the effective rollout of the EU AI Act, analyse AI's sectoral impact (including generative AI), enhance SME awareness of AI adoption benefits and expand digital upskilling initiatives (Government of Ireland, 2024[5]).

The national AI strategy in **Italy**, introduced in 2020, was revised in 2024 to expand AI infrastructure, align with EU priorities and introduce funding mechanisms supporting AI adoption across key sectors, including business, public administration and research. **Spain** also updated its 2020 AI strategy in 2024, integrating structured key performance indicators (KPIs) and monitoring mechanisms to track progress (España Digital, 2024[6]).

Several countries, namely **Cyprus, Hungary**, **Latvia**, **Lithuania**, **Luxembourg**, **Malta**, **Portugal** and **Slovenia**, are updating their national AI strategies. **Poland**, which adopted a national strategy in 2020, announced plans in November 2024 to create an AI fund and a cross-governmental AI council to oversee implementation of projects and guide AI policymaking. **Sweden** is redesigning its AI policies, announcing a new dedicated AI strategy to follow the more comprehensive 2025 digitalisation strategy published in May 2025.

The rise of generative AI has prompted several EU Member States to revise their strategies

The rise of generative AI has been a key driver of recent strategy updates, with about half of EU Member States indicating it prompted revisions to their strategies. Many of the 2023-2024 revisions address

generative AI capabilities, risks and opportunities. **France** added specific measures to its national strategy in 2023 in response to generative AI developments. These included calls for projects on generative AI building blocks and accelerating uptake, while also reinforcing AI cloud services and public supercomputing capacity. Similarly, **Ireland**'s 2024 strategy refresh includes actions to analyse the potential impacts of generative AI on key economic sectors. For its part, the **Netherlands** became one of the first EU Member States to publish a government-wide vision on generative AI in January 2024, outlining key principles such as safety, equity, human welfare and sustainability. Business **Finland** has also launched a campaign to support generative AI development. In **Belgium**, the Brussels-Capital Region introduced a programme in early 2025 that offers up to EUR 80 000 for SMEs to develop generative AI use-cases, complementing national efforts to foster adoption of generative AI.

Strategies increasingly aim to promote AI uptake across their economies and public sectors

Recent strategy updates reflect a gradual shift in emphasis towards practical AI implementation and sectoral adoption. As foundational research capabilities and policy frameworks mature, EU Member States are increasingly focusing on mechanisms to promote AI uptake across their economies and public sectors. For example, **France** has shifted from a research excellence agenda to one focused on economic diffusion; **Denmark** is emphasising public sector AI adoption; and **Ireland** is enhancing awareness of AI benefits among SMEs. These developments suggest that national AI policies are evolving to address implementation challenges while maintaining their commitment to research excellence and innovation. This pattern highlights the interdependent relationship between building AI capabilities and ensuring their effective deployment for economic and societal benefit.

Some AI strategies are embedded within broader plans for digital transformation

Several EU Member States, while having dedicated AI strategies, have also embedded AI within broader digital transformation frameworks. For example, after developing early AI-specific strategies (Finland's Age of Artificial Intelligence and Artificial Intelligence 4.0), **Finland** has integrated AI into its national Digital Compass, setting a long-term digital roadmap through 2030. Similarly, the national AI strategy in **France** is part of a massive EUR 54 billion investment plan called France 2030. It aims at strengthening French strategic sectors and positioning the country as one of the world leaders in industries that will shape the landscape of 2030. For its part, the **Netherlands** launched its Strategic Action Plan for Artificial Intelligence in 2019, which initially focused on AI-specific priorities. Since then, it has integrated updates emphasising innovation, education and ethical AI use into broader national digital strategies. These include the Dutch Digitalisation Strategy (2021), the Value-Driven Digitalisation Work Agenda (2022) and the Digital Economy Strategy (2023).

Croatia, Greece and the **Slovak Republic** were developing dedicated AI strategies at the time of writing. In 2024, **Greece** formalised its *Blueprint for Greece's AI Transformation*. In these countries, AI policy is embedded in broader digital transformation strategies, focusing on infrastructure, research, skills development and sectoral AI applications.

EU Member States adopt varied governance models to steer AI policy and oversight

Governance structures for AI policy vary across EU Member States but generally combine centralised leadership, inter-ministerial co-ordination and multi-stakeholder engagement (Table 2.2). Most national AI strategies are led by central government entities or ministries responsible for digitalisation, innovation, economy or research. Some countries such as **Austria**, **Ireland** and **Italy** have assigned leadership to the Prime Minister's Office or Chancellery. In **France**, the National Coordinator for Artificial Intelligence reports to the prime minister, while in **Hungary**, the Prime Minister's Cabinet Office jointly oversees AI governance together with two ministries. Other countries, like **Greece**, **Estonia**, the **Netherlands**, **Slovenia** and **Spain**, rely on ministries dedicated to digitalisation or innovation. In **Germany**, three federal ministries –

responsible for education and research, economic affairs and climate action, and labour and social affairs – jointly manage AI policies. Other countries, such as **Finland**, through the Digital Office, involve a broad range of ministries, or rely on a more decentralised approach, as in **Sweden**. Finally, some countries have established specialised agencies or authorities to oversee AI implementation, such as the **Malta** Digital Innovation Authority, the Vinnova innovation agency in **Sweden** or the **Portuguese** INCoDe2030 skills initiative.

Inter-ministerial co-ordination is commonly pursued through dedicated structures such as committees or working groups. Several countries reported challenges in ensuring effective collaboration and coherence across sectors. Establishing dedicated inter-ministerial task forces or assigning clear leadership to a single ministry or agency can help streamline implementation, avoid duplication and accelerate policy delivery across different sectors.

Some countries have introduced dedicated bodies to oversee AI compliance and governance. The **Malta** Digital Innovation Authority ensures strategic alignment with national digital transformation goals and facilitates regulatory oversight. **Spain** has established the Agency for the Supervision of Artificial Intelligence, responsible for AI risk assessment, regulatory enforcement and ensuring AI applications comply with national ethical and legal standards. **Poland** also announced plans to create the Supervisory Commission for Artificial Intelligence to oversee high-risk AI applications in sectors such as healthcare and transport.

Alongside government-led co-ordination, many EU Member States have established multi-stakeholder engagement mechanisms to ensure that AI policies are informed by expert knowledge, industry priorities and civil society perspectives. Countries have adopted various approaches to involve a broad range of stakeholders in the formulation and revision of national AI strategies. For example, **Croatia** formed a dedicated working group to develop the strategy. For its part, **Denmark** engaged citizens through public hearings and created an all-of-government task force (central government, all five regions and 98 municipalities). **Ireland** conducted an electronic consultation and established a working group composed of senior officials. **Malta** also conducted consultations and benchmarking exercises, emphasising inter-ministerial ownership. In addition, it carried out an impact assessment, although results were not made public. **Poland** has established a large advisory group of over 400 experts covering various topics, including market and ethical considerations; a smaller group advises the Minister for Digital Affairs.

Many countries have further institutionalised stakeholder engagement through advisory councils, public-private coalitions and consultation platforms that support AI policy development, implementation and monitoring. **Austria** launched the AI Stakeholder Forum in March 2024 as a national platform for structured engagement between government, industry associations, research institutions and civil society organisations. **AI4Belgium,** a coalition of public, private, academic and civil society stakeholders, acts as a hub for public-private collaboration to ensure the country's AI policy reflects the interests of a broad range of stakeholders. In 2023, **Bulgaria** established the Information and Communication Technology (ICT) Community Advisory Board as an expert advisory group. It brings together public and private stakeholders to advise on legislative changes and facilitate interaction between government and industry in digital governance. Similarly, the AI Coalition in **Hungary**, with around 500 members from public, private and academic sectors, supports both strategy development and project implementation. **Ireland** has established the AI Advisory Council and the Enterprise Digital Advisory Forum, which provide expert guidance on AI trends and help policymakers adapt strategies to technological advancements and economic needs.

Monitoring national AI strategies relies on specific KPIs or EU Digital Decade targets

Effective monitoring and evaluation are essential components of national AI strategies, enabling policymakers to assess progress, ensure effective implementation and make necessary adjustments to achieve strategic goals. Across EU Member States, approaches to monitoring and evaluation vary widely. While some countries lack dedicated mechanisms, others, such as Austria, Czechia, Estonia, France, Malta, Romania, Slovenia and Spain, are actively tracking or planning to track KPIs directly tied to their AI strategies. In contrast, countries like Croatia, Ireland, Lithuania, Luxembourg, the Netherlands and Portugal monitor AI developments within broader digital transformation frameworks. To that end, they often align with EU-level KPIs, such as those from the EU Digital Decade. Belgium and Greece are establishing AI observatories to collect and disseminate relevant data. Meanwhile, countries like Germany and Ireland have yet to define overarching KPIs, with monitoring responsibilities often distributed across ministries overseeing specific projects or initiatives.

Several EU Member States have defined KPIs for their AI strategies and perform regular monitoring and evaluation, including through regular review cycles and external assessments. In **Austria**, the AI Implementation Plan 2024 includes an evaluation monitor that tracks 65 measures, with 55 successfully completed to date. **Malta** also follows a structured approach, tracking its AI strategy through 72 specific action points, with clear implementation metrics. Similarly, **Spain** has systematically integrated KPIs into its AI strategy, with operational indicators tracking implementation timelines and deliverables. It reviews project-level impact indicators quarterly and submits annual implementation reports to the Council of Ministers.

Some EU Member States track AI progress within the context of broader digital transformation frameworks rather than through dedicated AI monitoring systems. Several countries refer to the AI-related indicators in the EU Digital Decade framework – notably AI adoption in businesses – as the KPI to monitor progress in AI advancement at the national level. **Croatia** tracks progress in AI-relevant areas as part of the Digital Croatia Strategy 2032 and the 2030 National Roadmap for Digital Decade Policy roadmap. Likewise, **Finland** monitors its AI policies as part of its national digitalisation strategy without dedicated KPIs but through cross-sectoral performance reviews. **Latvia** and **Lithuania** integrate AI monitoring into their national digital governance strategies, tracking AI adoption through innovation and industrial policy evaluations rather than dedicated AI-specific mechanisms. Similarly, the **Netherlands** evaluates AI initiatives as part of its broader digitalisation agenda, aligning monitoring efforts with the EU Digital Decade reporting framework.

Table 2.2. Overview of national AI strategies, governance, monitoring and evaluation mechanisms

EU Member State	National AI strategy	Year of adoption/revision	Lead entity for AI policies/strategy	Inter-ministerial co-ordination	Multi-stakeholder co-ordination/consultation	Monitoring and evaluation
Austria	Artificial Intelligence Mission Austria 2030 (AIM AT 2030)	Published: 2021; updated: 2024 with implementation plan	Federal Chancellery (Digitalisation and E-Government); Directorate General for Innovation and Technology, Ministry for Innovation, Mobility and Infrastructure (formerly the Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology)	Inter-ministerial AI Policy Forum (all 12 ministries)	AI Stakeholder Forum	Regular monitoring of defined KPIs for the national AI strategy
Belgium	National Convergence Plan for the Development of AI; Belgium's regional governments (Flanders, Wallonia, and the Brussels-Capital Region) have their own AI strategies	Published: 2022	At the federal level, Federal Public Service (FPS) Policy and Support (BOSA) and the FPS Economy	Multi-stakeholder Orientation Committee	AI4Belgium coalition	Under development: AI Observatory to consolidate data from various sources
Bulgaria	Concept for the Development of Artificial Intelligence in Bulgaria	Published: 2020	Ministry of Electronic Governance; Ministry of Innovation and Growth (support)	Digital Decade Council (responsible for digital transformation policies, including AI-related ones)	ICT Community Advisory Board	Indirect monitoring through national strategic frameworks (AI Cluster Bulgaria annual report, industry association)
Croatia	National Plan for the Development of Artificial Intelligence	Under development	Ministry of Justice, Public Administration and Digital Transformation	Collaboration with multiple ministries	..	Monitoring of AI-specific indicators within the Digital Croatia Strategy 2032
Cyprus	National Strategy for Artificial Intelligence	Published: 2020; updating under way	Deputy Ministry of Research, Innovation and Digital Policy	..	..	..

EU Member State	National AI strategy	Year of adoption/revision	Lead entity for AI policies/strategy	Inter-ministerial co-ordination	Multi-stakeholder co-ordination/consultation	Monitoring and evaluation
Czechia	National Artificial Intelligence Strategy	Published: 2019; updated: 2024	Ministry of Industry and Trade	Cross-ministerial responsibility for initiatives	AI Committee; Czech Association of AI; Czech National AI Platform	Regular monitoring through contextual indicators and performance indicators defined for the national AI strategy
Denmark	National AI Strategy and Strategic Approach to Artificial Intelligence	Strategy: 2019; Strategic Approach: 2024	Ministry for Digital Affairs	Digital Taskforce for Artificial Intelligence; Digital Taskforce for AI Expert Group	..	Regular monitoring of defined KPIs for the national AI strategy
Estonia	National AI Strategy	Published: 2019; updated: 2021; updated: 2024	Ministry of Economic Affairs and Communications; the government's Chief Data Officer oversees the overall strategy and its implementation	AI steering committee; data and AI committee	AI strategy developed in collaboration with more than 130 other organisations	Regular monitoring of defined KPIs for the national AI strategy
Finland	Finland's Age of Artificial Intelligence; Digital Compass	Published: 2017; updated: 2020; published: 2022	Digital Office, multiple ministries (Economic Affairs and Employment; Transport and Communications; Finance; Education and Culture)	Digital Office	Digital Panel	..
France	National AI Strategy	Published: 2018; updated: 2022	National Coordinator for Artificial Intelligence (reports to prime minister)	Co-ordination relies on all relevant administrations and AI research centres for implementation of the strategy; steering committee with eight ministries	..	Regular monitoring of defined KPIs for the national AI strategy (start-ups, investment, AI adoption, publications); external evaluations; independent monitoring of generative AI actions
Germany	National AI Strategy	Published: 2018; updated: 2020	Three ministries jointly (Education and Research; Economic Affairs and Climate Action; Labour and Social Affairs)	Regular co-ordination across ministries, federal states	..	No specific KPIs monitoring of specific actions under the responsibility of lead ministry

EU Member State	National AI strategy	Year of adoption/revision	Lead entity for AI policies/strategy	Inter-ministerial co-ordination	Multi-stakeholder co-ordination/consultation	Monitoring and evaluation
Greece	Blueprint for Greece's AI Transformation	Under development; blueprint adopted: 2024	Ministry of Digital Governance (MDG); [High-Level Advisory Committee on Artificial Intelligence, under the prime minister, developed the Blueprint]	AI National Inter-ministerial Committee (political level); Supervising Committee of the MDG (implementation)	Advisory Board, AI Politeia Lab; National Commission for Bioethics and Technoethics	Under development: AI Observatory (KPIs on ecosystem, research, education, success cases)
Hungary	National AI Strategy	Published: 2020; updating under way	Ministries for National Economy, and of Culture and Innovation, Prime Minister's Office	Artificial Intelligence Working Group	AI Coalition	..
Ireland	AI – Here for Good	Published: 2021; updated: 2024	Prime Minister's Office; Department of Enterprise, Trade and Employment	Senior Officials Group on Digital Issues; Top Team on Standards for AI	AI Advisory Council; Enterprise Digital Advisory Forum	Monitoring indicators linked to the Digital Decade
Italy	Italian Strategy for Artificial Intelligence	Published: 2020; updated: 2024	Presidency of the Council Ministers – Department for Digital Transformation (responsible for the implementation and monitoring of the strategy through the Agency for Digital Italy); National Cybersecurity Agency, responsible for the areas of competence	Coordination Committee for AI (13 experts)	Stakeholder consultations	..
Latvia	National AI Strategy on Developing Artificial Intelligence Solutions	Published: 2020 (considered outdated; AI continues to play a significant role in Latvia's Digital Transformation Guidelines 2021-2027)	Ministry of Smart Administration and Regional Development	..	Latvian Association of Artificial Intelligence	..
Lithuania	Lithuanian Artificial Intelligence Strategy; (Action Plan for the Development of Lithuanian	Published: 2019; updating under way; (published: 202 2)	(Institutional arrangements that could support co-ordination: Parliamentary Working	AI Governance Forum	..	Under development: Strategic Management of Information Systems

EU Member State	National AI strategy	Year of adoption/revision	Lead entity for AI policies/strategy	Inter-ministerial co-ordination	Multi-stakeholder co-ordination/consultation	Monitoring and evaluation
	AI Technologies 2023-2026)		Group on AI; Open Data and Digital Transformation Centre of Excellence; Strategic Portfolio Commission under the prime minister)			
Luxembourg	Artificial Intelligence: A Strategic Vision for Luxembourg	Published: 2019[1]	Ministry of State; Ministry of the Economy (focus on cloud and quantum strategies)	Inter-ministerial Committee for Digital Policy	High-level Committee for Digital Transformation	Monitoring indicators linked to the EU Digital Decade; monitoring and evaluation of specific projects
Malta	Malta: The Ultimate AI Launchpad	Published: 2019; updating under way	Malta Digital Innovation Authority	Responsibility for specific priority areas shared among relevant entities	AI Consultative Expert Group	Regular monitoring of defined KPIs for national AI strategy ("action points")
Netherlands	Strategic Action Plan for Artificial Intelligence (Since 2021, AI efforts have been integrated into the broader Dutch Digitalisation Strategy); Government-wide Vision on Generative AI	Published: 2019 (Government-wide Vision on Generative AI 2024)	Ministry for Digitalisation; Ministry for Economic Affairs	Ministerial co-ordination: Ministries of Economic Affairs, of Digitalisation and of Justice and Security jointly responsible for government-wide AI policy	..	Monitoring indicators linked to the Digital Decade
Poland	Policy for the Development of Artificial Intelligence in Poland from 2020; (national digitalisation strategy)	Published: 2021; (national digitalisation strategy 2024)	Chancellery of the Prime Minister; Ministry of Digital Affairs and Council of Ministers; Committee for Digital Affairs	Under development: AI Council	Working Group on Artificial Intelligence; Multi-stakeholder advisory team PL/AI Artificial intelligence for Poland	..
Portugal	AI Portugal 2030	Published: 2019; updating under way	INCoDE2030; Foundation for Science and Technology; National Innovation Agency; Administrative Modernisation Agency	..	..	Specific policies and initiatives monitored by relevant ministries
Romania	National Strategy in the field of Artificial Intelligence 2024-2027	Published: 2024	Ministry of Economy, Digitalization, Entrepreneurship and	Inter-ministerial Commission for the Coordination of the	Romanian Committee for Artificial Intelligence	Defined KPIs for national AI strategy

EU Member State	National AI strategy	Year of adoption/revision	Lead entity for AI policies/strategy	Inter-ministerial co-ordination	Multi-stakeholder co-ordination/consultation	Monitoring and evaluation
			Tourism	Implementation of the National Strategy for AI		
Slovak Republic	(Key strategy documents being harmonised into an AI strategy)	..	Ministries responsible for different strategies	Institutional and Coordination Framework for Digital Transformation; Standing Commission on Ethics and Regulation of AI	AIslovakIA	Defined KPIs for strategic documents
Slovenia	National Programme to Promote the Development and Use of Artificial Intelligence in the Republic of Slovenia by 2025	Published: 2021; updating (and extension to 2026) under way	Ministry of Digital Transformation	Inter-ministerial working group	..	Defined KPIs for strategic objectives
Spain	National Artificial Intelligence Strategy	Published: 2020; updated: 2024	State Secretariat Digitalisation and Artificial Intelligence within the Ministry for Digital Transformation and the Civil Service	Inter-ministerial working groups; Advisory Council on AI	..	Regular monitoring of defined KPIs for the national AI strategy
Sweden	AI Strategy for Sweden	Published: 2018; updating of policy framework underway (Digitalisation strategy 2025-2030 as a first step, and new AI strategy in development)	Ministry of Finance, Prime Minister's Office	Vinnova	AI Commission	Steering through annual budget bill; evaluation through reports, e.g. upcoming "Follow-up of government digitalisation 2024 – on data and AI' by the Agency for Digital Government

Note: ".." indicates information not available.
1. In May 2025, Luxembourg launched a new national AI strategy. While not considered here for analytical purposes, it is mentioned for ease of reference (Government of Luxembourg, 2025[59]).
Source: Based on data reported by EU Member States through the survey and interviews.

More than half of EU Member States reported having evaluated their national AI strategies, either for internal use to inform policy revisions or as external assessments made publicly available. However, the scope and depth of these evaluations vary significantly. In some cases, they comprise basic monitoring of implementation status, while others involve in-depth assessments of specific components or outcomes. In **France**, for example, the Court of Auditors conducted an external evaluation of the research pillar of the national AI strategy (Cour des comptes, 2023[7]) in 2023. In 2023-2024, three lead ministries in **Germany** jointly evaluated their national AI strategy and engaged the OECD to support the process through an international benchmarking of the German AI ecosystem (OECD, 2024[8]). Transparency in AI monitoring also varies across EU Member States. Countries such as **Austria**, **France** and **Spain** publish evaluation results via dedicated websites or official reports, supporting public accountability. In contrast, others primarily use evaluation outcomes internally, without making them publicly available.

AI strategies and policies mainly target AI healthcare and the public sector, while reflecting unique national contexts

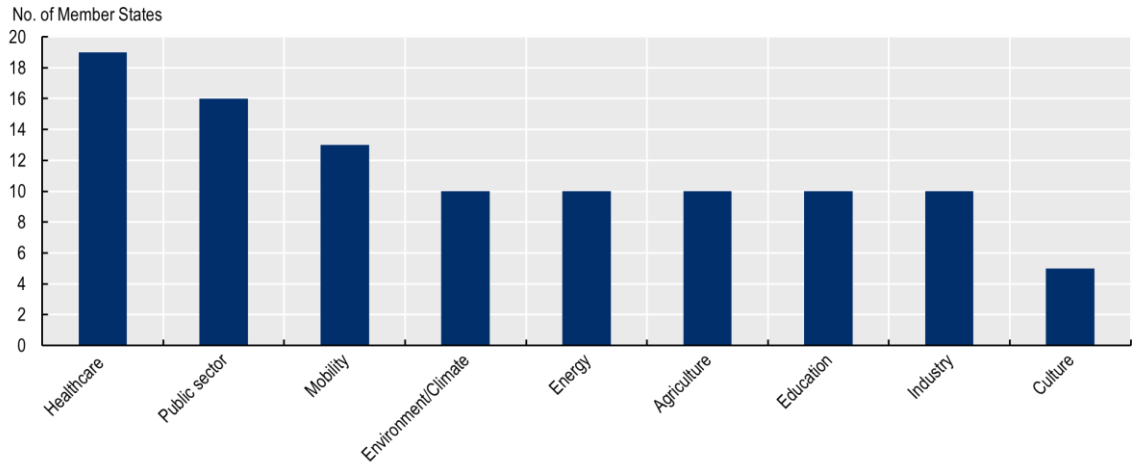
EU Member States take diverse approaches to integrating AI into various sectors. A large majority (20 countries) prioritise specific industries, while others adopt horizontal, cross-sectoral frameworks. Notably, **Estonia**, **Finland**, **Slovenia** and **Sweden** fall into the latter group, opting not to target any sector in their strategies. **Spain** has embedded its AI strategy within its Recovery and Resilience Plan, directly linking AI development to broader economic recovery objectives. As such, it adopts a horizontal approach, although it also foresees implementation of sector-specific measures in selected areas.

National AI strategies and policies of EU Member States reveal diverse sectoral priorities, reflecting both shared goals and country-specific needs. There is a strong emphasis on sectors with high potential for public impact (Figure 2.1), with healthcare and the public sector emerging as the most consistently targeted domains. Mobility, including transport and logistics, is another frequently cited sector. This focus is aligned with broader EU goals around smart mobility and decarbonisation. Similarly, climate and the environment feature prominently, with countries aiming to leverage AI to support sustainability and energy efficiency. The emphasis on energy also underscores the potential role of AI in managing renewable resources, grid optimisation and the broader green transition in the European Union. Education is an emerging area of focus, with countries integrating AI into learning systems and workforce development. Agriculture also appears in several strategies, particularly in countries with strong farming sectors.

While these priorities are consistent with the EU Coordinated Plan on AI, national strategies also reflect country-specific economic structures and strategic interests. For example, **Cyprus** prioritises AI in tourism and shipping, which are key to its economy. Meanwhile, **Slovenia** emphasises language technologies and cultural preservation, supporting its national identity. In **Greece**, culture, language, tourism and sustainability are key areas of focus of the national AI Factory under development. These complement ongoing measures focused on AI and digitalisation in healthcare.

These variations highlight how EU Member States tailor their AI strategies to their socio-economic contexts, competitive advantages, innovation ecosystems and policy priorities, while still aligning with broader EU goals.

Figure 2.1. Key priority sectors in national AI strategies/policies of EU Member States



Source: Data reported by EU Member States through the survey.
Notes: Based on 27 survey responses. Four EU Member States indicated their national AI strategy or policy does not prioritise any specific sector. Two EU Member States did not respond to this question.

EU Member States vary widely in how they allocate and report public funding for AI initiatives

Initiatives to promote AI development and uptake are often part of broader digitalisation agendas. As a result, it is generally difficult for EU Member States to isolate and account for AI-specific public expenditures. However, several declared they were planning to set up mechanisms to monitor that spending category. For similar reasons, data on the budgetary endowments of national AI strategies and policies do not allow for straightforward cross-country comparison. The financial amounts presented in this report reflect estimates provided by EU Member States through the survey and interviews. In most cases, these figures represent budgetary commitments rather than actual expenditures and may include contributions from both EU funding instruments and private sector sources.

There is significant variation in how EU Member States fund AI national initiatives. Only 12 of 27 EU countries have dedicated AI strategy budgets with specific financial allocations. The remainder finance AI through specific initiatives led by relevant ministries or rely on AI funding integrated into broader digitalisation strategies (Table 2.3). All EU Member States reported multiple initiatives aligned with each thematic area of the EU Coordinated Plan on AI, financed through national budgets or EU-level programmes (see country notes for details).

Among countries with dedicated AI budgets, **France** and **Germany** reported the highest annual allocations. Germany invests between EUR 482.8-625 million annually as part of a EUR 5 billion strategy running from 2018 to 2025, with EUR 3.38 billion spent by 2024. France allocates EUR 250 million through its AI strategy, complemented by EUR 750 million from additional sources, with an estimated commitment of EUR 4 billion for 2022-2025. Although **Italy** lacks a dedicated AI strategy budget, it indicated an estimated yearly investment of EUR 270 million. This will be complemented by other funding sources targeting broader digitalisation efforts, such as tax credits for enterprises and equity investments, which include AI-driven advancements. **Czechia** allocates funding for AI through specific initiatives outlined in the Action Plan for the Implementation of Digital Czechia. It has an overall budget of approximately EUR 753.7 million (CZK 19 billion) designated for all active projects in 2025. Mid-range investments come from countries like **Spain** (EUR 100 million), **Estonia** (EUR 31.7 million), **Slovenia** (EUR 22.5 million) and **Bulgaria**

(EUR 5-20 million). Meanwhile, **Cyprus**, **Denmark** and **Malta** reported allocations of around EUR 2.5-5 million annually.

Regional variations within countries also emerge in the data. **Belgium**, for instance, demonstrates strong regional investment through its Flanders region. It allocated EUR 35 million for AI policy and EUR 118.5 million for AI research and innovation (R&I) in 2024, despite having no dedicated national AI budget. From the R&I budget of Wallonia, 4% has been allocated to AI (on average between 2022 and 2024).

Priorities for different dimensions of the EU Coordinated Plan on AI and use of EU funding sources, such as the RRF, also vary significantly among EU Member States. AI-related projects within Horizon 2020 and Horizon Europe (ECA, 2024[9]), as well as within the RRF, do not have specific tags. Consequently, it is challenging to have a complete overview of financing through EU programmes.

Table 2.3. Funding for national AI strategies

EU Member State	Annual budget estimate (EUR)	Funding source	Timeframe	Notes	RRF
Austria		No dedicated AI strategy budget; ministries finance AI-specific measures			
Belgium		No dedicated national AI strategy budget; ministries finance AI-specific measures		Flanders (2024): EUR 35 million for AI policy; EUR 118.5 million for AI research and innovation (R&I)	
Bulgaria	5-20 million			Estimated range	Projects related to AI are also included in the strategic documents for the "Digital Transformation of Bulgaria" (2020-2030 and 2024-2030), with some components funded by the Recovery and Resilience Plan
Croatia		No budget information			
Cyprus	2.5 million	National AI strategy			
Czechia	107.7 million	AI funding distributed through specific initiatives in the Strategic Plan for the Digitalization of Czechia	2025-2030	CZK 19 billion or about EUR 753.7 million designated for all projects active in 2025; EUR 47.6-51.6 million (CZK 1.2-1.3 billion) invested annually in research and development (R&D) in 2021-2023	
Denmark	4.375 million	Strategic Approach to Artificial Intelligence	2024-2027	DKK 133.1 million or about EUR 17.5 million earmarked	
Estonia	31.7 million		2024-2026	Total of EUR 95 million	
Finland		AI initiatives integrated into broader digitalisation strategy; additional sources			EUR 9.1 million call for projects to develop leading technologies including AI

EU Member State	Annual budget estimate (EUR)	Funding source	Timeframe	Notes	RRF
France	250 million (AI strategy) 750 million (other sources)	National AI strategy; additional sources	2022-2025	Total of EUR 4 billion for 2022-2025; EUR 1.85 billion invested in the first phase of the strategy (2018-2022)	Used in AI-transversal projects
Germany	482.8-625 million	National AI strategy	2018-2025	Total of EUR 3.38 billion spent as of 2024, part of a EUR 5 billion plan	
Greece		No dedicated AI strategy budget			
Hungary		No dedicated AI strategy budget			
Ireland		No dedicated AI strategy budget			
Italy	At least 266.7 million	No dedicated AI strategy budget	2024-2026	EUR 800 million in collaboration with various agencies; EUR 300 000 annually (2025-2026) for AI projects within the Ministry of Foreign Affairs; up to EUR 1 billion for equity investments in AI, cybersecurity and related sectors; the Transition 5.0 Plan dedicates EUR 4.41 billion over 2024-2025 to digital innovation projects, including AI-driven advancements	The Italian AI Bill and the Transition 5.0 Plan leverage RRF resources
Latvia		No dedicated AI strategy budget			
Lithuania		No dedicated AI strategy budget			
Luxembourg		No dedicated AI strategy budget			
Malta	2.5 million	Distributed across specific initiatives complemented with a centralised budget			
Netherlands		No dedicated AI strategy budget			
Poland		No dedicated AI strategy budget	2021-2023	A new Artificial Intelligence Fund of approximately EUR 235 million (PLN 1 billion) announced in 2024	

EU Member State	Annual budget estimate (EUR)	Funding source	Timeframe	Notes	RRF
Portugal	1-10 million	National AI strategy	2019-2030	Estimated range	
Romania		No budget information			
Slovak Republic		No national AI strategy; no budget information			
Slovenia	22.5 million	National AI strategy	2021-2025	Total of EUR 112.7 million over five years	EUR 13 million/year funded through the RRF
Spain	100 million	National AI strategy	2021-2025	Total of EUR 390 million spent as of 2024, part of a EUR 500 million plan	The national AI strategy is a core element (Component 16) of the digital axis of the country's NRRP and identified as a reform to be launched as part of the plan.
Sweden		No dedicated AI strategy budget, but specific funding allocations in the annual budget bill, co-ordinated by the Ministry of Finance, have served as a means of steering Sweden's AI policies so far.			

Note: RRF funding reported in this table only concerns the overall strategies. RRF funds for individual areas have been reported separately.
Source: Based on data reported by EU Member States through the survey and interviews.

Leveraging the RRF to advance AI initiatives

The RRF is the primary instrument for the European Union to provide financial support to Member States in the aftermath of the Coronavirus disease 2019 (COVID-19) pandemic (OECD, 2024[10]; EC, 2025[11]). It has a total allocation of EUR 672.5 billion – comprising EUR 312.5 billion in grants and EUR 360 billion in loans. In this way, the RRF aims to foster economic recovery while advancing the EU green and digital transitions.

Under the National Recovery and Resilience Plans (NRRPs), EU Member States had to indicate objectives and funding aimed at accelerating the green and digital transitions. The national AI strategy in **Spain** is a core element (Component 16) of the digital axis of the country's NRRP and identified as a reform to be launched as part of the plan. **Lithuania** and **Romania** indicated the instrumental role of the RRF and other EU funding for AI-specific publicly funded programmes. Meanwhile, **Slovenia** reported that about half of planned investments in the national strategy (i.e. approximately EUR 65 million) will be funded through the RRF.

EU Member States have leveraged RRF resources to support a wide range of initiatives. Notably, these include the areas of enabling conditions for AI development and uptake; fostering excellence from laboratory to market; ensuring AI technologies work for people; and building strategic leadership in high-impact sectors.

A substantial number of EU Member States have used RRF funding to set enabling conditions for AI development and uptake. These initiatives frequently focus on improving data governance, enhancing interoperability, expanding cloud infrastructure and developing national data platforms. In **Belgium,** for instance**,** Smart Data Sciences Market Consultation and SolidLab Flanders initiatives enhance data sharing, interoperability and citizen control over personal data. **Latvia** and **Lithuania** have invested in secure government cloud environments and open data platforms to foster data accessibility and trust. **Spain** made use of the funding to create sectoral data spaces and enhance HPC capacities. Similarly, countries like **Poland**, **Romania** and **Slovenia** have directed funding towards creating digital public infrastructure and improving data-management capabilities.

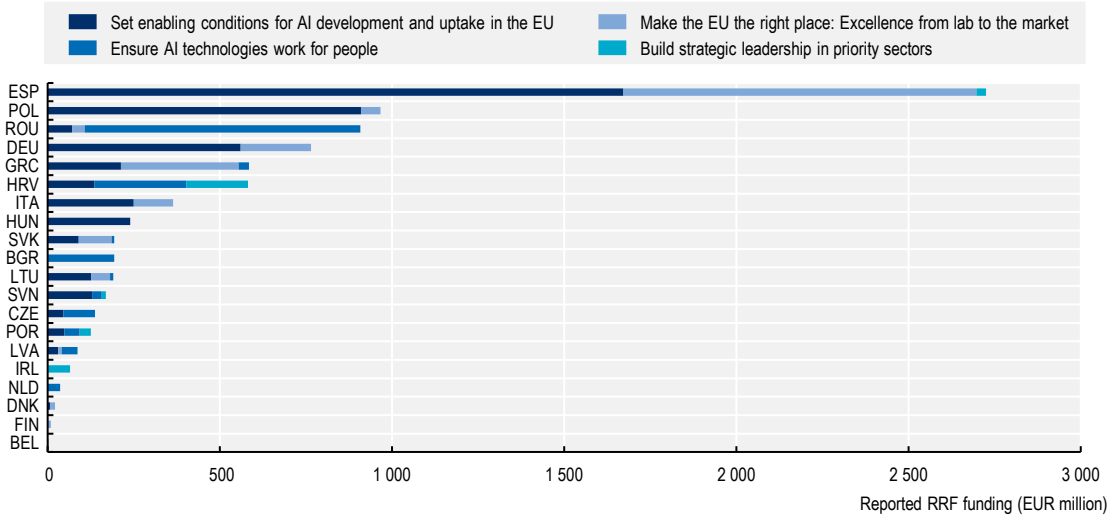
In parallel, several EU Member States have deployed RRF funding to support the transition from R&I to market-ready AI applications, particularly by targeting SMEs and innovation ecosystems. These efforts align with the ambition to make the European Union the right place for AI excellence. For example, the EDIH CROBOHUB++ digital innovation hub in Croatia provides tailored support to SMEs in adopting digital solutions. In **Greece**, the Digital Transformation of SMEs initiative delivers training, guidance and funding to modernise business processes through AI and related technologies. **Denmark** and **Ireland** have similarly focused on enhancing SME competitiveness by facilitating access to digital tools and resources, as well as building national networks for testing and experimentation.

Another prominent area of investment through the RRF involves ensuring that AI technologies work for people, with an emphasis on digital skills development and inclusive access to training. This thematic strand reflects the understanding that a thriving AI ecosystem depends on a well-prepared workforce. The adult learning platform in **Bulgaria** exemplifies this approach, offering personalised digital learning pathways supported by AI to upskill workers across sectors. **Italy** and **Portugal** have platforms that guide users towards reskilling and employment opportunities, often targeting vulnerable groups or those affected by labour market transitions. The AI Research network in **Ireland** and efforts in **Lithuania** to integrate AI into public services also illustrate how countries are embedding human-centred approaches in national strategies.

Finally, several EU Member States have employed RRF funding to build strategic leadership in priority sectors, such as healthcare, education, justice and mobility. These initiatives reflect national efforts to harness AI for public value creation and sectoral modernisation. In **Spain**, the national AI strategy includes targeted investments in green data centres and sovereign cloud infrastructure to support long-term digital

sovereignty. **Finland** and **Slovenia** have focused on using AI to improve public administration, while **Croatia** and **Romania** are using AI to strengthen social protection systems and job market platforms. In **Belgium**, the regional government in Flanders has made notable investments in AI R&I innovation, demonstrating how subnational actors are also contributing to strategic leadership in this domain.

Figure 2.2. Reported use of the Recovery and Resilience Facility funds for AI initiatives



Note: Italy also reported EUR 30 billion in the area of "Set enabling conditions for AI development and uptake in the European Union".
Source: Data reported by EU Member States through the survey and interviews.

Tap into the potential of data and foster critical computing capacity

Harnessing the potential of data is important for the economy and to promote fairness, inclusion and diversity in society. Access to quality data and ability to collect, store and manage those data are essential components of AI ecosystems. Quality data requirements are particularly significant when it comes to developing foundation models such as large language models. As noted by the 2021 EU Coordinated Plan on AI, AI has growing influence in both the economy and society. Consequently, the potential of data should be harnessed both from an economic and industrial perspective, and from the standpoint of fairness, inclusion and diversity.

Addressing the incomplete nature of language data is crucial in this context. Without developing language models beyond English, increased use of generative AI may prevent large fractions of the population from reaping the benefits of AI (Ta and Turner Lee, 2023[12]). About 56% of open-source datasets from Hugging Face, an online platform for foundational model hosting and sharing, are in English (OECD, 2024[10]). Similarly, by one estimate, about 93% of large language model GPT-3 training data come from sources in English. Moreover, trusted and high-quality data are necessary for deploying AI systems in sensitive or sovereignty-related areas such as defence or energy (French Government, 2024[13]).

In parallel, the infrastructure required to develop, train and deploy AI systems – particularly at scale – has seen exponential growth in demand. Hyperscale data centres have emerged as essential infrastructure, offering massive computing power, high-speed networking and expansive data storage. The global hyperscale infrastructure market is dominated by a few major players – Amazon Web Services, Google Cloud Platform, Microsoft Azure and Alibaba Cloud. Indeed, the first three account for roughly two-thirds of the global public cloud market.

As AI workloads expand, so too does the need for AI-optimised infrastructure. Current projections suggest that demand for data centre capacity could triple by 2030, growing between 19% and 27% annually. By that time, generative AI alone is expected to account for approximately 40% of total AI-related infrastructure demand. Meeting this surge will require building at least twice the data centre capacity constructed globally since the year 2000 (McKinsey & Company, 2024[14]; BBC, 2025[15]).

Computing capacity – referred to as AI compute – is another cornerstone of AI capability and competitiveness. In a list of the 500 most powerful non-distributed computer systems, the European Union hosts only three EU-based supercomputers in the top ten. The United States dominates the list with five entries, including the top four. The remainder are in Japan and Switzerland (one each) (Top 500, 2025[16]). EU Member States host 132 supercomputers (in 19 countries). Germany leads the ranks with 38, followed by France and Italy, with 24 and 14, respectively.

The European Union also lags in market share for semiconductors, which could make it vulnerable to market shifts. Integrated circuits or computer chips made of semiconductors are the foundational hardware for AI compute. Yet, the global semiconductor supply chain is marked by high levels of market concentration and geographic asymmetry. Indeed, Nvidia's model CUDA, based in the United States, has become a de facto standard for graphic processing unit acceleration in AI. This makes the industry vulnerable to both economic shocks and geopolitical tensions.

The chip manufacturing market presents a similar landscape. In the advanced chip segment (3-7 nanometres), Chinese Taipei-based TSMC has a market share of about 90%. The other main actor is Samsung in Korea. ASML, the world's leading manufacturer of advanced chipmaking machines (using extreme ultraviolet lithography systems), is based in the Netherlands.

To mitigate related economic and geopolitical risks, major world economies have taken steps to bolster their chip manufacturing capacity (France Digitale, 2024[17]). In the European Union, key measures include the Chips Act and support measures from Member States. France, for example, has provided EUR 7.4 billion worth of direct grants to GlobalFoundries and STMicroelectronics to develop a large-scale manufacturing site for high-performance chips (EC, 2023[18]).[1] In December 2024, the European Commission announced the establishment of seven AI Factories (a EUR 1.5 billion investment combining national and EU funding). This is expected to double EuroHPC computing capacity and thereby help enhance European AI capability (EC, 2024[19]). The following month, complementing the CHIPS for America fund, the United States announced USD 500 billion worth of investments to roll out AI infrastructure, particularly data centres and the attendant power supply (Politico, 2025[20]).

To help harness the potential of data, the EU Coordinated Plan on AI calls upon Member States to:

> ***Invest in*** *strengthening Europe's position in next-generation cloud and edge technologies and foster cloud uptake through their national recovery and resilience plans and in line with the example component for the RRF 'Scale-up' flagship 64 and including through multi-country projects.*

Investing in advanced cloud computing infrastructure will be required to ensure the affordability and availability of computing resources by a broad range of economic actors for AI-related purposes and the wider digital transformation. Edge computing, in turn, can help reduce energy consumption, reduce latency, increase the performance of high bandwidth applications and enable new cloud service models. Edge computing could also support resilience, security and privacy protection (OECD, 2022[21]).

The EU Coordinated Plan on AI also outlines a series of actions to enhance data processing and compute capacity at the national, regional and EU levels. Specifically, it calls for further developing the necessary technological systems and AI-enabling infrastructure, fostering access by all relevant AI actors to compute resources and expertise, and strengthening the semiconductor ecosystem.

To foster critical compute capacity, Member States are encouraged to pursue the following actions:

> *Continue the **development of national integrated large-scale data management and HPC infrastructure** to support research, innovation and skills development in AI through regional, national and European digital innovation hubs.*
>
> *Ensure that academic, industry and public sector organisations can leverage national HPC and data-management infrastructure and expertise to optimise and scale up their AI innovation and applications.*
>
> ***Invest in strengthening the EU position in processors and semiconductor technologies for AI** through their NRRPs, in line with the example component for the RRF scale-up flagship area and through multi-country projects.*

This section discusses actions by EU Member States to tap into the potential of data and foster critical computing capacity, in line with the EU Coordinated Plan on AI. Table 2.4 summarises key findings from the survey and complementary interviews.

Table 2.4. Tap into the potential of data and foster critical computing capacity: Key findings

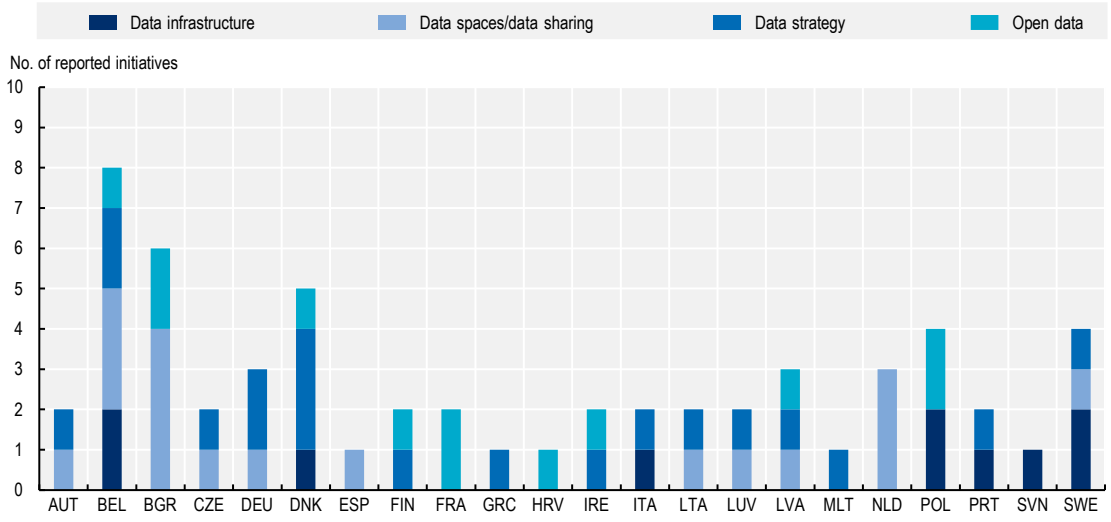
Dimension of survey	Description	Key findings
National data strategies or action plans	Strategies or policy initiatives to promote the availability, sharing and re-use of data for AI development	Fifteen EU Member States have adopted national data strategies, while others are developing them or integrating data governance into broader digital agendas. Strategies typically address open data, governance and infrastructure to enable data-driven services, research and business innovation.
Cloud strategy or policy initiatives	National policies or strategies to promote adoption of cloud computing services and infrastructure	Around two-thirds of EU Member States have national cloud strategies, often aligned with EU initiatives like Gaia-X and the European Open Science Cloud. Strategies commonly support secure, interoperable infrastructure for the public sector, with some integrating hybrid or sovereign cloud models.
Support for investment in edge technologies	Initiatives that foster investment in edge computing infrastructure	Edge computing is generally supported through broader digitalisation or cloud initiatives, with few EU Member States launching standalone programmes. Important Projects of Common European Interest (IPCEIs) on Next-Generation Cloud Infrastructure and Services are a key enabler of co-ordinated investment.
Support for large-scale data centres	Measures to attract or expand investment in large-scale, data centres	Many EU Member States are investing in large-scale data centre infrastructure, typically as part of broader cloud, digital government or AI-readiness strategies, with several initiatives co-funded via the RRF.
Support for HPC capacity	National investments or participation in EU-level initiatives to develop or enhance HPC infrastructure to support advanced AI	Over two-thirds of EU Member States are strengthening HPC capacity, often in collaboration with the European High Performance Computing Joint Undertaking (EuroHPC JU). Investments support AI Factories, supercomputers and national research infrastructure.
Use of HPC for AI	Use of HPC infrastructure to support AI training	HPC resources increasingly support AI applications, such as large-scale model training and simulations. EU Member States are working to expand access to these resources for SMEs, researchers and public sector users.
Investment in the semiconductor ecosystem	National strategies or initiatives supporting the design, production or R&D of semiconductors critical to AI infrastructure	More than half of EU Member States support semiconductor R&D or manufacturing, often via national strategies or participation in the IPCEI on Microelectronics and Communication Technologies. Investments also target skills and supply chain resilience.

EU Member States are strengthening data foundations for AI

Across the European Union, countries are developing a wide range of initiatives to tap into the value of data. While these efforts are shaped by national priorities, they often share the common goals of improving access to and sharing of data, modernising infrastructure and supporting digital innovation. In total,

EU Member States reported 57 initiatives (Figure 2.3). Several governments have launched overarching strategies to guide how data are used, shared and protected across public and private sectors. Some countries are focusing on secure infrastructure like data centres, while others are working on creating environments where data can be easily shared and re-used, including through open data policies and data spaces. A growing number of EU Member States also reported specific initiatives to enhance availability of datasets in national languages (see Chapter 3).

Figure 2.3. Initiatives to tap into the potential of data



Note: Data for Belgium include regional initiatives.
Source: Data reported by EU Member States through the survey and interviews.

More than half of EU Member States reported a data strategy or action plan, or ongoing efforts to develop one

Fifteen EU Member States have adopted national strategies to ensure data are managed consistently and responsibly. These strategies reflect a shared understanding of data as both a public good and a strategic asset to drive economic growth, requiring careful governance to balance innovation with protection of fundamental rights. In most cases, they also position themselves within the broader EU data framework. **Austria** published its first national data strategy in October 2024 (Federal Chancellery of Austria, 2024[22]). The strategy, whose development relied on broad stakeholder involvement, encompasses areas such as sustainable infrastructure, responsible data sharing and innovative data culture/data literacy. It is also aligned with the EU data strategy (EC, 2020[23]). In **Germany,** the National Data Strategy aims to maximise the potential of data across sectors, including public administration, research, industry and civil society. Key objectives include expanding data availability by creating more datasets and facilitating access to government data, improving data quality through standardised descriptions and quality assurance, and fostering a culture of data-driven decision making across society. These efforts are largely driven by the development of the National Research Data Infrastructure (German Federal Government, 2023[24]) The **Greek** National Data Strategy, part of the Digital Transformation Bible 2020-2025, aims to create a balanced data ecosystem that respects individual privacy, promotes open government and data-driven innovation, and complies with EU obligations and international best practices. In **Portugal**, the National Data Strategy envisions a governance model that fosters a collaborative and dynamic ecosystem, promoting data altruism and creating synergies among stakeholders (Portugal Digital, 2022[25]).

Several countries integrate data strategies within broader digital agendas. In **Germany**, Digital Strategy 2025 consolidates priorities for digital transformation under a unified framework. In **Denmark**, the National Strategy for Digitalisation includes improved data access as part of "a strong, ethical and responsible digital foundation". In **Finland,** Digital Compass embraces data policy within its broader digitalisation vision. In **Sweden**, the strategy is linked to innovation in AI.

Some data strategies or action plans of EU Member States focus on public administration. **Czechia** adopted a Strategy for Data Management in the Public Administration. It focuses on enhanced data sharing among public administrations through standardisation to modernise services and optimise efficiency through improved data management. **France** has several data-related strategic initiatives for the public sector, both cross-cutting (inter-ministerial data administration framework) and domain-specific (e.g. relationships between the public administration and citizens). In addition to open government data initiatives and laws, the 2021 Inter-ministerial Framework for Data Administration in **France** covers data, algorithms and source codes (Ministère de la transformation et de la fonction publiques, 2021[26]). In **Ireland,** the Public Service Data Strategy for the period 2019-2023 (Government of Ireland, 2019[27]) sets out goals and actions to deliver a more joined-up approach to managing and using data in the public service; a new strategy was expected in 2025. Similarly, **Italy** focuses on improving how government data are managed and used to support services. Meanwhile, the Public Administration Data Strategy 2023-2027 in **Malta** aims to establish single, centralised registers for individuals, organisations, geospatial data and government administrative data. Other countries, like **Latvia**, **Lithuania** and **Luxembourg**, are still developing or updating their strategies, working on building new governance models to support the use of data across government systems.

There are also data strategies at the subnational level. In 2022, the association of **Danish** municipalities published its data strategy for local governments (KL, 2022[28]), which notably calls upon municipalities to make standardised data available. In **Belgium**, the Flemish Data Strategy (for which an updated version is being developed) promotes open data availability, standardisation and interoperability. Moreover, it fosters collaboration between local and regional authorities to enable data-driven decision making.

Governments are making more public data available to support transparency and innovation

Open data initiatives represent a key area of focus across multiple EU countries, with varying approaches to increase transparency, accountability and data re-use. **Croatia** (Open Data Portal), **Denmark** (datavejviser.dk) and **Poland** (Dane.gov.pl) have established centralised repositories where public authorities can publish datasets, creating single access points for users. Legal frameworks vary – from the 2016 Law for a Digital Republic in **France** that lays the foundation for open public data, to the Act on Open Data and the Re-use of Public Sector Information in **Poland**. The Open Government Action Plan 2023-2027 in **Denmark** supports development of data policies aligned with principles of open government, emphasising transparency, accountability and citizen participation. Similarly, the **Polish** Public Open Data Programme aims at enhancing the accessibility and usability of public sector information. Some countries have developed specialised repositories. The Portal for Open Science in **Bulgaria**, for example, has more than 73 000 science-related documents available for access. Meanwhile, **France** has progressively opened court decision data beginning with Supreme Court decisions in 2021.

Data spaces are emerging as shared environments for secure and structured data exchange

A growing number of countries are developing shared data environments to enable secure and standardised data exchange across sectors. In **Austria**, the Data Intelligence Offensive (DIO) aims to promote business models for data exchange and monetisation. It supports the development of data spaces in various sectors, including tourism (Tourism Data Space, 2024[29]), health (DIO, 2024[30]) and agriculture. Moreover, the DIO supports the regional data space.tirol (digital.TIROL, 2024[31]). Flanders region in

Belgium hosts initiatives such as Athumi (2024[32]) and SolidLab (2024[33]), which build secure and privacy-respecting data ecosystems. Led by GATE, the Urban Data Space is the first sectoral data space in **Bulgaria**. It facilitates data sharing and access between organisations to enable development of new business products and services. The **Netherlands** established the Centre of Excellence for Data Sharing and Cloud to support development of data spaces for organisations to securely exchange data across sectors, such as the Smart Connected Supplier Network (2024[34]) and HDN (2024[35])[2]. In **Spain**, whose national AI strategy already encompasses several data-related initiatives, an RRF-supported Plan to Promote Sectoral Data Spaces was released in November 2024 (Government of Spain, 2024[36]). **Lithuania** and **Sweden** are focusing on integrating data lakes and open platforms into digital public services. **Germany** and **Greece** reported to be actively supporting the federated data infrastructure Gaia-X (2024[37]), which has national hubs in most EU Member States.

Countries are building the infrastructure to manage and store growing volumes of data

Many EU Member States are expanding their physical and digital infrastructure to support the increasing demand for secure, scalable data processing and storage. Some EU Member States mentioned the development of data centres to support the digitalisation of government services (i.e. beyond AI). **Italy** has invested in large-scale national data centres that underpin government services and digital transformation (see also below on cloud infrastructure). With assistance from the Digital Europe Programme, **Czechia** is setting up a shared data pool to facilitate smoother and more efficient data sharing and collaboration across public administrations. In a similar vein, the Shared Government Data Centre in **Ireland** aims at supporting digitalisation of government services (Government of Ireland, 2021[38]). **Slovenia** and **Sweden** are strengthening research infrastructure through data storage platforms tailored for science and higher education. These facilities often form part of broader strategies that also include national cloud systems and supercomputing hubs. For instance, **Portugal** and **Slovenia** are integrating these investments with HPC and edge capabilities.

EU Member States are implementing national cloud initiatives to support development of secure and interoperable cloud infrastructure

About two-thirds of EU Member States reported having cloud strategies or initiatives in place (Table 2.5). While the scope and scale of these initiatives vary, they share the common goals of facilitating efficient and secure cloud adoption, particularly within public administration. At the same time, they promote digital sovereignty, interoperability and innovation. Several EU Member States also reported alignment with EU-level initiatives such as Gaia-X and the European Open Science Cloud.

Most of these initiatives prioritise development of cloud infrastructure for the public sector, often guided by "Cloud-First" policies. For instance, **Finland** updated its central government cloud guidelines in 2023 to reinforce a Cloud-First approach. **Denmark** operates GovCloud, a dedicated cloud service for government entities. For its part, **Greece** has invested in the Government Cloud (G-Cloud Services) and the Hybrid Cloud project. The Flemish Administration of **Belgium** also demonstrates this focus with its Cloud Strategy.

Several countries have adopted comprehensive national strategies, supported by substantial public and EU funding. **France** has launched an ambitious EUR 1.8 billion industrial plan under its National Cloud Strategy to strengthen its domestic cloud ecosystem. This includes the PEPR Cloud research programme, initiated in 2024 to advance innovation in areas such as security, sustainability and performance. The Administrative Cloud Strategy in **Germany** aims to build a modular, interoperable federal cloud infrastructure through open standards, reduced vendor dependency and shared platforms. **Italy** has established a Cloud Strategy and National Strategic Hub with supporting data centres. **Portugal** has a Public Administration Cloud Strategy alongside initiatives to attract further data centre investments. **Romania** has committed over EUR 2.7 billion through its NRRP to support the Deployment of the Government Cloud Infrastructure measure and cloud migration efforts.

Other countries such as **Poland, Portugal** and the **Slovak Republic** have adopted detailed frameworks that include cloud and edge computing components. These frameworks typically encompass implementation guidelines, training programmes, monitoring mechanisms and streamlined procurement processes.

Other countries are implementing hybrid and federated cloud infrastructures, leveraging both national and external capabilities. **Malta** is rolling out a Hybrid Cloud Enabling Infrastructure, while **Lithuania** is reforming ICT management. The latter includes hybrid cloud deployment; integration of state information resources into a state data lake; and development of a national cloud infrastructure. **Bulgaria** is also advancing its hybrid cloud capabilities. **Luxembourg,** whose AI strategy is closely tied to its cloud development goals, has introduced Clarence, a sovereign cloud platform.

The Important Project of Common European Interest (IPCEI) on Next-Generation Cloud Infrastructure and Services (CIS) was announced on 5 December 2023. ICPEI-CIS authorised seven Member States (France, Germany, Hungary, Italy, the Netherlands, Poland and Spain) to mobilise up to EUR 1.2 billion in public funding to support research, development and initial industrial deployment of European innovations in cloud and edge technologies (EC, 2023[39]). This project aims to establish a decentralised cloud-edge ecosystem that will reduce technological dependencies and foster new data-driven business models. Its primary goal is to create a Multi-Provider Cloud-Edge Continuum, which allows for advanced use of data processing resources from cloud to edge environments. This open ecosystem is expected to support AI and Internet of Things applications across various industries, including manufacturing, mobility and energy (BMWK, 2023[40]; 8ra Cloud-Edge Continuum, 2024[41]). Most initiatives reported by EU Member States regarding next-generation cloud and edge technologies concern this project, which is supported by RRF funding.

Table 2.5. Cloud initiatives and strategies in EU Member States

EU Member State	Cloud initiatives	IPCEI-CIS participation	IPCEI-CIS funding
Belgium	Cloud Strategy for the Flemish Administration		
	Transversal Cloud Adoption Plan (in development)		
Croatia	Cloud Computing Platform Vrančić		
	State Cloud Upgrade Project		
Czechia	Government Council for Information Society's Working Group for Cloud Computing		
	Strategic Framework of National Cloud Computing		
Denmark	GovCloud		
Finland	Updated central government cloud policies (2023)		
	Cloud-First Strategy		
France	National Cloud Strategy	✓	Not specified
	Cloud research programme		
Germany	Administrative Cloud Strategy (DVS)	✓	EUR 560 million
	IPCEI-CIS		
Greece	Government Cloud "G-Cloud"		
	Hybrid Cloud project		
	Upgrading of the National Network of Infrastructures for Research and Technology (GRNET)		
Hungary	FedEU.ai	✓	EUR 7 million
Italy	Cloud Strategy		
	Cloud Regulation for Public Administration	✓	EUR 250 million
	National Strategic Hub		
	IPCEI-CIS		
Latvia	Participation in IPCEI-CIS Working Group		
Lithuania	Development of state cloud ICT infrastructure		
	Hybrid cloud model		
	Reform of ICT management		
Luxembourg	Clarence		
Malta	Hybrid Cloud Enabling Infrastructure		
Netherlands	National Centre of Excellence for Data Sharing and Cloud	✓	Not specified
	IPCEI-CIS		
Poland	Common State IT Infrastructure Programme (WIIP)		
	Cloud Service Provision System (ZUCH)	✓	EUR 217 million
	Polish Cloud Support Fund		
	IPCEI-CIS		

EU Member State	Cloud initiatives	IPCEI-CIS participation	IPCEI-CIS funding
Portugal	Public Administration Cloud Strategy		
Romania	Government Cloud Infrastructure deployment		
	Cloud development and migration		
Slovak Republic	National Concept of Public Administration Informatization (NKIVS)		
	Methodological Guidelines for Cloud Services		
Slovenia	DRO Next		
	Governmental private cloud	✓	EUR 5 million
	IPCEI-CIS		
Spain	Programme to support edge technologies (as part of IPCEI-CIS)	✓	EUR 111 million

Source: Data reported by EU Member States through the survey and interviews.

Strengthening compute infrastructure that can support AI workloads is a key objective in most EU Member States

More than two-thirds of EU Member States (23) reported initiatives to strengthen compute infrastructure (Table 2.6). Several of these initiatives are connected to the European High Performance Computing Joint Undertaking (EuroHPC JU) – a key structuring element in shaping the EU supercomputing landscape. Notably, two supercomputers in the top ten of the TOP500 list – LUMI (Finland) and Leonardo (Italy) – have been procured through the EuroHPC JU (EuroHPC, 2025[42]). This structuring role is bound to remain significant. The launch of the AI Factories (EC, 2025[43]) will bring together supercomputers, data and human capital to develop an ecosystem to train advanced AI models and develop AI solutions. The EuroHPC JU will provide the necessary supercomputing infrastructure, covering half of the acquisition and operation costs of AI-optimised supercomputers, as well as half the cost of the services provided by AI Factories (Neistadt, 2025[44]).

HPC resources can support workloads both specific and non-specific to AI for a variety of scientific research and industrial applications. However, AI-related compute needs appear to be an increasingly important driver. Several EU Member States reported to have stepped up investment to enhance compute capacity in 2023-2024. This move responded to the needs associated with the latest developments in AI technology such as large language models. It also reflected the soaring demand for AI compute, especially for deep neural networks (OECD, 2024[10]). **Italy**, which hosts 5 of the world's 500 most powerful supercomputers, continues to bolster its infrastructure. Meanwhile, **Poland** is preparing to launch two new facilities, the AI Factory at CYFRONET and the PIAST AI Factory under the EuroHPC.

EU Member States are also becoming increasingly aware of the need to make sufficient compute capacity available to all relevant stakeholders in the AI ecosystem – not only researchers but also the public administration and private companies, including SMEs. For instance, **France** deployed the supercomputer Jean Zay during the first phase of the country's AI strategy between 2018 and 2022. In 2023, France announced it would expand the capacity of Jean Zay in response to generative AI needs and improve access for AI start-ups. The associated teams of support engineers have also been further strengthened. Similarly, in **Luxembourg**, the MeluXina supercomputer supports AI, industry and research use-cases and forms part of the broader national HPC and quantum strategy. The Komondor HPC and OTP-Emese systems in **Hungary** serve both academic and commercial purposes, including AI model training.

Given the sizeable investment outlays required, initiatives to enhance compute infrastructure often rely on collaboration across several partners:

- The Gauss Centre for Supercomputing in **Germany** brings together the country's three leading national supercomputing centres in Jülich, Leibniz and Stuttgart. The centre, which is instrumental in advancing Germany's capabilities in computational science and engineering, is jointly funded by the German federal government and the respective host federal states (GCS, 2024[45]).
- The Vienna Scientific Cluster in **Austria** is another collaborative effort, pooling resources from several universities and providing supercomputer resources and technical support to their users (VSC, 2024[46]). Moreover, with the help of RRF resources, the Quantum Austria funding initiative will enable development of the country's fastest HPC system: the Multi-Site Computer Austria (MUSICA) (FFG, 2024[47]).
- The EuroQCS-**Poland** project, in turn, is a joint initiative of Polish and European institutions, owned by the EuroHPC JU and located at the Poznan Supercomputing and Networking Center. EuroQCS-Poland will be a digital, gate-based quantum computer, based on trapped ions offering 20-plus physical qubits. The infrastructure will allow for remote access (EuroHPC JU, 2024[48]).
- **Belgium**, **Croatia** and **Finland** are also actively participating in EuroHPC JU initiatives, including LUMI-Q and IPCEI-CIS.
- **Bulgaria** reported several initiatives aimed at enhancing HPC capacity. These include Discoverer (launched in 2021), a petascale supercomputer co-funded through the EuropHPC JU and specifically designed to support big data processing and AI applications; supercomputer HEMUS (launched in 2023); and supercomputer Avitohol (expected to be operational in 2025).
- The HPC roadmap in **Slovenia** includes supercomputing and edge computing investments through projects DRO Next and SLING.
- **Sweden** is complementing investments in AI-focused HPC by participating in the LUMI supercomputer hosted in Finland and the planned deployment of its own national systems by 2025.

Public-private partnerships are also emerging. **Denmark** started collaborating with leading AI hardware and software supplier NVIDIA in 2024. Together, they plan to establish a centre for AI innovation that will host one of the world's most powerful AI supercomputers (Gefion). This public-private partnership is co-funded by the Export and Investment Fund in Denmark and the Novo Nordisk Foundation. It is expected to provide researchers from the Danish public and private sectors with access to a state-of-the-art supercomputer. It will be optimised for large-scale projects using AI, as well as software platforms, training and expertise (Novo Nordisk Foundation, 2024[49]).

Several EU Member States are developing HPC and quantum compute capacities as part of a national or regional ecosystem. In some cases, such as **Spain**, initiatives focusing on quantum computing are embedded into national AI strategies. Conversely, countries like **Austria** and **Denmark** have opted for separate programmes or strategies. In **Finland**, the government supports quantum research through initiatives like the LUMI-Q project. It has committed funding to scale its quantum computer to 300 quantum bits by 2027. The Quantum 2030 strategy in **Ireland** outlines a comprehensive framework around research, talent and collaboration. In **Italy**, the National Quantum Science and Technology Institute brings together public research institutions to accelerate quantum R&D. Similarly, **Portugal** launched the Portuguese Quantum Institute and is developing a broader strategy on advanced computing and quantum technologies, including new national facilities. The **Slovak Republic** is also building national capabilities in quantum communication and infrastructure. In 2023, **Spain** announced several measures in this area, notably to reinforce the capacity of the Barcelona Supercomputing Centre (designated in 2024 among the EU AI Factories). It plans to make such capacity available to industry actors and reinforce the Spanish HPC network. The same year, Spanish authorities announced that the first quantum computer in southern Europe would be in Barcelona (Presidencia del Gobierno, 2023[50]). Moreover, the Spanish government was developing at the time of writing a National Strategy on Quantum Technologies[3]. This builds on the

Quantum Spain programme, which is part of the country's AI strategy to develop competitive and comprehensive quantum computing infrastructure (Quantum Spain, 2025[51]).

Table 2.6. HPC and quantum initiatives and strategies in EU Member States

EU Member State	HPC initiatives	Quantum computing initiatives
Austria	Vienna Scientific Cluster - VSC-4 and VSC-5 Supercomputers	Quantum Austria
	MUSICA supercomputer – under development	
	AI Factory	
Belgium	HPC CÉCI	No initiative reported
	HPC Lucia	
	EuroCC Belgium	
	Vlaams supercomputer Centrum (VSC) (Flanders' region)	
	Flemish participation in EuroHPC	
Bulgaria	Discoverer (EuroHPC supercomputer)	No initiative reported
	HEMUS supercomputer	
	Avitohol supercomputer	
	AI Factory	
Croatia	Supek supercomputer	No initiative reported
	Bura supercomputer	
	National Competence Center for HPC	
Cyprus	Cyprus National Competence Center as part of EuroCC	No initiative reported
Czechia	IT4Innovations Supercomputing Centre, hosting Barbora (supercomputer) and Karolina (EuroHPC supercomputer)	LUMI-Q participation
Denmark	Danish Centre for AI Innovation (Gefion supercomputer)	National Strategy for Quantum Technology
	Danish e-infrastructure Consortium (DeiC)	
Finland	LUMI (EuroHPC supercomputer)	LUMI-Q participation; VTT National Quantum Programme (develop and upscale quantum compute capacity)
France	Jean Zay expansion (supercomputer)	France 2030 Quantum R&D
	AI Factory	
Germany	Gauss Centre for Supercomputing	No initiative reported
	High- and Highest-Performance-Computing for the Digital Age (SCALEXA and GreenHPC)	
	Jupiter (EuroHPC supercomputer)	
	AI Factory	
Greece	ARIS	No initiative reported
	DAEDALUS	
	AI Factory	
Hungary	Komondor HPC (supercomputer)	No initiative reported
	OTP-Emese	
	Levente HPC (under development)	
Ireland	Research Ireland Centre for Future Networks	Quantum 2030 Strategy
Italy	National Strategic Hub	Quantum Computing Research and Development Programme; National Quantum Science and Technology Institute (NQSTI)
	HPC6	
	Leonardo (EuroHPC supercomputer)	
	Marconi-100	
	Davinci-1	

EU Member State	HPC initiatives	Quantum computing initiatives
	Cassandra	
	AI Factory	
Luxembourg	MeluXina (EuroHPC supercomputer)	No initiative reported
	AI Factory	
Malta	HPC through Digital Innovation Hub (under development)	No initiative reported
Poland	AI Factory (CYFRONET AGH)	EuroQCS-Poland
	PIAST AI Factory (under EuroHPC)	
Portugal	Deucalion (EuroHPC supercomputer)	Portuguese Quantum Institute
	National Strategy for Advanced Computing	Portuguese Quantum Communications Infrastructure (PTQCI)
Romania	Romanian HPC Competence Centre	No initiative reported
Slovak Republic	Development and construction of a supercomputer (Slovak Academy of Sciences)	Slovak Quantum Communication Infrastructure
Slovenia	DRO Next	No initiative reported
	National Competence Centre SLING	
	Vega (EuroHPC supercomputer)	
	AI Factory	
Spain	Marenostrum (EuroHPC supercomputer)	Quantum Spain
	Measures to reinforce Spain's HPC capacity for AI development	
	AI Factory	
Sweden	National Academic Infrastructure for Supercomputing Sweden	No initiative reported
	LUMI participation	
	AI Factory	

Note: The survey did not include a specific question on quantum initiatives; therefore, the initiatives reported reflect Member States' own decisions to provide this information voluntarily.
Source: Data reported by EU Member States through the survey and interviews.

As a complement to their AI strategies, several EU Member States have started to support investment in the semiconductor ecosystem

More than half of EU Member States reported initiatives to support investment in the semiconductor ecosystem, often with sizeable funding. EU Member States also reported their participation in the IPCEI on Microelectronics and Communication Technologies (ME/CT) (Box 2.1) and in the Chips Joint Undertaking (EU, 2023[52]), aimed at boosting development and adoption of advanced nano-electronic chip technologies and systems manufactured in Europe.

Several EU Member States have launched national strategies to support semiconductor development

Across the European Union, a growing number of EU Member States have adopted or are adopting national strategies to strengthen their domestic semiconductor sectors. This move reflects growing awareness of the strategic importance of the semiconductor supply chain and the need to reinforce strategic autonomy and resilience in line with the EU Chips Act. **France**, for example, committed to mobilise EUR 5 billion through the 2022 national strategy on electronics (French Government, 2022[53]). Through the PERTE Chip (Government of Spain, 2022[54]), **Spain** will mobilise EUR 12.25 billion earmarked for 2022-2027 to support conception, design, production of chips and manufacturing of electronic products. **Czechia** launched its national semiconductor strategy (EUR 45 million) in 2024, targeting a threefold growth in the domestic semiconductor sector by 2029, with a focus on research, export and talent. Through

a national strategy, **Poland** aims to support strategic semiconductor investment throughout the entire value chain (Government of Poland, 2023[55]; KIGEiT, 2023[56]) The 2024 National Strategy for Semiconductors in **Portugal** is similarly focused on boosting national scientific and technological advancements to contribute to EU resilience. **Finland** will launch a national research, development and innovation environment, including for semiconductors, with EUR 79 million from the 2024-2027 budget. **Ireland** is also developing a national strategy following a public consultation in 2023. Meanwhile, **Romania** has launched a National Platform for Semiconductor Technologies, with approximately EUR 130 million allocated to enhance cross-sector collaboration and national design and manufacturing capacity. **Slovenia** is also finalising its national semiconductor strategy (2024-2030) to co-ordinate actions across ministries and stakeholders.

Many countries are participating in joint EU efforts such as the IPCEI on Microelectronics and Communication Technologies

Participation in the IPCEI ME/CT is a central mechanism through which many countries are mobilising national and EU funding. The **Slovak Republic**, for example, is supporting four Slovak companies selected under the IPCEI ME/CT, allocating EUR 200 million. **Slovenia** is supporting companies involved in the IPCEI through both annual funding (EUR 1.2 million) and project-based co-financing (EUR 1.5 million). In **Malta**, the Semiconductor Competence Centre is a strategic initiative spearheaded by Malta Enterprise in collaboration with STMicroelectronics in the context of the IPCEI ME/CT framework. It focuses on developing the workforce; conducting research; promoting industry-academia collaboration; attracting foreign investment; and assisting start-ups and SMEs (Malta Enterprise, 2024[57]).

Strategic investments are supporting R&D, infrastructure and industrial capacity

Many countries are combining strategic planning with concrete investments in semiconductor-related research and development (R&D) and manufacturing infrastructure. The Framework Programme for Research and Innovation (2021-2024) in **Germany** includes EUR 400 million in national support (plus significant private investment). **Belgium** plays a central role through Imec, a world class semiconductor research centre that participates in PREVAIL, an EU initiative to develop AI hardware. **Greece** has committed EUR 7.8 million towards its participation in the EU Chips Joint Undertaking (Chips JU). **Latvia** signed a memorandum of understanding in 2022 with 12 partners and planned to join the Chips JU in 2025, backed by approximately EUR 745 000 per year in national co-funding. **Sweden** is promoting MyFab, the national cleanroom and nano-fabrication infrastructure. Vinnova, the national innovation agency, is co-financing up to EUR 2 million per year to support Swedish participation in the Chips JU. **Romania** is advancing a project dedicated to cross-border and multi-country collaboration (EUR 400 million in funding expected). **Slovenia** has also launched Čip.si (2025) to support SMEs and start-ups with access to R&D infrastructure and pilot lines.

Countries are also investing in skills, talent and academic-industry collaboration

Several countries have adopted measures focused on the talent pipeline, industry-academia collaboration and ecosystem support. In **Spain**, the Chip Chairs initiative is creating 17 university chairs to strengthen academic research and workforce development in the field of microelectronics. In **Finland**, Chips from the North provides EUR 10 million for training, co-ordination and local ecosystem building in the Oulu region. In **Slovenia**, the Čip.si initiative also covers talent support, along with infrastructure and company support.

Box 2.1. Important Project of Common European Interest on Microelectronics and Communication Technologies

The first Important Project of Common European Interest (IPCEI) on Microelectronics, approved by the European Commission in December 2018, brought together 32 companies from five Member States (Austria, France, Germany, Italy, the United Kingdom) to support research and innovation in microelectronics. With public funding of up to EUR 1.9 billion, the initiative targeted the development of advanced technologies and components such as chips, sensors and integrated circuits for use in diverse applications – from consumer electronics to electric mobility systems.

In June 2023, the European Commission approved a second IPCEI, focused on Microelectronics and Communication Technologies (IPCEI ME/CT). It involves 14 Member States (Austria, Czechia, Finland, France, Germany, Greece, Ireland, Italy, Malta, the Netherlands, Poland, Romania, the Slovak Republic and Spain) and 68 projects from 56 companies.

The project's overall objective is to enable the digital and green transformation by:

- creating innovative microelectronics and communication solutions
- developing energy-efficient and resource-saving electronics systems and manufacturing methods

The IPCEI will contribute to the technological advancement of many sectors, including communications (fifth and sixth generation of cellular network technology, 5G and 6G), autonomous driving, AI and quantum computing. They will also support companies active in the energy generation, distribution and use in their green transition.

The 14 Member States are expected to provide up to EUR 8.1 billion in funding, which is expected to unlock additional EUR 13.7 billion in private investments.

Source: EC (2023[58]), *Approved IPCEIs in the Microelectronics Value Chain*, https://competition-policy.ec.europa.eu/state-aid/ipcei/approved-ipceis/microelectronics-value-chain_en.

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Notes

[1] Expected to be operating at full capacity by 2027. Notably, the project on technologies is being developed as part of the 2028 IPCEI for research and innovation in microelectronics.

[2] For a comprehensive overview, please refer to: https://coe-dsc.nl/knowledge-base/community/data-sharing-initiatives-data-spaces/

[3] The Quantum Technologies Strategy was published in April 2025 (Ministry for the Digital Transformation and the Public Function, 2025[60]).

3 Make the European Union the right place: Excellence from lab to market

The European Union Coordinated Plan on Artificial Intelligence is a strategic initiative developed by the European Commission and EU Member States to promote development, deployment and use of AI technologies across the European Union. This chapter reflects on how the European Union needs to continue building and mobilising capacities to stay competitive in AI research and uptake. It looks at how EU Member States are fostering AI research and development, and increasingly consolidating AI expertise through dedicated research centres. The chapter then turns to how EU Member States are funding and scaling AI to enhance productivity and create new avenues for value creation. To that end, it examines support from European Digital Innovation Hubs, AI testing and experimentation facilities, initiatives to help domestic businesses adopt AI, and measures supporting innovative AI start-ups and scale-ups.

Introduction

The EU Coordinated Plan on AI is a strategic initiative to promote development, deployment and use of AI technologies across the European Union. It represents a joint commitment between the European Commission and EU Member States to maximise the impact of investments in AI, foster synergies and encourage co-operation across the European Union. The plan outlines a series of concrete actions to facilitate investment decisions, aligning AI policy in the European Union to remove fragmentation. It also aims to contribute to strengthening the global position of the European Union regarding the development and adoption of human centric, sustainable, secure, inclusive and trustworthy AI technologies and applications.

Within this framework, this chapter reflects on how the European Union needs to continue building and mobilising capacities to stay competitive in AI research and uptake. It looks at how most EU Member States are fostering AI research and development, and increasingly consolidating AI expertise through dedicated research centres. The chapter then turns to how EU Member States are funding and scaling AI to enhance productivity and create new avenues for value creation. To that end, it examines support from European Digital Innovation Hubs, AI testing and experimentation facilities, initiatives to help domestic businesses adopt AI, and measures supporting innovative AI start-ups and scale-ups.

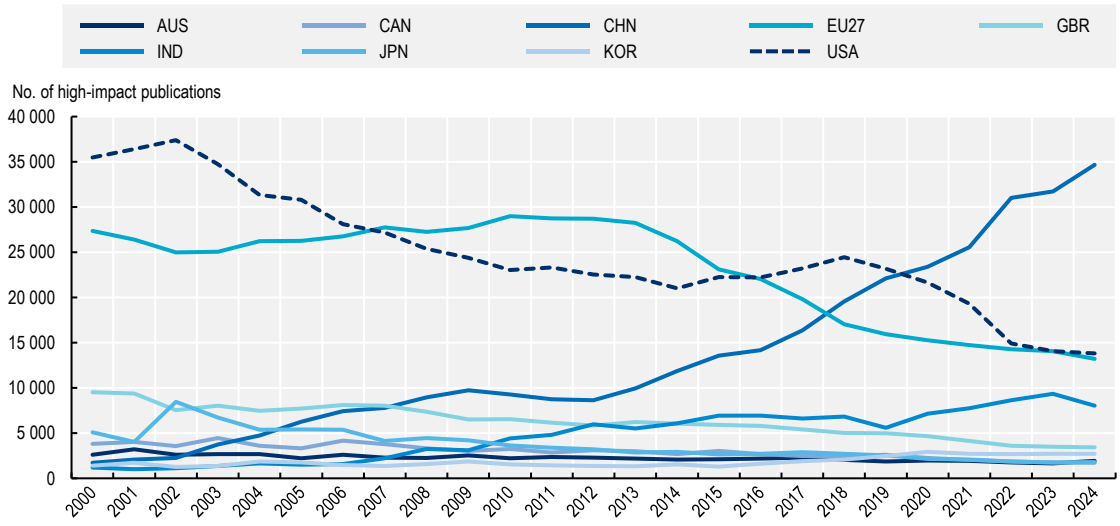
Build and mobilise research capacities

The European Union is a leader in AI research but needs to continue building and mobilising capacities to stay competitive

Research and development (R&D) in Artificial Intelligence (AI) are critical drivers of technological progress, economic growth and geopolitical competitiveness. Over the past decades, the European Union has seen steady growth in the number of AI research publications. Meanwhile, AI research output has surged in the Republic of China (hereafter “China”). Since 2019, China has published more AI research than both the European Union and the United States. India has also made notable progress in recent years, more than doubling its number of AI research publications since 2015 (OECD.AI, 2025[1]). The EU-27 ranks second in terms of high-impact publications related to AI, slightly ahead of the United States but significantly behind China.

In this context, ensuring the European Union remains globally competitive requires sustained and increased investment in AI research capacities. Supporting Member States in building and expanding their national AI research infrastructures is critical, both through funding and establishment of national AI research excellence centres. Strengthening collaboration between these national centres at the EU level will further consolidate its AI research potential. This, in turn, will allow the European Union to compete more effectively with global leaders while maintaining a strong emphasis on trustworthy, ethical and human-centred AI development.

Figure 3.1. High-impact AI publications, European Union and selected countries



Note: Although by no means a perfect measure, citations are used to estimate the "quality" of a publication, with a decay factor to adjust for time. For each publication, the normalised quality score is: Quality score = # Citations / [(upcoming year) – (year of publication)]. Based on this score, publications are categorised into low, medium or high quality. To determine the appropriate category, the average number of citations per year in the field of AI are calculated and normalised using the same formula as above. The distribution of these normalised scores is used to assign categories: below the first quantile (low quality), between the first and third quantiles (medium quality) and above the third quantile (high quality).
Source: OECD.AI (2025[2]), *AI Publications by Country* (dataset group), https://oecd.ai/en/data?selectedArea=ai-research&selectedVisualization=ai-publications-time-series-by-country-2.

The EU Coordinated Plan on AI calls on Member States to take concrete actions to strengthen AI research at the national and regional levels:

> ***Set up regional and national AI research excellence centres around AI**, for example by using national funding instruments and RRF funds and create a research and technology transfer structure able to attract and retain talent while at the same time aiming to become a national reference point for AI research and development. The centres would ensure regional outreach and exchange, collaborate at the European level and, together with the EU-funded networks, build the distributed European AI lighthouse.*
>
> ***Strengthen investment in AI research**, at national level, e.g. through the RRF.*

Table 3.1 summarises key findings from the survey and complementary interviews.

Table 3.1. Build and mobilise research capacities: Key findings

Dimension of survey	Description	Key findings
Artificial intelligence (AI) research and development (R&D) funding programmes	National funding programmes supporting fundamental and applied AI research	Twenty-three EU Member States report initiatives to support AI R&D, ranging from large-scale national programmes to sector-specific investments.
Thematic AI research and language technologies	Targeted AI research initiatives in areas such as language technologies and sector-specific challenges	EU Member States increasingly fund AI R&D in thematic areas such as language technologies and sector-specific domains like healthcare and manufacturing.
National AI research centres	Establishment of flagship national centres for AI research and innovation	More than half of EU Member States have established large-scale AI research centres. These centres often anchor national AI strategies and attract significant public investment.
National networks of excellence	Co-ordination of multiple research centres under national networks of excellence	Some EU Member States co-ordinate national AI centres through structured networks of excellence to enhance synergies and collaboration.
University-led and specialised AI research institutes	Development of university-based or domain-specific AI research initiatives	Nearly half of EU Member States complement national centres with specialised, university-led or domain-specific AI research institutes, expanding capacity and fostering innovation in niche areas.

Fostering AI R&D is a key pillar in the strategies and policies of the vast majority of EU Member States

Ensuring AI R&D initiatives remain well co-ordinated and responsive to emerging needs will be essential to maintaining Europe's competitive edge in AI research. In all, 23 EU Member States have reported 65 initiatives that centre mostly on two main areas: AI R&D funding (24 initiatives) and the creation or expansion of AI research centres (41 initiatives). The scope of these programmes varies considerably: while some governments adopt comprehensive, multi-year investment strategies, others focus on narrower or sector-specific projects. In parallel, many countries are establishing or reinforcing national AI centres and smaller university-led institutes, highlighting diverse pathways for fostering innovation.

EU Member States are strengthening national AI research through large-scale funding programmes

Several EU Member States have rolled out ambitious funding schemes, often spanning several years or strategic phases, to boost AI research and innovation.

In **Belgium**, three concurrent efforts anchor the country's approach. The AI Fund, established under the Federal Public Service Policy and Support, allocates EUR 3 million per year for applied research in priority domains (e.g. health, cybersecurity). Meanwhile, the Flanders AI Research Program, launched in 2019, finances both foundational and industry-driven AI R&D (Flanders AI Research Program, 2024[3]). Additionally, the Research Foundation Flanders invests around EUR 20 million in fundamental AI research and EUR 73 million in AI innovation annually.

In 2017, **Czechia** launched the Operational Programme "Research, Development and Education". It has allocated EUR 86.7 million (CZK 2.19 billion) to its AI R&D programme, which has so far funded 23 AI-related projects. The programme aims to enhance both educational resources and applied research capabilities, thus bridging university-led innovation and industry uptake.

Similarly, **Ireland** supports AI through Research Ireland challenge-based funding under its National Recovery and Resilience Plan (NRRP). With EUR 65 million committed, this multi-stream mechanism has financed 31 AI-related projects crossing eight broad research challenges. Moreover, the country's Collaborative Alliances for Societal Challenges (COALESCE) programme fosters projects targeting societal challenges, including AI.

In **Spain**, the ENIA Chairs invest EUR 16 million (co-funded through the RRF) across 22 chairs. They are centred on topics such as responsible AI, ethics and "green algorithms". In this way, they aim to connect academia, industry and multidisciplinary research teams (Spanish Government, 2024[4]).

France has allocated EUR 73 million over six years, starting in 2023, to its **Priority Research Programme and Equipment (PEPR) on AI. It focuses** on frugal AI, robust distributed systems and solid mathematical underpinnings (CNRS, 2025[5]).

Luxembourg positions AI at the heart of its National Research and Innovation Strategy. It aspires to serve as a "living laboratory" for AI, primarily in personalised healthcare and digital education (Government of Luxembourg, 2020[6]).

The **Netherlands** has launched ROBUST, a ten-year, EUR 45 million consortium to develop trustworthy AI systems, bringing together 54 partners from academia, industry and civil society (RVO, 2023[7]).

Poland uses the decade-long INFOSTRATEG programme to bolster advanced information, telecommunication and mechatronic technologies. Upcoming competitions aim to strengthen Polish AI potential (Government of Poland, 2025[8]).

Portugal provides targeted grants through its R&D Funds for Data Science and AI. It has committed EUR 10 million for public administration-academic collaborations and an additional EUR 2 million for joint work with Google.

Meanwhile, **Sweden** pursues a dual strategy. It hosts the continent-scale Wallenberg AI, Autonomous Systems and Software Program (EUR 560 million until 2031). In addition, through an AI-specific track under Vinnova, it has funnelled about EUR 173 million (SEK 2 billion) into more than 800 AI projects since 2009 (WASP, 2025[9]; Vinnova, 2025[10]).

Targeted, thematic AI research projects gain traction

Beyond broad-based funding programmes, several EU Member States have reported narrower or sector-specific initiatives. Language technologies have emerged as a key area, with countries launching initiatives aimed at strengthening AI capabilities in their respective languages.

In **Bulgaria**, the BgGPT initiative, launched by the Institute for Computer Science, Artificial Intelligence and Technology (INSAIT) in January 2024, is the first project to develop an open-source large language model (LLM) developed for the Bulgarian language (INSAIT, 2024[11]).

In **Denmark**, the **Secure Platform for Developing Transparent Danish Language Models** represents a EUR 2.78 million investment in advancing research-driven language model development (Digitaliseringsministeriet, 2024[12]). Complementing this, the Danish Text Data Must Be Freely Accessible initiative facilitates AI training by opening national archives and public records, embedding Danish language, culture and values into AI applications (Digitaliseringsministeriet, 2024[12]).

In **France**, the national AI strategy supports development of large test databases from national archives for the training of AI models. France also launched an initiative to establish large databases in the French language in October 2024 (Avrin, 2024[13]) and is involved in the European Digital Infrastructure Consortium for Language Technologies.

Greece is involved in EU LLM projects, including the LLMs4EU project and the LLM-Bridge project. In so doing, it aims to extend the capabilities of open LLMs to the Greek language (beyond the existing Meltemi

and Llama-Krikri LLMs) and offer Greek companies, especially Greek small and medium-sized enterprises (SMEs), access to tools and resources to start becoming competitive regarding LLMs.

In **Spain,** the Project for Economic Recovery and Transformation on New Language Economy dedicates EUR 1.1 billion to linguistic corpora and generative AI tools for Spanish and co-official languages (Government of Spain, 2023[14]).

In **Slovenia**, CLARIN.SI supports research communities from humanities, social sciences and other language-related disciplines with language resources and technological solutions for language studies, with the emphasis on Slovene and other South Slavic languages. Several countries reported their participation in the Alliance for Language Technologies – European Digital Infrastructure Consortium (ALT-EDIC, 2025[15]).

Apart from language-based priorities, some countries have also focused on governance aspects; climate, health and manufacturing, and different aspects of technology:

- In **Austria**, the Fostering Austria's Innovative Strength and Research Excellence in Artificial Intelligence (FAIR-AI) project focuses on AI governance and regulatory challenges, addressing risks such as data shifts, cognitive bias and human oversight, in preparation for the EU AI Act (FAIR-AI, 2024[16]).
- Research Ireland Frontiers for the Future Programme advances domain-specific AI research in **Ireland** through 16 active projects, covering climate adaptation, digital health and advanced manufacturing, with grants ranging from EUR 200 000 to EUR 1.5 million. Research Ireland also offers challenge-based funding across eight research challenge streams, with 31 AI-related projects under way at the time of writing.
- **Slovenia** has implemented three AI-focused programmes addressing different technological areas. The Digital Transformation of Robotic Factories of the Future project applies AI and Industry 4.0 principles to optimise manufacturing automation (DIGITOP, 2024[17]). PoVejMo (2023-2026) enhances natural language processing through AI-driven models (ARIS, 2023[18]; CJVT, 2023[19]). The Gravity programme (2024-2027) funds research in AI, semiconductors, language technologies and quantum computing, supporting early-stage technological development (ARIS, 2024[20]).

Member States increasingly consolidate AI expertise through dedicated research centres

Beyond research funding programmes, most EU Member States bolster their AI ecosystems by establishing centres of excellence and research hubs. More than half of Member States reported AI national-level centres to anchor policy and innovation efforts. A few also connect their national AI centres through national networks of excellence. However, cross-border collaboration appears limited. Meanwhile, a growing number of smaller, university-led entities concentrate on specific domains or niches.

More than half of Member States rely on national AI excellence centres to drive strategic AI innovation

More than half of EU Member States reported having established large, government-backed AI institutes as flagships in their national innovation agendas. In **Bulgaria**, INSAIT exemplifies this trend as the first AI research centre in Eastern Europe. It was created in collaboration with the Federal Institute of Technology Zurich) and Swiss Federal Institute of Technology in Lausanne. The centre focuses on generative pre-trained transformer models, deep technology (deep tech) ventures and quantum research, with a ten-year budget of about EUR 92 million (INSAIT, 2025[21]). **Czechia** maintains a comparable focus through its Czech Institute of Informatics, Robotics and Cybernetics, while **Denmark** anchors human-

centric AI development at the Pioneer Centre for Artificial Intelligence (EUR 47 million from 2021 until 2034). Denmark also supports the transfer of research-based knowledge to industry via the Alexandra Institute (Alexandra Instituttet, 2024[22]). The country's newly launched Centre for Artificial Intelligence in Society complements these efforts by offering interdisciplinary research and practical guidance on AI adoption (Digitaliseringsministeriet, 2024[12]).

Other notable examples include **Spain** Neurotech (EUR 200 million over 15 years), a centre bridging neuroscience and brain science with AI (Government of Spain, 2023[14]), and the **Finnish** Centre for Artificial Intelligence, which unites key academic and industrial players under the Research Council of Finland's flagship programme. The Artificial Intelligence National Laboratory (MILAB) co-ordinates multiple AI research initiatives in **Hungary** under a national framework (MILAB, 2024[23]). **Ireland** fosters market-driven AI solutions at the CeADAR technology centre, which also serves as an AI **European** Digital Innovation Hub. The Innovation Center for Artificial Intelligence in the **Netherlands** scales AI expertise across industries (ICAI, 2024[24]), while **Poland** bolsters cyber and administrative AI research at the Artificial Intelligence Security Research Centre and Artificial Intelligence and Data Analysis Centre (NASK, 2023[25]). **Portugal** is set to launch its own Centre of Excellence for AI R&D, aiming to boost overall research capacity. **Sweden** co-ordinates at least 75 AI projects through its Research Institutes of Sweden and the Centre for Applied AI (RISE, 2025[26]; RISE, 2025[27]).

Italy has strengthened its AI research landscape through the Future Artificial Intelligence Research Foundation, a EUR 114.5 million initiative backed by the NRRP, uniting key academic and industry actors. Additionally, Italy has established several AI excellence centres, such as the Italian Institute of Artificial Intelligence for Industry in Turin, the European Laboratory for Learning and Intelligent Systems (ELLIS) in Milan and the Alma Mater Research Institute for Human-Centered Artificial Intelligence in Bologna.

Croatia has notably established the Centre for Artificial Intelligence, a leading institution focused on advancing theoretical AI foundations across multiple domains, including machine learning, deep learning, natural language processing, computer vision, financial analytics, robotics, Internet of Things (IoT), bioinformatics, cybersecurity and recommender systems. **Latvia** has formalised AI expertise consolidation with its National Artificial Intelligence Center, created under the AI Development Law to advance national AI adoption. **Slovenia** is similarly reinforcing AI expertise through its AI Competence Center, a long-term initiative with EUR 2 million in annual funding to support AI research, innovation and SME adoption. Completing this group, the **Slovak Republic** brings academia, business and government together via the Slovak Center for Artificial Intelligence Research (AIslovakIA), pushing forward collaborative AI innovation.

A few EU Member States connect their national AI centres through national networks of excellence

Some EU Member States opt for a network-driven model, pooling multiple institutes under a shared framework to increase synergies at the national level. **Germany** invests EUR 50 million annually in its Network of German Centres of Excellence for AI Research, comprising six institutes: i) the Berlin Institute for the Foundations of Learning and Data (BIFOLD); ii) the German Research Center for Artificial Intelligence (DFKI); iii) the Munich Center for Machine Learning; iv) the Lamarr Institute for Machine Learning and Artificial Intelligence North Rhine-Westphalia (LAMARR); v) the Center for Scalable Data Analytics and Artificial Intelligence Dresden/Leipzig (ScaDS.AI); and vi) the Tübingen AI Centre (TUE.AI) (DFKI, 2024[28]). **Spain** follows a similar approach with AI4ES, a consortium that unites four technology centres: the Technological Center for Research, Development and Innovation in Information and Communication Technologies, the Technological Center for Information and Communication Foundation, Eurecat and Tecnalia, mobilising around 300 researchers focused on data analytics, algorithmic breakthroughs and robotics (AI4ES, 2024[29]). **Ireland** channels public and private resources into the Research Ireland Centres, including Insight, Lero, CONNECT and ADAPT, which collectively receive EUR 230 million in government funding alongside significant industry co-investment.

Table 3.2. AI research centres in EU Member States

EU Member State	AI research centres	Funding
Bulgaria	Institute for Computer Science, Artificial Intelligence and Technology (INSAIT)	EUR 92 million over ten years
Croatia	Centre for Artificial Intelligence (CAI)	Not reported
Czechia	Czech Institute of Informatics, Robotics and Cybernetics	Not reported
Denmark	Pioneer Centre for Artificial Intelligence	EUR 47 million from 2021 to 2034
	Alexandra Institute	Not reported
	Centre for Artificial Intelligence in Society	Approximately EUR 6.8 million (DKK 50.7 million) for 2024-2027
Finland	Finnish Centre for AI (FCAI)	Not reported
France	France's Priority Research Programme and Equipment on Artificial Intelligence (PEPR IA) is co-directed by three leading research institutions: National Institute for Research in Digital Science and Technology (Inria), National Centre for Scientific Research (CNRS), and Alternative Energies and Atomic Energy Commission (CEA).	EUR 73 million over 6 years
Germany	Network of German Centres of Excellence for AI Research (BIFOLD, DFKI, MCML, LAMARR, ScaDS.AI, TUE.AI)	EUR 50 million annually
Greece	Archimedes independent unit focusing on AI, data science and algorithms within "Athena" Research Centre	EUR 21 million (RRF)
Hungary	Artificial Intelligence National Laboratory (MILAB)	Not reported
Ireland	Research Ireland Centres (Insight, Lero, CONNECT, ADAPT)	EUR 230 million + industry co-investment
	CeADAR Technology Centre	Not reported
Italy	Future Artificial Intelligence Research (FAIR) Foundation	EUR 114.5 million
	European Laboratory for Learning and Intelligent Systems (ELLIS)	Not reported
	Italian Institute of Artificial Intelligence for Industry (AI4I)	Not reported
	Alma Mater Research Institute for Human-Centred Artificial Intelligence	Not reported
Latvia	National Center for Artificial Intelligence	Not reported
Netherlands	Innovation Center for Artificial Intelligence (ICAI)	Not reported
Poland	NASK's AI Security Research Centre	Not reported
	Artificial Intelligence & Data Analysis Centre (AIDA)	Not reported
Portugal	Centre of Excellence for AI R&D	Not reported
Slovak Republic	Slovak Center for Artificial Intelligence Research (AIslovakIA)	Not reported
Slovenia	AI Competence Center	EUR 2 million annually
Spain	15 Sectorial Networks of Excellence	EUR 32 million
	Spain Neurotech	EUR 200 million over 15 years
	AI4ES Consortium	Not reported
Sweden	Centre for Applied AI	Not reported

Source: Data reported by EU Member States through the survey and interviews.

Nearly half of EU Member States strengthen their AI ecosystems through university-led and/or specialised research institutes

Smaller-scale initiatives, often embedded in universities or joint academic endeavours, propel AI research in specialised fields. In **Austria**, Clusters of Excellence "Bilateral AI", hosted at Johannes Kepler University Linz and backed with EUR 19.8 million, integrates machine learning with symbolic AI methods (BilateralAI, 2024[30]). **Belgium** supports AI development through a number of prominent institutions. The FARI Institute,

a collaboration between the Université libre de Bruxelles and Vrije Universiteit Brussel, engages 300 interdisciplinary researchers. Meanwhile, UGent.AI at Ghent University explores AI applications in public safety and ethical governance (FARI, 2024[31]; UGent.AI, 2024[32]).

Another flagship initiative in Belgium is **TRAIL (TRusted AI Labs)**, launched in 2020 and now recognised as a strategic innovation initiative by the Walloon government. TRAIL brings together the five French-speaking universities (UCLouvain, UMONS, ULB, ULiège and UNamur), four accredited AI research centres (Cenaero, CETIC, Multitel and Sirris), the training consortium **Numeria** and a range of socio-economic and public actors, including the LIEU network, the Digital Agency, AI4Belgium, Pôle Mécatech, WSL and the Infopôle Cluster TIC. TRAIL fosters cross-sector collaboration to both apply and further develop AI expertise and tools, primarily through publicly and privately funded projects.

Greece has established two initiatives. The Archimedes Unit at the Athena Research Center fosters fundamental AI and data science research. For its part, AI Politeia Lab at the Institute of Informatics and Telecommunications Demokritos, an interdisciplinary research centre, focuses on responsible AI governance (Athena, 2024[33]; IIT Demokritos, 2024[34]).

In addition to the above-mentioned Centre for Artificial Intelligence, **Croatia** has invested in AI-driven research through the Centre for Artificial Intelligence and Cybersecurity at the University of Rijeka (EuroCC, 2025[35]), the Regional Center of Excellence for Robotics (CRTA, 2025[36]) and the Innovation Centre Nikola Tesla (ICENT, 2025[37]), all of which contribute to AI innovation across multiple industries.

In **Finland**, AI Hub Tampere takes an interdisciplinary approach to AI design and deployment, backed by a broad cohort of professors from Tampere University. **Ireland** has expanded its AI research within its Research Ireland Centres Insight, Lero, CONNECT and ADAPT. **Latvia** has further strengthened its AI research ecosystem through the IT Competence Centre project, which supports AI-driven innovations in software security, retail analytics and digital content classification.

In **Malta**, the AI Department and Institute of Digital Games at the University of Malta focus on augmented reality/virtual reality, creative computing and financial technology, leveraging game-based research to pioneer novel AI techniques. That university will also be setting up an AI Research Cluster to promote multidisciplinary AI research.

Poland showcases a cluster of specialised projects: the PLLuM (Polish Large Language Universal Model) consortium (PLLuM, 2025[38]), the ARTIQ-AI Center of Excellence in Artificial Intelligence at AGH University (NCN, 2021[39]) and a generative AI-focused lab at the University of Lodz CaMiNO centre (UL, 2024[40]), each reflecting Poland's growing AI aspirations.

In Sweden, the AI Sweden Edge Learning Lab experiments with decentralised and edge-based AI approaches (AI Sweden, n.d.[41]), while the **Slovak Republic** fosters advanced intelligent technologies at KInIT, an independent, non-profit research institute.

Fund and scale innovative ideas and solutions for AI

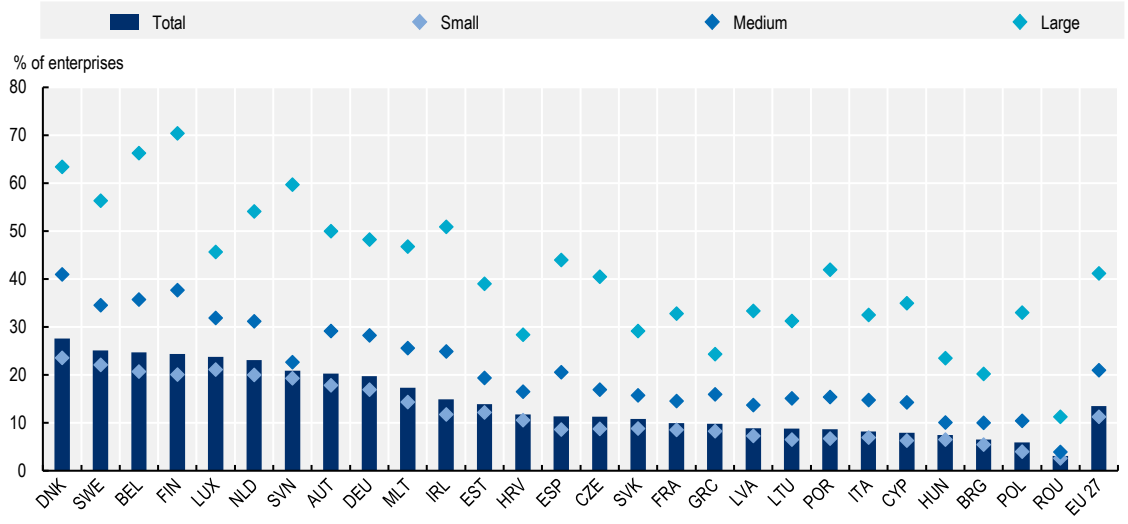
Digital technologies, including AI, can contribute significantly to the competitiveness of the EU economy by enhancing productivity and opening new avenues for value creation. In this context, one key priority of the EU Digital Decade relates to reaching 75% of businesses using digital technologies, including cloud, data analytics and AI, by 2030. Capitalising on its research excellence in AI by enabling innovation and commercialisation on a large scale is a central priority of EU policies. In recent years, a range of initiatives has been launched to support economic actors.

Businesses in the European Union have started to adopt AI technologies, although at varying speeds

In 2024, approximately 13.5% of enterprises in the European Union reported using AI technologies, up from around 8% the previous year (Figure 3.2). Adoption rates vary significantly across countries and within countries. There remains a notable gap between EU "frontrunners" – such as Belgium, Denmark, Finland and Sweden – and other EU Member States, as well as between larger and smaller firms.

Figure 3.2. AI use by businesses in the European Union, by country and firm size, 2024

As a percentage of enterprises with ten or more employees

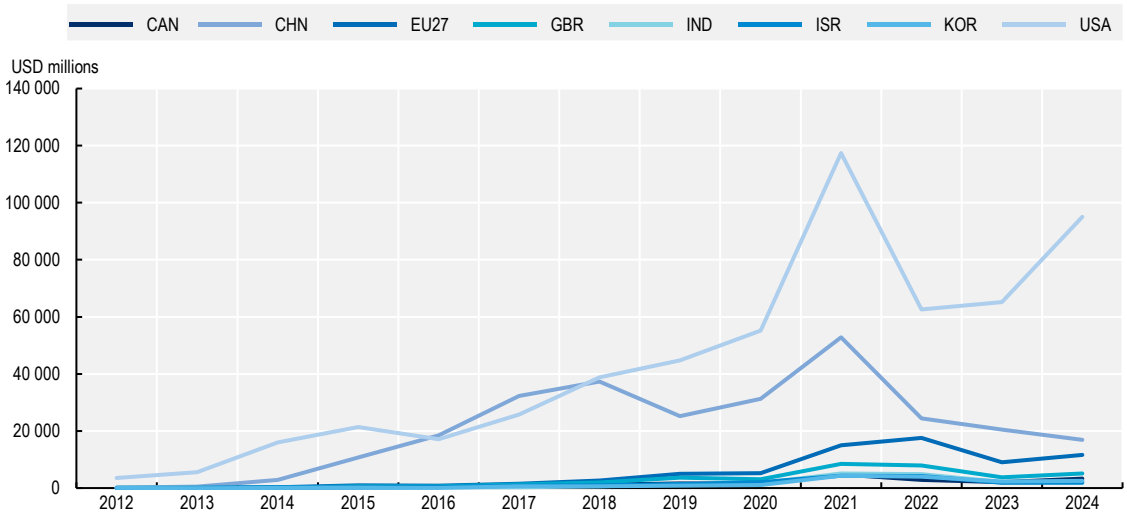


Source: OECD (2025[42]), *Businesses using artificial intelligence (AI)* (indicator), https://data-explorer.oecd.org/s/342.

Attracting investment in EU AI start-ups is crucial for accelerating deployment of advanced AI solutions Between 2013 and 2022, the number of specialised AI companies receiving financing in the United States was 2.5 times higher than in the European Union (French Government, 2023[43]). In 2024, more than 90% of global venture capital (VC) investment in AI, which amounted to approximately EUR 137 billion, was directed towards AI start-ups in the United States (Figure 3.3). In contrast, EU start-ups only attracted EUR 9.15 billion.

In 2024, there were approximately 6 300 AI start-ups in the European Union, of which about 10.6% can be classified as generative AI start-ups. Most of the latter are in Germany (19.9%), France (17.5%), the Netherlands (10.9%) and Sweden (8.2%), with public funding playing "only a minor role" in their development (AI Institute for Europe, 2024[44]). These start-ups primarily focus on developing downstream applications based on foundation models. A smaller proportion work on developing foundation models themselves, and building tools and infrastructure for generative AI models. Access to computational capacity for training their models was identified as a key need for EU start-ups (AI Institute for Europe, 2024[44]).

Figure 3.3. VC investments in AI by country, European Union and selected countries



Source: OECD.AI (2025[45]), *VC Investments in AI by Country* (dataset group), https://oecd.ai/en/data?selectedArea=investments-in-ai-and-data&selectedVisualization=vc-investments-in-ai-by-country.

The EU Coordinated Plan on AI calls upon EU Member States to help develop an ecosystem of excellence in AI; help bring AI innovations into the commercialisation stage; and promote the broad uptake and deployment of AI technologies, notably through the following:

> ***Commit an equal share of funding to testing and experimentation facility (TEF) projects*** *selected by the Commission with the help of independent experts.*
>
> ***Define relevant new priorities for additional TEFs*** *beyond the current sectors of agrifood, manufacturing, healthcare and smart communities. Possible new sectors could be mobility, public administration or green transition.*
>
> ***Take full advantage of the opportunities offered by the RRF****, as well as by Cohesion Policy programmes, to fund more non-EU and European Digital Innovation Hubs ([E]DIHs) and TEFs to bring innovation closer to the market.*
>
> ***Support the creation of local, regional and/or national AI marketplaces for interaction and the exchange of best practice****; and facilitate scale-up across borders through the EU AI-on-demand platform (central AI toolbox and marketplace), EDIHs and Startup Europe.*
>
> ***Support AI start-ups and scale-ups in accessing finance for their growth, as well as support SMEs in their digital transition in adopting AI technologies****. Provided that the RRF objectives and conditions are met, Member States can make use of RRF funding to set up investment in the form of financial instruments (e.g. guarantees, loans, equity and venture capital instruments and the setting up of dedicated investment vehicles). Member States also have the possibility to contribute up to 4 % of their recovery and resilience plans" total allocation to their compartment of InvestEU.*

This section discusses the actions implemented by EU Member States to fund and scale innovative ideas and solutions for AI, in line with the EU Coordinated Plan on AI. Table 3.3 summarises key findings from the survey and complementary interviews.

Table 3.3. Fund and scale innovative ideas and solutions for AI: Key findings

Dimension of survey	Description	Key findings
Testing and experimentation facilities (TEFs)	Facilities providing structured environments for AI testing, experimentation and regulatory compliance	Nearly half of EU Member States report initiatives supporting TEFs, mainly in EC-prioritised sectors (agrifood, healthcare, manufacturing, smart cities and communities). Some have launched cross-cutting or broader experimentation facilities.
European Digital Innovation Hubs (EDIHs)	Hubs providing support to SMEs in AI adoption through services like testbeds, training and technical expertise	EDIHs are active in all EU Member States, offering AI services for companies and public organisations including testing, training and innovation matchmaking. Several hubs focus exclusively on AI adoption support.
Support for AI adoption in SMEs	Public programmes helping SMEs adopt AI, often through financial support, expert guidance and services offered by EDIHs	Two-thirds of EU Member States support SME AI adoption through national or regional programmes, often embedded in broader digitalisation strategies and delivered via grants, expert advice or EDIH services.
Support for AI start-ups and scale-ups	Initiatives to improve access to capital, infrastructure and commercialisation	Around two-thirds of EU Member States support AI start-ups and scale-ups, although most initiatives are part of broader innovation or entrepreneurship frameworks and not specific to AI. A growing number of programmes target AI or deep tech ventures through venture capital, incubators and accelerators.

EDIHs offer services to support AI adoption in SMEs

Co-funded under the Digital Europe Programme and national budgets, EDIHs (Box 3.1) serve as one-stop-shops offering access to technical expertise, testbeds, training and support services for digital and AI transformation. Their role is particularly relevant in helping SMEs overcome barriers to technology adoption, including limited resources, skills shortages and lack of awareness about the potential of AI.

Many EDIHs deliver AI-specific services such as testing facilities for new solutions, guidance on regulatory and ethical considerations, and matchmaking with technology providers. In **Austria**, for example, the AI5Production hub provides AI-driven solutions for SMEs in manufacturing and healthcare, with services ranging from digital readiness assessments to support for project implementation. In **Finland**, the Finnish AI Region EDIH focuses exclusively on AI-powered services for regional SMEs.

In some countries, EDIHs are closely integrated with regional innovation ecosystems. Flanders AI EDIH in **Belgium** delivers an integrated service ecosystem to facilitate AI testing, upskilling, funding access and innovation matchmaking. In **Wallonia**, both EDIH WalHub (industry 4.0) and eDIH-CONNECT (construction) offer specific services to help companies see the benefits of AI and support them in its adoption. In **Brussels**, sustAIn.brussels supports AI-driven innovation in the Brussels-Capital Region, while Mittelstand-Digital Innovation Hubs in **Germany** offer tailored support for AI implementation, including in energy efficiency and resource management. The Green AI Hub Mittelstand specifically supports SMEs in using AI to improve energy and resource efficiency. These hubs are part of the dual approach in Germany that combines EDIH participation with a national infrastructure to support SME digitalisation and AI readiness.

Several countries have developed networks of EDIHs. Networks of EDIHs in **Greece**, **Portugal** and **Romania** have a clear focus on AI, often complemented by other facilities such as national test beds and regulatory sandboxes. The **Netherlands** hosts six EDIHs and seven regional AI hubs, supporting AI experimentation and adoption across diverse sectors. CROBOHUB++ and EDIH Adria in **Croatia** provide AI and high-performance computing (HPC) support for business processes, cybersecurity, health, tourism and sustainable development. **Romania** has developed a network of seven EDIHs, five of which (eDIH-DIZ, TDIH, DIH4Society, FIT EDIH, CiTyInnoHub) have an explicit AI focus, offering SMEs tools for AI adoption, testing and scaling. **Greece** similarly hosts seven EDIHs, with thematic focuses including AI

applications in energy, environment, culture and tourism. In particular, the ahedd Digital Innovation Hub provides AI testbeds and sandboxes for SMEs and public entities.

In **Hungary**, the national AI EDIH fosters AI-driven innovation across SMEs, start-ups and public organisations and is complemented by technology vouchers to support uptake. In **Portugal**, the ATTRACT DIH supports AI and HPC adoption by SMEs. DIH **Slovenia** and the Smart, Resilient and Sustainable Communities EDIH both offer financing and testing services to AI-focused start-ups and SMEs. In **Lithuania**, EDIH4IAE.LT, EDIH VILNIUS and DI4 LITHUANIAN ID integrate AI capabilities across manufacturing and public services.

Box 3.1. European Digital Innovation Hubs (EDIHs)

What are EDIHs?

EDIHs are regional support structures co-funded by the Digital Europe Programme and national governments. They function as one-stop-shops to help companies and public organisations harness digital technologies to enhance innovation, competitiveness and resilience. Many have a strong AI focus, either sectoral (e.g. manufacturing, health, energy) or thematic (e.g. trustworthy AI). EDIHs are distributed across Europe, ensuring broad territorial coverage. Their locations reflect strategic choices to leverage regional strengths and close digitalisation gaps. As of 2025, over 150 EDIHs are active across all EU Member States.

Key services offered

EDIHs tailor their support to regional needs, typically offering:

- test-before-invest services (e.g. AI testbeds and demonstration environments)
- skills development and training in AI, digitalisation and data use
- support to find investments and navigate funding programmes
- innovation ecosystem networking, matchmaking with technology providers, start-ups and research institutions
- regulatory guidance (especially on trustworthy AI and data protection)

Sources: EC (2025[46]), "European Digital Innovation Hubs Network", https://european-digital-innovation-hubs.ec.europa.eu/home; EC (2025[47]), "European Digital Innovation Hubs", https://digital-strategy.ec.europa.eu/en/policies/edihs.

Nearly half of EU Member States reported initiatives related to AI testing and experimentation, with variations in focus and scope

Beyond EDIHs, several countries have specific TEFs to aid SMEs in evaluating and adopting AI technologies. By providing structured environments to develop, evaluate and refine AI systems, these facilities lower barriers to adoption, support innovation and facilitate compliance with emerging regulatory frameworks such as the EU AI Act. In most cases, initiatives reported by EU Member States focus on TEFs in the areas selected by the European Commission (agrifood, healthcare, manufacturing, smart cities and communities) (EC, 2024[48]); TEF initiatives in other sectors were seldom reported. However, there are several examples of cross-cutting AI testing and experimentation. While most countries report active experimentation initiatives, budget allocations for testing infrastructures are often difficult to isolate, especially where facilities are part of larger programmes or funded through mixed sources (e.g. RRF, Horizon Europe).

AI testing and experimentation

France has established one of the most comprehensive ecosystems, co-ordinating two major EU-funded TEFs (AI-MATTERS and PREVAIL). It is also launching a national evaluation laboratory at the National Metrology and Testing Laboratory. These efforts are part of a broader suite of activities under the Confiance.ai programme, with total funding exceeding EUR 100 million, including contributions from the RRF. **Germany** has launched the KIPITZ AI platform to support experimentation with LLMs in public administration. This will contribute to development of secure and scalable infrastructure for AI deployment. In **Finland**, Tampere City Lab (Tampere AI), which is part of the EU-wide CitCom.ai initiative, combines virtual and physical testbeds for smart city and AI-powered solutions. It also supports development and testing of AI technologies in real-world urban environments. This is complemented by a call for projects focused on testing, experimentation and research to support SMEs and the country's export sector (supported through EU funding). **Portugal** has built a dedicated National Test Beds Network to complement its Digital Innovation Hubs. This aims at scaling AI applications through hands-on testing. **Spain** has adopted a networked approach through its RETECH IA initiative. This includes 13 flagship projects with a combined endowment of EUR 345.8 million, mobilising both RRF and regional funds. In **Austria**, the Automated Transport Innovation Labs provide testing environments for autonomous vehicle technologies. In **Sweden**, the Edge Learning Lab provides a testing environment enabling researchers to experiment with decentralised and edge learning (AI Sweden, n.d.[41]).

Testing infrastructures in the health sector

In the health sector, testing infrastructures are particularly prominent. **Czechia** hosts a national node of the TEF-Health facility at Masaryk University, enabling collaborative testing of health AI and robotics. The **Slovak Republic** has also joined the TEF-Health network with a focus on medical imaging, aligning national priorities with EU-level goals. **Greece** and **Ireland** have established AI testbeds and sandboxes, such as those within the ahedd Digital Innovation Hub.

Embedding testing within broader programmes

While some EU Member States have developed standalone infrastructures, others embed testing activities within broader programmes. For example, the **Netherlands** embeds AI projects in broader testing and experimentation settings (e.g. SURF). **Slovenia** facilitates SME access to testbeds as part of its service portfolio through the Smart, Resilient and Sustainable Communities EDIH, and **Belgium** promotes proof-of-concept development as part of its national AI strategy.

AI regulatory sandboxes

Some EU Member States have also started engaging in regulatory experimentation pertaining to AI. In December 2024, after established the regulatory foundation, **Spain** launched a call for expressions to participate in a pilot of the first AI regulatory sandbox. This initiative seeks to bring competent authorities close to companies that develop AI to define best practices and inform implementation of the EU AI Act (EC, 2022[49]). The pilot aims at selecting 12 high-risk AI systems from different sectors and provide technical guidance and expert support to facilitate compliance with AI Act requirements. This call focuses on SME and start-ups, which are expected to encounter more difficulties regarding compliance.

As part of its digitalisation strategy, **Denmark** has opened a sandbox for testing AI solutions since 2024 to public and private organisations. It notably aims to provide guidance regarding General Data Protection Regulation compliance. Over time, it is expected to also address compliance with the AI Act.

The 2024 refresh of the national AI strategy in **Ireland** includes development of a national campaign to raise awareness among SMEs of the benefits of adopting AI and available support. It also foresees

establishment of an AI regulatory sandbox to foster innovation and regulatory learning and provide legal certainty for investors.

EU Member States privilege broad digitalisation promotion programmes to encourage domestic businesses to adopt AI

Some countries offer financial support (grants and consulting) and voucher programmes for SMEs to explore and implement AI solutions. Other initiatives aim at facilitating access to resources through advice and "matchmaking" between research and firms, between start-ups and firms and among firms with potentially complementary needs and objectives. Approximately two of every three EU Member States reported at least one initiative to promote AI adoption by domestic businesses. However, in most cases these tend to go beyond AI proper and encompass digitalisation more broadly. These measures, combined with support from EDIHs and testing facilities, aim to lower the barriers for SMEs to integrate AI into their operations and enhance their competitiveness.

Lowering AI barriers for SMEs

Denmark provides grants to SMEs, mainly to buy private advice on identifying digitalisation potential (including through an AI-dedicated strand) or on implementation. Other support measures include subsidies for investments, skills and management development and guidance on digitalisation, although with a broader focus than AI. In addition, since May 2023, the Export and Investment Fund of Denmark helps smaller Danish companies access financing for digitalisation.

In **Slovenia**, the Ministry of the Economy, Tourism and Sport, in co-operation with the Slovene Enterprise Fund, offers grants up to EUR 100 000 for digital transformation of SMEs. These include funds for use of advanced technologies, including AI.

In **Greece**, the Digital Transformation of SMEs initiative supports investments for development of new products and services in the information technology (IT) and communications sector. It covers costs related to purchasing software, training staff and integrating new digital solutions, including AI, through vouchers.

Latvia also provides funding for companies to buy digitisation and technology services through its Digital Vouchers to SMEs programme. Likewise, **Hungary** is also planning to launch a voucher programme. Grants will cover 60-80% of costs faced by up to 200 SMEs seeking to implement AI solutions. **Hungary**'s Modern Enterprises Program, which is implemented by the Hungarian Chamber of Commerce and Industry, assists SMEs in their digital transformation by providing resources and guidance on digital tools and technologies, including AI. It offers personalised IT audits, access to accredited IT suppliers, information on funding opportunities, thematic events and a digital knowledge repository (Modern Vállalkozások Programja, 2024[50]).

In **Italy**, the EUR 4.41 billion Transition Plan 5.0 provides financial incentives for SMEs and start-ups to integrate AI, IoT, collaborative robotics, automation, big data, blockchain and cloud technologies into their operations (MIMIT, 2024[51]). **Spain** has large digitalisation support programmes for companies, some of them specific to SMEs (Digital Kit, Kit Consulting) (red.es, 2025[52]).

Despite the general preference for broader digitalisation support programmes, EU Member States also reported AI-specific ones. In **Belgium**, Start IA provides 45 hours of support to companies by an AI expert. The goal of Start IA is to identify, based on the company's activity and data, potential projects where AI technologies can add value (Digital Wallonia, 2024[53]). The Brussels-Capital Region offers "Start AI" innovation vouchers (up to EUR 10 000) to SMEs for AI experimentation with research centres, mirroring similar digital voucher programmes in other EU Member States.

Connecting entrepreneurs with experts

Other EU Member States connect entrepreneurs with expert consultants. In **France**, the AI Booster support helps entrepreneurs work with experts to discover appropriate AI solutions and initial operational deployment (Francenum, 2024[54]). In **Germany**, the AI for SMEs Grants (KI4KMU) support innovative AI projects led by SMEs in partnership with universities and start-ups. This programme encourages SMEs to explore advanced AI solutions in areas such as automated decision making, privacy-by-design and data engineering, with a focus on industry-specific applications like renewable energy, mobility and manufacturing (BMBF, 2020[55]). In 2024, **Luxembourg** enhanced Fit 4 Digital, a digitalisation support programme for SMEs, to focus on AI-specific measures. It enables businesses to collaborate with an experienced AI consultant who will help identify challenges, set objectives and prioritise development actions (LuxInnovation, 2024[56]).

Promoting knowledge transfer also features prominently in the set of measures adopted by EU Member States. In **Denmark**, DigitalLead serves as a hub for digital innovation by bringing together businesses, entrepreneurs and knowledge institutions. In **Germany**, the National Initiative for AI and Data Economy (Mission KI) connects AI start-ups and SMEs by identifying the specific innovation needs of SMEs. The initiative works with partners to match them with suitable AI developers. In **Poland**, AI4MSP, an online tool administered by the Polish Agency for Enterprise Development, connects firms looking for AI solutions with providers of AI solutions (Government of Poland, 2024[57]). **Spain**'s ENIA Chairs programme (Spanish Government, 2024[4]) aims at promoting multidisciplinary AI research leading to projects that can be transferred to industry. It also fosters knowledge transfer between universities and companies in areas including health, sustainability and the data economy.

Accelerating AI innovation in domestic firms

Several EU Member States have signalled an increasingly strong focus on generative AI in their emerging initiatives to support domestic AI firms. In **Finland**, Business Finland's campaign on generative AI aims at accelerating generative AI-driven innovation for SMEs through research-based proof-of-concept projects. **France** launched calls for proposals to accelerate use of generative AI in the economy and on accessible digital commons across the generative AI value (BPI France, 2024[58]). In **Germany**, the Generative AI for SMEs programme aims to support the effective adoption of generative AI in businesses by showcasing practical use cases. It is designed to address the unique needs and opportunities of SMEs.

Enhancing the AI skills and regulatory preparedness of domestic firms are important features in the strategies of several EU Member States

Several EU Member States are working to enhance the AI skills and regulatory preparedness of domestic firms. In **Austria**, embrAIsme (2024) is an Interreg Europe project co-financed by the Federal Chancellery. It aims to encourage SMEs to take up AI through raising awareness of AI and the importance of related skills; facilitating access to funding; and building tools to support compliance of SMEs (aws, 2024[59]). Furthermore, the AI5Production EDIH focuses on AI. Comprising 16 partner institutions in Vienna and Upper Austria, it offers manufacturing companies comprehensive support with digitalisation. Companies with up to 2 999 employees can access its services free of charge. The initiative Fostering Austria's Innovative Strength and Research Excellence in Artificial Intelligence (FAIR-AI) supports Austrian firms to implement the EU AI Act. These include technical issues like data shifts in dynamic environments; managerial obstacles such as high costs and the need for skilled staff; and socio-technical factors like raising risk awareness and mitigating cognitive biases in AI-assisted decisions. The project aims to bridge the gap between regulatory requirements and practical application (FAIR-AI, 2024[16]). Similarly, Hubs for Tomorrow in **Germany** promotes skills and AI adoption among firms (Zukunftszentren, 2024[60]). In **Spain**, the Digital Generation SMEs programme aims to provide SME employees with the tools and knowledge for the digital transformation of their companies. In **Croatia**, the AI Center Lipik is a dedicated initiative

promoting AI education and entrepreneurship. This includes through a start-up school, which combines theoretical training with hands-on mentoring to support business development in the AI sector.

Around two-thirds of EU Member States report initiatives to help start-ups and scale-ups access finance, although not exclusively for AI

Several EU Member States have a wide range of initiatives to support AI start-ups and scale-ups. Many assist through EDIHs, which offer services such as mentoring, infrastructure access, training and guidance on securing investment. While some initiatives are AI-specific, most measures to support access to finance for start-ups are embedded in broader innovation and entrepreneurship programmes that include AI as one of several focus areas.

Venture capital initiatives

A significant number of countries facilitate access to finance through national VC initiatives or public funding instruments not limited to AI but inclusive of AI start-ups. In **Greece**, EquiFund and EquiFund II provide equity financing for start-ups, from seed to scale-up stages. EquiFund II manages a EUR 200 million fund-of-funds to stimulate innovation. In the **Netherlands,** Invest-NL provides equity and debt financing to companies advancing deep tech solutions, including AI, targeting SMEs. In **Poland,** PFR Ventures of the Polish Development Fund (PFR) channels VC investment into innovative and deep tech companies, including AI start-ups (PFR Ventures, 2025[61]). **Spain** supports high-potential digital and AI companies through large-scale initiatives including the Next Tech Fund (EUR 4 billion). In **Italy,** the Digital Transition Fund strengthens the national innovation ecosystem through direct and indirect VC investments. It focuses on emerging technologies, including AI. In **Slovenia**, the Early-Stage Innovation Fund offers equity financing for start-ups that contribute to the green and digital transitions. **Sweden** has a comprehensive innovation funding ecosystem, combining grants, soft loans and equity-based support.

Early-stage support to drive innovation

Many EU Member States also provide early-stage support to help launch innovation-driven businesses. **Luxembourg** supports AI and digital start-ups through the Digital Tech Fund, a seed fund launched as part of the Digital Luxembourg initiative. In **Malta**, the TAKEOFF Seed Fund Award provides grants ranging from EUR 2 500 to EUR 25 000 to help researchers and entrepreneurs develop their ideas, while the Start-up Finance programme offers repayable advances to innovative small businesses and academic AI projects. In **Slovenia**, Start-up P2 subsidies – managed by the Ministry of the Economy, Tourism and Sport – help launch innovation-driven businesses with a focus on commercialisation. Meanwhile, the SID Bank offers additional equity financing for start-ups and scale-ups. The Innovative Starters Award in **Belgium** plays a similar role in scaling early-stage companies through strategic R&D funding.

Targeted programmes for AI or deep tech start-ups

Beyond general financial support to start-ups, many EU Member States have developed targeted programmes focused on AI or deep tech start-ups. In **Austria,** the Data Intelligence Offensive promotes innovative AI ideas and offers technical and financial support for start-ups and SMEs. In **Belgium**, Tremplin IA helps start-ups explore AI applications and develop proof-of-concept projects. Meanwhile, Innoviris offers funding for applied R&D, strategic AI initiatives and validation activities. The Innovative Starters Award, for example, grants up to EUR 500 000 over three years. The AI Cluster in **Bulgaria** runs specialised programmes offering technical guidance, professional development and access to AI infrastructure, linking AI companies with research institutions. In **Czechia,** the AI Hub, launched by CzechInvest in 2022, funds AI start-ups in sectors like industry, healthcare and gaming. At the same time, the Technology Incubation project aims to support around 250 start-ups by 2025, earmarking a portion of

its EUR 27 million budget for AI. In **Germany,** Mission KI supports PhD students and postdoctoral researchers in transforming their AI research into start-ups through the AI Founder Fellowship. It connects AI developers with SMEs in need of AI solutions. In **Lithuania**, the Startup Lithuania Accelerator provides start-up services, with 30% of participants working in AI. Meanwhile, additional RRF and EU Investment Framework funding targets AI innovation in regional start-ups and spin-offs. The AiNed programme in the **Netherlands**, funded by the National Growth Fund, promotes AI adoption by supporting research grants, innovation labs and start-up development.

Public-private and research-driven platforms

Public-private and research-driven platforms are also playing a crucial role in AI start-up development by fostering collaboration across academia, industry and government. In **Finland**, the 6G Bridge and Data Economy programmes collectively offer over EUR 260 million to support data-driven and AI-based business models, encouraging start-ups to commercialise emerging technologies. In **Poland,** Start in Poland acceleration programmes support accelerators, which are required to select at least 25% of start-ups working in areas like AI. The Startup hub portal in **Portugal** connects start-ups with investors, accelerators and incubators, serving as a gateway to national and EU support programmes (Startup Portugal, 2020[62]). In **Bulgaria**, Startup Ecosystem support provides entrepreneurs – particularly in the fields of innovation and technology – a strong emphasis on AI, focusing on improving access to VC and fostering a more effective policy framework for entrepreneurship**.**

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4 Ensuring AI technologies work for people

The European Union Coordinated Plan on Artificial Intelligence is a strategic initiative developed by the European Commission and EU Member States to promote development, deployment and use of AI technologies across the European Union. Within this framework, this chapter looks at efforts to ensure that AI technologies work for people. It reflects first on how EU Member States are nurturing talent and improving the supply of skills to support a vibrant AI ecosystem. It then examines measures to equip people with the capabilities needed to benefit from AI technologies. It also reviews efforts to enhance AI-related skills in primary and secondary education, as well as structured AI programmes in academia. Finally, the chapter looks at AI-specific initiatives to promote broader participation in AI-related fields, including digital upskilling, and analyses measures to attract AI talent from academia and industry.

Introduction

The EU Coordinated Plan on AI is a strategic initiative to promote development, deployment and use of AI technologies across the European Union. It represents a joint commitment between the European Commission and EU Member States to maximise the impact of investments in AI, foster synergies and encourage co-operation across the European Union. The plan outlines a series of concrete actions to facilitate investment decisions, aligning AI policy in the European Union to remove fragmentation. It also aims to contribute to strengthening the global position of the European Union regarding the development and adoption of human centric, sustainable, secure, inclusive and trustworthy AI technologies and applications.

Within this framework, this chapter looks at efforts to ensure that AI technologies work for people. It reflects first on how EU Member States are nurturing talent and improving the supply of skills to support a vibrant AI ecosystem. It then examines measures to equip people with the capabilities needed to benefit from AI technologies. It also reviews efforts to enhance AI-related skills in primary and secondary education, as well as structured AI programmes in academia. Finally, the chapter looks at AI-specific initiatives to promote broader participation in AI-related fields, including digital upskilling, and analyses measures to attract AI talent from academia and industry.

Nurture talent and improve the supply of skills to enable a thriving AI ecosystem

The rapid advancement of AI is transforming industries and reshaping national economies. While AI holds significant potential to boost productivity and drive technological innovation, it also presents substantial challenges, particularly in disrupting traditional job roles and creating an increasing need for new skills.

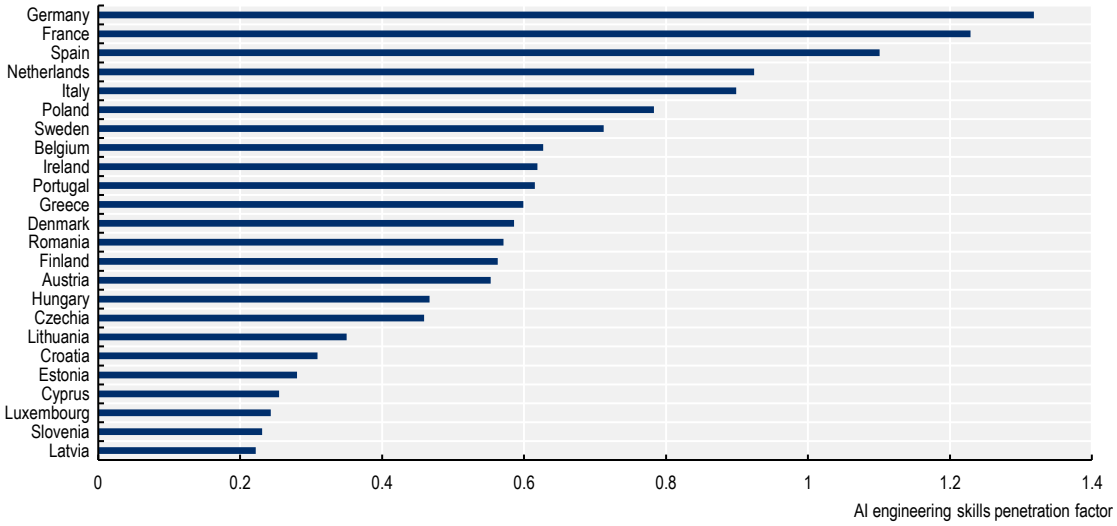
For most professions, AI is reshaping job roles rather than replacing them entirely. As AI technologies are integrated into sectors such as manufacturing, healthcare and finance, many job functions are evolving to incorporate AI-driven tools. In customer service, for instance, workers are now using AI-powered chatbots to manage client inquiries, while in manufacturing, employees are engaging with automated systems to improve operational efficiency (OECD, 2024[1]).

AI also creates new job opportunities, particularly in fields requiring advanced technical expertise. As demand for AI technologies grows, there is a heightened need for professionals skilled in machine learning, programming or data science. The challenge, however, lies in ensuring the workforce is prepared to fill these positions (OECD, 2024[1]).

Upskilling and reskilling across the EU workforce are key to addressing this challenge. Ensuring a strong foundation in AI from early education in primary schools through to higher education will be essential for preparing the next generation of workers. Moreover, lifelong learning and adaptive training programmes can help workers transition into new roles and maintain their relevance in a rapidly changing job market (OECD, 2024[2]).

There are significant disparities in AI skills penetration across countries (Figure 4.1). Among EU Member States, Germany and France stand out, respectively ranking third and seventh globally. Other countries such as Greece, Italy, the Netherlands and Spain also surpass the global average. However, most other EU countries fall below this benchmark. While some EU Member States are emerging as AI talent hubs, AI skills penetration in several states remains below global average. Most EU Member States are net attractors of AI talent, attracting more skilled professionals than they lose. However, countries such as Greece, Hungary and Italy face a net outflow of AI expertise.

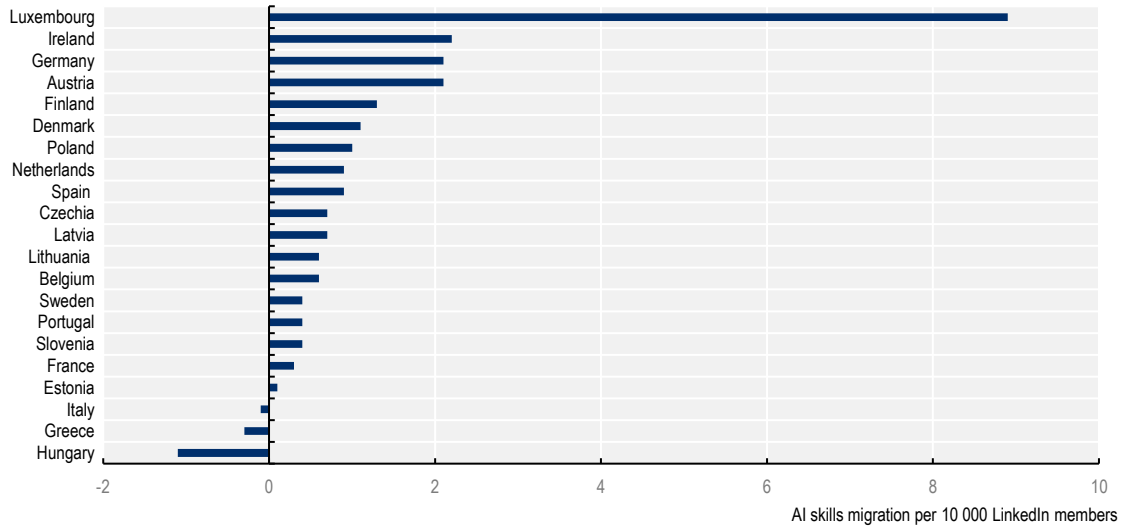
Figure 4.1. AI skills penetration by EU Member State, 2024



Note: This chart shows the prevalence of workers with AI skills – as self-reported by LinkedIn members from 2016-2024 – by country and against a global average benchmark. An AI skills penetration of 1.5 means that workers in that country are 1.5 times more likely to report AI skills than workers in the benchmark. Please see OECD.AI (2025[3]) for more information.
Source: OECD.AI (2025[4]), *Cross-Country AI Skills Penetration* (dataset group), https://oecd.ai/en/data?selectedArea=ai-jobs-and-skills&selectedVisualization=cross-country-ai-skills-penetration.

The EU Coordinated Plan on Artificial Intelligence, since its inception in 2018, has prioritised the persistent ICT and AI skills gap as a critical factor for fostering AI development and uptake across EU Member States (EC, 2018[5]). Recognising that a digitally skilled workforce is essential for leveraging the potential of AI, the plan calls for equipping citizens with broad computing skills, while nurturing specialised AI expertise in fields such as data modelling, architecture and semantics. The aim is to maintain the European Union's competitive edge in AI research and innovation, while ensuring widespread access to AI benefits and preventing workforce polarisation. The 2021 update to the plan reinforced this vision, emphasising the need for lifelong learning and formal education reforms to cultivate digital and AI-specific skills (EC, 2021[6]).

Figure 4.2. Between-country AI skills migration, 2024



Note: This chart displays the net migration flows of LinkedIn members with AI skills from 2019 to 2024. The size of the dark blue bars indicates the magnitude of a country's AI talent gains/losses, respectively. The chart represents an average from 2019 to 2024 for a selection of countries with 100 000 LinkedIn members or more. Migration flows are normalised according to LinkedIn membership in the country of interest. Data downloads provide a snapshot in time. Caution is advised when comparing different versions of the data, as the AI-related concepts identified by the machine-learning algorithm may evolve over time. Please see OECD.AI (2025[3]) for more information.
Source: OECD.AI (2025[7]), *Between-country AI Skills Migration*, (dataset group), https://oecd.ai/en/data?selectedArea=ai-jobs-and-skills&selectedVisualization=between-country-ai-skills-migration; data from LinkedIn Economic Graph, last updated 2025-04-07.

The plan outlines several key actions for Member States to address skills gaps and prepare their workforces for AI-driven transformations:

> ***Refine and implement the skills dimension*** *in their national AI strategies, in collaboration with social partners, e.g. to:*
>
> *– promote the development of computational thinking of pupils, students and educators in formal, informal and non-formal education at all levels and support dedicated initiatives that encourage young people to choose AI subjects and related fields, such as robotics, as a career;*
>
> *– create outreach programmes for teachers on including AI in school, both in ICT skills and from a broader perspective;*
>
> *– increase the availability of training in AI, also by financing AI modules in humanities and social science master programmes, lifelong learning activities, training of judges, lawyers and public officials, as well as reskilling people from nontechnical backgrounds in the basics of AI and the implications of it for their field of work; and*
>
> *– test, assess and, if successful, support the implementation of educational AI technologies in primary and secondary education to facilitate individual learning requirements (e.g. cognitive, AI-based tutoring);*
>
> ***Exchange best practices on how to integrate AI into general education and other specialised programmes*** *(such as healthcare, law, social sciences, business), and on promoting both broad and specialised knowledge on AI in lifelong learning;*
>
> *Take measures and exchange best practices to increase inclusion and diversity, i.e. to facilitate balanced AI teams and attract talent in AI education, especially postgraduate studies, and training, as well as development of AI technologies; and*
>
> *Make the best of the* ***unique opportunity provided by the RRF to finance ambitious upskilling and reskilling initiatives*** *as mentioned above.*

This section discusses the actions by EU Member States to nurture talent and improve the supply of skills to enable a thriving AI ecosystem, in line with the EU Coordinated Plan on AI. Table 4.1 summarises key findings from the survey and complementary interviews.

Table 4.1. Ensure AI technologies work for people: Key findings

Dimension of survey	Description	Key findings
AI-related skills in primary and secondary education	Measures to promote digital literacy and introduce AI-specific content, tools and teacher training in schools	Most EU Member States have digital literacy programmes that may include AI elements. AI-specific initiatives exist in a smaller number of countries. Several EU Member States report AI-focused teacher training.
Structured AI programmes in higher education	Creation and expansion of AI-related degree programmes, especially at master's and doctoral levels	Some EU Member States report initiatives to create or expand graduate and doctoral-level AI programmes. However, national-level monitoring of AI courses and numbers of graduates is not systematic.
Interdisciplinary AI education	Integration of AI into non-information and communication technology (ICT) disciplines at universities and research centres	A growing number of initiatives aim to broaden the reach of AI into fields such as humanities, business and governance. 14 interdisciplinary initiatives were reported across 12 EU Member States.
Inclusion and diversity in AI	Initiatives to foster gender equality and digital inclusion in AI education and training	One-third of EU Member States have launched AI-relevant inclusion initiatives, but only a few of them are AI-specific.
Workforce upskilling and reskilling	National and sectoral programmes to develop digital and AI-specific competencies among workers	More than half of EU Member States have national digital upskilling strategies that include AI elements. Several countries report dedicated AI workforce training. Continuous learning options are expanding.
AI talent attraction and retention	Programmes to attract and retain AI talent in academia and industry	Most initiatives focus on attracting researchers and doctoral candidates. Only one country reported a structured initiative to attract private sector AI professionals.

Nearly all EU Member States have introduced measures to boost AI skills, equipping people with the capabilities needed to benefit from AI technologies

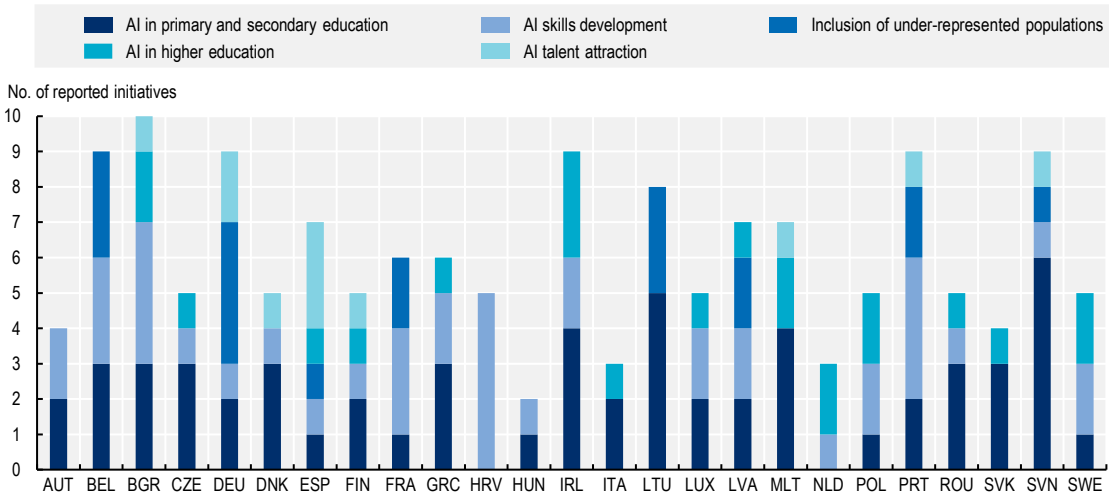
Twenty-five EU Member States reported 154 measures to boost AI skills (Table 4.2). Most focus on AI uptake in primary and secondary education, followed by support for adult upskilling and reskilling (broad AI skills development). Meanwhile, higher education programmes and policies to promote broader participation in development and use AI are also emerging, although they remain fewer in number. Finally, talent attraction stands out as the least common focus, especially outside academia, indicating room for further efforts to draw private sector AI professionals. Co-ordinating these various endeavours will be essential to ensuring the EU workforce can adapt to AI-driven changes and support the region's digital competitiveness over the long term.

Table 4.2. Overview of measures categorised as "Ensure AI technologies work for people"

Target group	Type of initiative	Initiative count
Students and teachers in primary and secondary education	Fostering broader digital literacy (initiatives may include AI but are not AI -specific, both for teachers and students)	26 (from 15 Member States)
	Targeted integration of AI into classrooms	8 (from 8 Member States)
	AI-specific training and upskilling of teachers	12 (from 11 Member States)
	AI competitions and challenges	4 (from 4 Member States)
	Experimental pilot projects	6 (from 6 Member States)
	Guidelines and recommendations	5 (from 5 Member States)
Students in higher education	Enhancing AI-specific programmes at universities	7 (from 7 Member States)
	Initiatives to foster interdisciplinary approaches in AI study programmes	15 (from 12 Member States)
General workforce	Fostering digital skills in the workforce more broadly	24 (from 15 Member States)
	Fostering AI skills in the workforce specifically	15 (from 12 Member States)
	Forecasting digital and AI-related labour demands	4 (from 4 Member States)
Foreign talent	Attracting (international) AI research and academic talent	10 (from 7 Member States)
	Attracting AI talent outside of academia	1 (from 1 Member State)
Women	Increasing women's participation in AI specifically	3 (from 3 Member States)
	Increasing women's participation in STEM more broadly	6 (from 4 Member States)
Other groups, including older people	Other initiatives	10 (from 7 Member States)

Source: Data reported by EU Member States through the survey and interviews.

Figure 4.3. Initiatives to ensure AI technologies work for people



Source: Data reported by EU Member States through the survey and interviews.

Efforts of EU Member States to enhance AI-related skills in primary and secondary education focus on digital literacy, while AI-specific initiatives remain less common

EU Member States are taking diverse approaches to integrating AI into primary and secondary education. While most initiatives focus on enhancing digital literacy, some countries are introducing AI-specific curricula, teacher training and pilot programmes. Additionally, a few governments have begun to develop guidelines and recommendations to ensure the effective integration of AI into schools.

Fostering broader digital literacy, which may include AI-related components, is a policy priority for most EU Member States

More than half of EU Member States (14 of 27) have introduced digital literacy programmes in primary or secondary education that may include AI-related elements but are not AI-specific.

In **Belgium**, three initiatives stand out: Digital Wallonia 4 Edu introduces coding and robotics into school activities (Digital Wallonia, 2024[8]); e-classes provides interactive content and teacher training on the potential impact of AI (Fédération Wallonie-Bruxelles, 2023[9]); and Smart Education @ Schools supports AI-driven classroom experiments (imec, 2024[10]). Similarly, in **Czechia**, the RRF-funded Innovation in Education programme trains teachers in digital technologies, including AI, under the EU Digital Competence Framework for Educators.

Germany directs resources towards infrastructure and pedagogy through the Digital Pact for Schools, allocating EUR 92 million for digital educational materials, and the Competence Centres for Digital and Digitally Supported Teaching in Schools and Further Education (BMBF, 2023[11]; BMBF, 2024[12]). In **Denmark**, Technology Comprehension in Traditional Subjects and Compulsory Training in Digital Skills initiatives integrate digital awareness, including for AI, into various subjects (Center for Folkeskole, 2024[13]; Danish Ministry of Children and Education, 2024[14]). **Hungary** fosters digital and AI skills through its Digital Culture Curriculum for students in Grades 5 and 11, complemented by teacher training efforts.

Lithuania has launched multiple initiatives under its digital transformation strategy, such as the Digital Transformation of Education (EdTech) (EUR 10 million from the RRF), the EdTech Center for teacher training and a digital entrepreneurship programme for students. In **Luxembourg**, the extracurricular Tech

School provides training in coding and AI (Luxembourg Tech School, 2024[15]), while COPE sessions in **Malta** equip educators with knowledge on emerging digital trends, including AI integration. **Portugal** supports coding and problem-solving education through Ubbu Project and Happy Code. In the **Slovak Republic**, the DiTEdu programme modernises pedagogical methods with AI components.

In **Finland**, the Digital Vision for Higher Education (Digivisio 2030) programme aims to consolidate digital competence courses into a unified platform, with AI playing a key role in supporting guidance and counselling services for students (Digivisio, 2024[16]). Backed with EUR 30.1 million in RRF funding, **Greece** has launched the Supply of Robotics and STEM Equipment for Education programme, distributing digital equipment for hands-on AI learning in primary and secondary schools. This complements the Panhellenic Educational Robotics Competition, which promotes AI and science, technology, engineering and mathematics (STEM) as integral parts of compulsory education (WRO Hellas, 2023[17]; Greece20, 2024[18]).

Romania is fostering the digitalisation of education through two initiatives. Robotics and Life**,** an optional subject at the lower secondary level (International Standard Classification of Education [ISCED] level 2), develops students' transdisciplinary skills by combining physics, mathematics and informatics with hands-on robotics projects. Additionally, the Smart Labs initiative, funded through the National Recovery and Resilience Plan, equips all high schools with intelligent laboratories, enabling personalised learning and AI-driven educational tools.

In **Ireland,** the annual Discover funding call supports projects to broaden participation in STEM, support the development of key skills and increase awareness of the variety of career pathways available. Forty projects were funded in 2023, including the STEM Passport for Inclusion and OurKidsCode initiatives.

Slovenia has also introduced multiple initiatives, including Digital Competences and Basic Knowledge of Computer and Information Science (2023-2026), Training for Children and Young People to Strengthen Digital Competences, and Training of Professional and Managerial Staff in Education, which all include modules on advanced digital technologies and AI (MIZS, 2022[19]; MIZS, 2023[20]; MIZS, 2024[21]; Slovenian Ministry of Digital Transformation, 2023[22]).

A smaller number of EU Member States are incorporating AI-specific content into primary and secondary curricula

While broader digital literacy is widely promoted, seven EU Member States have also reported AI-specific initiatives that integrate AI into school curricula:

- The AI for Children programme (2023) in **Czechia** provides educators with AI-focused teaching materials and student engagement tools.
- AI4Youth programme, launched by **Poland** in 2021, supports AI skills development among secondary school students, including a competition to create AI-driven solutions to societal challenges (Government of Poland, 2021[23]; AI4Youth, 2025[24]).
- The 2024 revision of the national computer science curriculum in **Lithuania** introduces AI literacy, data ethics and neural networks.
- In **Malta**, the Fair Artificial Intelligence Educator application, backed by EUR 775 000, leverages AI to enhance mathematics education for younger students.
- The Component 7: Reform 1 (EUR 95.5 million from the RRF) embeds AI competencies within a broader overhaul of digital and media literacy in the **Slovak Republic**.
- The **Netherlands** invests EUR 91 million (including EU financing) in the National Education Lab AI. This ten-year initiative unites educational institutions, technology companies and researchers

to develop and test AI tools in primary, secondary and special education. It plans to disseminate these products in the education market (Radboud University, 2024[25]).

- In **Romania,** Introduction to Machine Learning became an optional subject in upper secondary education in 2022, equipping students with foundational AI concepts and digital skills to support future careers in emerging technologies.
- In **Slovenia**, the Pumice project (2022-2023) developed AI-related educational content and examples across multiple school subjects, demonstrating the role of AI in chemistry, history, biology and the arts (Pumice, 2025[26]).

AI-specific teacher training programmes gain momentum in several EU Member States

Twelve EU Member States have reported targeted, AI-specific upskilling programmes for teachers. In **Bulgaria**, a Short-term Teacher Training Programme is run together with Prof. Dr. Assen Zlatarov University. It equips educators with augmented and virtual reality know-how, as well as familiarity with AI-powered educational platforms, broadening classroom engagement methods. **Lithuania** operates Wizards (*Vedliai,* Teachers Lead Tech), which supports computer science teachers in Grades 1 to 8, offering toolkits, creative lesson ideas and hands-on workshops for integrating AI and computational thinking across different subjects. In **Malta**, the PAIDEIA project (2023) defines an AI competence framework and delivers hands-on sessions in responsible AI usage, enabling teachers to adapt their pedagogical practices to innovative learning technologies. In **Poland**, "Lesson: AI" (2025-2027) trainings provide primary and secondary school teachers with knowledge in AI basics to implement in their lessons.

The Oide Technology in Education initiative in **Ireland** provides AI resources and training through an online AI hub, offering courses for teachers and school leaders on safe, ethical AI use in classrooms (Oide Technology in Education, 2024[27]). **Czechia**, **Latvia** and the **Slovak Republic** participate in the AI-Empowered Teaching (AI-EmpaTe) project (2024-2026), an international collaboration to enhance educators' AI competencies through digital training modules. Similarly, the Erasmus+ K3 AI for and by Teachers (AI4T) initiative involved **France**, **Ireland**, **Italy**, **Luxembourg** and **Slovenia.** It trained teachers in AI for mathematics, science and modern English curricula between 2021 and 2024 (Government of Luxembourg, 2025[28]).

Competitions and challenges focused on AI remain relatively rare

Four EU Member States have introduced national AI competitions. The National Competition for AI (2021) in **Austria** engages students aged 14-19 in AI model development, data analytics and problem-solving challenges (BWKI, 2024[29]). **Bulgaria** hosted its first International Olympiad in Artificial Intelligence in 2024, bringing together 200 participants from 40 countries to work on AI applications. **Greece** launched the National Artificial Intelligence Competition (2024), which familiarises middle and high school students with machine learning, computer vision and natural language processing techniques (Athena, 2024[30]; PDTN, 2024[31]). The first Baltic AI Hackathon (2024) in **Latvia** brought together students across disciplines to explore AI applications in education, sustainability and public services (RTU, 2024[32]).

AI integration is further advanced through a few select pilot projects

A few countries have reported experimental projects or funding calls, with six EU Member States launching pilots to explore AI integration into classrooms.

In **Austria**, the AI School Package reserves EUR 250 000 for a 2024 trial, enables a group of schools to use generative AI tools under expert supervision. It generates best practices to inform teacher training and policy updates (BMBWF, 2024[33]). Since 2018, **Spain** has run the School of Computational Thinking and Artificial Intelligence. It experiments with AI-based lesson content and measuring how computational thinking can enhance learning outcomes (MEFPD, 2025[34]). **Malta** is implementing an AI for Education

pilot (EUR 150 000, partly funded by the national AI strategy). It employs adaptive learning software to tailor lessons to individual strengths and identify potential gaps in student understanding. **Italy** has also launched the AI in Primary and Secondary School initiative under its 2024-2026 AI strategy. The pilot programme is to introduce AI topics in 15 schools across Calabria, Lazio, Lombardy and Tuscany, focusing on the role of AI in personalised learning and digital skill development. In **Poland,** Our Second Language (2023) teaches programming skills in an AI-supported online environment, scaling nationwide after a pilot phase (NASK, 2023[35]). **Slovenia** recently launched Using Generative AI for Education (2024), a national funding call for content development aligned with AI use in primary and secondary schools (Slovenian Ministry of Education, 2024[36]).

Guidelines and recommendations on AI use in schools reflect growing government attention

Five EU Member States have issued or are developing national AI guidelines for education. In **Bulgaria**, AI Guidelines for the Education System (2024) address ethics, data protection and AI integration into classrooms. The expert group on AI in **Denmark** published recommendations in April 2024 on AI use in examinations and digital competences. In **Finland**, the National Agency for Education and Ministry of Education and Culture are drafting policies on AI accessibility and governance. Similarly, **Ireland** was developing AI Guidelines for Schools, expected for publication in 2025. Lastly, the web-based AI advisory service in **Sweden** provides guidance on AI risks and benefits in education (Skolverket, 2023[37]).

A growing cohort of EU Member States develops structured AI programmes in academia

Seven EU Member States report initiatives to create or expand master's and doctoral-level AI courses, often with clear pathways to professional roles in data science, AI or machine learning. However, AI courses offered at universities and the number of AI graduates are not monitored systematically. Increased efforts are needed in this area.

In **Italy**, the Artificial Intelligence Observatory at Politecnico di Milano is tracking indicators linked to the National AI Strategy, including the number AI doctoral candidates and professors in AI. These indicators are monitored manually using the national database of teachers and researchers of the Ministry of University and Research (MUR, 2025[38]). Similar ad hoc research was conducted for selected EU Member States using national university databases (OECD, 2024[39]). It revealed a higher number of university AI courses than those reported in the survey for this study. This highlights a gap in national-level monitoring for this indicator and for indicators on AI graduates.

In **Bulgaria**, the GATE Institute Big Data Technologies master's programme (2023) at Sofia University merges advanced data science with AI-focused modules, training graduates to handle analytics in both academic and industrial environments. **Luxembourg** co-ordinates the European Master for High Performance Computing (EUMaster4HPC), launched in 2020 with EUR 7 million in EU funding. It aims to cultivate a specialised high-performance computing (HPC) workforce able to support the digital transformation of the European Union (EUMaster4HPC, 2024[40]). This two-year programme covers HPC fundamentals alongside mentorships and internships, including AI applications at scale.

Poland has taken a systemic approach with the Academy of Innovative Applications of Digital Technologies, a collaboration between five universities to establish second-cycle AI study programmes. Running from 2021 until 2027, the initiative is backed by EUR 12 million and integrates coursework, tutoring, information technology (IT) projects, internships and study visits to prepare specialists in AI, machine learning and cybersecurity (Government of Poland, 2025[41]; Government of Poland, 2025[42]).

In **Malta**, the Future Innovators Summer School and Future Innovators Plus initiative (2024) targets not only local students but also international participants, introducing AI-based innovation in a hands-on summer and winter bootcamp format. Although modestly funded at EUR 38 500 (with an additional EUR 15 000 for a Gozo Summer School), these programmes add experiential depth, bridging theoretical

AI concepts with real-world projects. Similarly, in **Romania**, the Transylvanian Machine Learning Summer School (since 2018) provides AI education for researchers, focusing on deep learning and reinforcement learning. The programme fosters collaboration between academia and the private sector.

In **Sweden,** Wallenberg AI and Transformative Technologies Education Development Program positions itself as a key driver of AI capacity building in the country, striving to support 600 PhD students, post-doctoral students and professors (WASP-ED, 2025[43]). It promotes AI integration across Swedish universities, scaling up educational offerings and supporting faculty to keep pace with technological change. Meanwhile, in the **Slovak Republic**, the National IT Academy has produced innovative study materials and courses on neural networks and programming languages for AI, funded as part of a broader EUR 11.7 million investment. Although not all resources go directly to AI, this initiative underscores a clear commitment to modernising higher education in emerging digital fields.

EU Member States increasingly recognise the importance of fostering interdisciplinary approaches in AI study programmes

Fourteen initiatives across 12 EU Member States reportedly integrate AI into non-traditional fields, reflecting the technology's expanding influence beyond computer science. **Bulgaria**'s GATE Institute Internship Programme provides practical AI and big data experience for students through interdisciplinary research projects (GATE, 2025[44]). In **Czechia**, prg.ai Minor (2020) collaborates with multiple Prague-based universities to provide AI electives and internships for students from diverse academic backgrounds, blending AI with fields such as economics and design. In **Malta**, the Master in Artificial Intelligence for Industry 4.0 at the Malta College of Arts, Science and Technology focuses on business and competitive AI applications, including predictive analytics and automation. Meanwhile, the Master of Science in AI targets working professionals, as well as those who recently completed their undergraduate degree.

Ireland has invested significantly in interdisciplinary AI training through the Research Ireland Centres for Research Training. These focus on machine learning, digitally enhanced reality, foundations of data science and AI applications in key sectors such as mobility, cybersecurity and agriculture. Between 2018 and 2023, the programme trained 78 PhD students, with EUR 26 million in funding. Its Human Capital Initiative and Springboard+ programmes also offer AI-focused reskilling courses, with EUR 15.58 million allocated for digital-related courses in the 2024/25 academic year. Furthermore, the country has issued AI and Academic Integrity Guidelines (2023) to provide a framework for handling generative AI in academic settings.

Spain has launched 15 sectoral Networks of Excellence. These interdisciplinary research groups, backed by EUR 32 million in RRF funding, cover a broad range of AI applications such as cognition, advanced algorithms, physics, social and environmental challenges and quantum computing.

In **Greece**, Pioneers for AI (2024) provides an online AI course tailored to science students, enriched with videos, exercises and interactive modules. The **Netherlands** hosts two notable interdisciplinary ventures: the Cultural AI Lab, which applies AI to humanities and social sciences (Cultural AI, 2024[45]) and the Netherlands AI Coalition (NL AIC) Training Platform, a repository of over 600 AI-related university programmes that span ICT, business, healthcare and social sciences (NL AIC, 2024[46]). Together with Microsoft, Portugal developed the AI Business School for Public Administration (2023). It merges AI with leadership and governance, focusing on ethical AI use in policymaking.

Sweden has strengthened its science, technology and society university offerings, with Uppsala University (2025[47]) and the University of Gothenburg (2025[48]) leading interdisciplinary research on the societal impact of AI. **Latvia** has also introduced the AI in Social Sciences course, designed to equip educators with AI fundamentals relevant to humanities and education (RTU, 2025[49]).

Italy has further expanded interdisciplinary AI education through the National Doctorate in Artificial Intelligence (PhD-AI.it), which unites 61 universities and research centres. This initiative structures its AI

education into five federated PhD tracks, each focusing on a strategic AI application area such as healthcare, cybersecurity and industrial automation (Scuola Superiore Sant'Anna, 2025[50]). Similarly, **Finland** has dedicated EUR 255 million to fund 1 000 new doctoral researchers from 2024 to 2027.

AI-specific initiatives to promote broader participation in AI-related fields remain scarce

One-third of EU Member States have reported programmes that aim to foster broader participation in AI-related fields, with varying degrees of specificity and scope. Some of these initiatives focus on boosting women's participation in AI research, while others address imbalances in the broader STEM landscape. Additional measures promote workplace-level transformations for representations of underserved communities.

Few EU Member States have AI-specific initiatives to increase women's representation

Only three EU Member States have dedicated initiatives to enhance women's participation in AI fields. **Germany** launched the Funding Programme for Female AI Junior Scientists in 2019. It supports women-led AI research groups while factoring in work-life balance criteria to reduce barriers for women in academia. In 2023, the programme renewed its calls for applications to expand support (BMBF, 2019[51]). **France** launched Women in AI programmes, including a 2024 government-backed push to attract more women into AI studies and careers through networking events and mentorship (Fondation Inria, 2024[52]). **Latvia** introduced AI Essentials for Women (2024), a beginner-friendly course developed by Google.org and implemented by non-profit organisation Riga TechGirls. This initiative aims to equip women with AI-related skills to improve productivity and efficiency in their professional and personal lives (Riga TechGirls, 2025[53]).

A handful of EU Member States have reported initiatives to support women and girls in STEM more broadly

Four EU Member States have indicated broader initiatives that support women and girls in STEM, some of which include AI elements.

In **Belgium**, training centre Interface3 provides coding and digital training for women, enhancing their employability in technology-intensive sectors (Interface3, 2024[54]). The Women Award in Technology and Science grants EUR 10 000 annually to a science "ambassadress", who organises workshops and outreach activities across Brussels to inspire young women to pursue STEM careers (Innoviris, 2024[55]).

Portugal has reported two initiatives addressing disparities between men and women in STEM. Technovation Girls introduces young participants (ages 8-18) to technology-based social problem-solving. Meanwhile, Engineers for a Day engages girls in hands-on engineering and ICT activities to break down gender stereotypes in technical professions.

Since 2016, Women Go Tech in **Lithuania** serves as a mentoring programme for women that has supported over 670 participants in transitioning to careers in IT and engineering. It aims to scale its impact across Central and Eastern Europe, with a goal of assisting 25 000 women by 2024.

Slovenia has launched a Requalification of Women in ICT Professions programme (2023) as part of its National Strategic Plan for the Digital Decade. This initiative provides training for women in digital and AI-related fields, with EUR 2.95 million in total funding, including EUR 22 000 allocated to AI training.

Some EU Member States have reported initiatives that extend beyond gender

Seven EU Member States have launched broader efforts beyond gender representation, focusing on fostering greater access to AI and digital opportunities.

An inclusive AI programme in **France** encourages development of diverse AI teams and responsible AI design to mitigate biases in algorithmic decision making.

In **Lithuania,** Digital Decade: No One Left Behind (2023) addresses digital exclusion among older citizens, providing community-based training on safe digital usage, fraud prevention and consumer rights in online services. The country has also launched a Digital Inclusion for Excluded Populations programme (2025-2026), focusing on improving digital literacy for vulnerable communities through training and outreach activities.

In **Belgium,** #BeDigitalTogether (2024[56]) reduces barriers for under-represented groups in the technology sector, with a focus on older adults. Additionally, the Innoviris funding programmes on STEM promote digital literacy in disadvantaged communities, including Capital Digital, which provides coding lessons for children in less economically developed areas (Nooby.Tech, 2023[57]).

Three distinct initiatives in **Germany** promote workplace-level AI inclusion. AI Studios delivers workshops and interactive training to help employees and worker representatives engage with AI applications in professional settings (KI-Studios, 2024[58]). The Digital Work Society Think Tank, established in 2022 under the Federal Ministry of Labour and Social Affairs, examines AI-driven labour market shifts. It focuses on employee rights, digital transformation and socially responsible AI adoption (BMAS, 2024[59]). The Civic Innovation Platform, a key part of the country's Civic Coding – AI Innovation Network for the Common Good, promotes participatory AI development and explores socially responsible applications of AI (CIP, 2025[60]).

In **Spain,** the emerging National Plan on Vulnerable Collectives includes a study on the impact of AI on marginalised groups and aims to create safeguards for AI-driven decision making.

In **Latvia,** research on AI systems and discrimination aspects (2024) is assessing the risks of algorithmic bias and the adequacy of national legal frameworks to prevent discrimination. The study covers multiple demographic groups, including gender, disability, race, ethnicity, social status and age, and will provide policy recommendations to mitigate AI-driven inequalities (Ombudsman of Latvia, 2024[61]).

Most EU Member States focus on broader digital upskilling, but AI-specific training is increasing

Efforts to enhance digital and AI-related workforce skills vary significantly across EU Member States. Many countries prioritise digital literacy, structured AI-specific training is being increasingly developed. Moreover, only a handful of EU Member States have launched initiatives to forecast AI-related labour demands, a crucial step in ensuring workforce preparedness for AI-driven transformations.

More than half of EU Member States have launched broader national digital skills strategies and digital upskilling initiatives, many of which incorporate AI-related elements

More than half of EU Member States (14 of 27) have introduced digital skills strategies or workforce development initiatives, often integrating AI components to address evolving technological demands.

In **Austria**, the Digital Skills Initiative, backed by EUR 6 million for 2024, ensures AI literacy is integrated into nationwide digital education (Digital Austria, 2023[62]). **Bulgaria** follows a dual-track approach, with Operation Digital Skills providing AI and digital literacy training for unemployed individuals, while Operation New Skills aims to upskill 40 000 employed workers in broader digital fields, including AI. In **France**, the programme *Appel à manifestation d'intérêt « Compétences et métiers d'avenir »* (EUR 200 million, 2021-2025) seeks to train 400 000 individuals per year by 2030, covering all levels of digital education, from secondary school to PhD, with AI as a key focus (ANR, 2024[63]).

In **Poland**, the Digital Competence Development Programme (2022-2031) establishes a digital education framework that includes a dedicated AI module, ensuring that teachers are equipped to integrate AI into classrooms (Government of Poland, 2025[64]; Kompetencje Cyfrowe, 2025[65]). The Reform of Higher Education for a Green and Resilient Transition to Society 5.0 in **Slovenia** embeds AI, blockchain and cybersecurity skills into national higher education curricula (MIZS, 2022[66]; MIZS, 2022[67]). In **Croatia**, the University of Zagreb Computing Centre's ICT Education Programme provides self-paced courses on digital and AI skills as part of the country's broader digital education infrastructure. Additionally, the country's Labour Market and Social Protection Component allocates EUR 267 million in training vouchers for digital and AI-related skills.

In **Belgium,** the DigiSkills platform aggregates AI and digital skills courses across multiple industries, while Technocité provides digital training for creative and cultural sectors (DigiSkills, 2024[68]; Technocité, 2024[69]). In **Czechia**, the I'm in a Course initiative, led by the Ministry of Labour and Social Affairs, subsidises up to 82% of course fees to support digital retraining, including AI programming. In **Denmark**, the Digital Problem-Solving programme, initially designed for low-skilled adults, now also includes AI-related modules to enhance automation problem-solving skills (Danish Ministry of Children and Education, 2025[70]). **Finland** was developing the digital service bundle for continuous learning at the time of writing. It aims to provide a flexible, user-oriented service crossing administrative boundaries to support career and education choices, skills development and labour market alignment. AI is integrated into its services.

In **Ireland,** Skillnet Ireland offers digital reskilling in manufacturing, cybersecurity and healthcare. Additionally, state agency SOLAS Ireland launched the Skills to Advance programme, which is developing digital and AI micro-qualifications. The AP Digital and AMA Academy in **Portugal** trains public sector employees in AI-driven administrative functions. **Latvia** offers AI-related training courses in the reskilling and upskilling training programmes of the State Employment Agency (Ministry of Welfare of Latvia, 2020[71]). Additionally, the country's Skills for Entrepreneurs initiative provides training for small and medium-sized enterprises (SMEs) to help them acquire digital competences (Ministry of Economics of Latvia, 2025[72]).

In **Greece**, ReGeneration (2021[73]), launched in 2020 under the Hellenic Ministry of Digital Governance and supported by Microsoft, focuses on youth digital upskilling, including AI-related content. The country has also introduced the Digital Academy for Citizens, a government-led initiative offering free online courses to enhance digital literacy, particularly for SMEs undergoing digital transformation (Jākobsone, 2021[74]). The Education and Employment Programme (2021-2027) in **Romania** updates vocational training and teacher education to integrate AI, robotics and other emerging technologies, with a budget of approximately EUR 1.5 million.

AI-specific training upskilling and reskilling initiatives and continuous learning programmes on AI gain momentum across the European Union

Twelve EU Member States have reported AI-specific workforce training initiatives, reflecting the growing demand for AI skills across industries.

In **Austria**, the AI Radar programme supports AI adoption in the tourism sector through dedicated workshops and webinars, providing industry professionals with hands-on experience in AI applications (Austria Tourism, 2024[75]). **Belgium** has developed the Flanders AI Academy, which maps AI education opportunities, identifies unmet training needs and collaborates with universities to expand AI-focused courses (VAIA, 2021[76]). **Bulgaria** has introduced the AI Programmer Vocational Education programme in secondary schools and vocational institutions, with an initial cohort of 580 students enrolled in the 2023/24 academic year.

In **Luxembourg**, the Skillsbridges initiative, launched in 2024, offers AI courses ranging from 40 to 240 hours for business professionals and IT specialists (CNFPC, 2024[77]), while AI Competence for

Sweden programme provides modular AI courses for working professionals seeking to integrate AI into their respective fields (AI Competence for Sweden, 2025[78]).

France has invested significantly in AI skills development through its AI Cluster initiative, which allocated EUR 560 million in 2023 to AI education and workforce training (ANR, 2024[63]). The programme, implemented across nine universities and *grandes écoles* higher education establishments, focuses on developing AI expertise and fostering interdisciplinary AI applications. The AI Challenge in **Hungary**, part of its national AI strategy, has reached over 4.5 million participants through AI literacy courses and assessments, with a second phase planned to expand participation. **Croatia** has also introduced AI workforce training. The AI Center Lipik offers intensive AI education alongside a start-up incubation programme, while the Croatian Artificial Intelligence Association provides free introductory AI courses (AI Competence for Sweden, 2025[78]).

In **Romania,** the AI Education Council, established under the Romanian Committee for Artificial Intelligence in 2018, aims to guide national AI skills development, education and training. **Spain** has launched a National AI Skills Development Programme, investing an estimated EUR 30 million in AI training, degree programmes and public-private partnerships. The Polish Development Fund has launched AI training workshops for business leaders in **Poland**, equipping companies with the skills to integrate AI into operations. At the same time, it offers a free AI literacy course for the general population (PFR, 2024[79]).

In **Portugal**, two training programmes for public sector employees – the INA Training Program and Program in Data Science and Artificial Intelligence in Public Administration – aim to cultivate AI, blockchain and data science expertise within government institutions.

Efforts to forecast the impact of AI on the labour market remain limited

Four EU Member States have begun systematically examining the impact of AI on labour market trends. In **Germany**, the AI Observatory, housed within the Federal Ministry of Labour and Social Affairs, monitors the economic, social and regulatory implications of AI (KI-Observatorium, 2025[80]). LaborIA (2025[81]) in **France** examines how AI drives the need for reskilling and explores how workforce structures adapt to automation. In the **Netherlands**, the NL AIC Human Capital working group liaises with universities and industry partners, aiming to bridge AI skill shortages by designing targeted development strategies (NL AIC, 2024[82]). Meanwhile, **Sweden** relies on analyses from the Higher Education Authority (UKÄ) and the National Agency for Higher Vocational Education (MYH) to forecast AI-related staffing requirements (Regeringen, 2023[83]).

Most AI talent attraction efforts focus on academia, while industry-focused initiatives remain scarce

EU Member States primarily concentrate on attracting AI talent into universities and research institutions. 12 initiatives across seven countries are dedicated to bringing international AI researchers, doctoral candidates and academic professionals to the European Union. These efforts reflect a broader strategy to strengthen AI research capabilities in the European Union and position the region as a hub for AI innovation. However, initiatives aimed at attracting AI talent beyond academia remain scarce, with only **Finland** and **Slovenia** reporting structured efforts to recruit AI professionals for private sector roles or non-academic settings.

EU Member States focus on attracting academic talent

Seven EU Member States have reported dedicated programmes aimed at attracting and retaining top-tier AI researchers and students in academia.

Bulgaria has introduced the Institute for Computer Science, Artificial Intelligence and Technology research programmes. They host over 20 international researchers working on robotics, machine learning and computer vision. The programmes also offer competitive internship opportunities for students worldwide, fostering international talent attraction.

Germany builds on its national AI strategy by funding the Konrad Zuse Schools of Excellence in Artificial Intelligence, which offer English-language master's and PhD programmes specifically geared towards high-calibre international students (DAAD, 2024[84]). Alongside this, Germany greatly surpassed its target of creating 100 new AI professorships by 2025, reaching 150 posts by 2023 through ventures like the Alexander von Humboldt Professorship for AI and AI competence centres (BMBF, 2022[85]; OECD, 2024[39]).

Spain has introduced three large-scale initiatives to lure and nurture AI talent. The Artificial Intelligence Training Programme, backed by EUR 30 million, subsidises up to 80% of tuition fees for around 8 000 AI students in public and private universities. Meanwhile, the Programme for Training in Artificial Intelligence awards 374 long-term research scholarships in HPC, cybersecurity, biotech and robotics, backed by EUR 120 million. The State Programme for Developing, Attracting and Retaining Talent adds EUR 10 million specifically for AI and semiconductor researchers.

Denmark is reinforcing its IT education landscape through the Strengthen and Retain Specialised IT Talent and Skills initiative. This strategy enhances continuing education in IT fields and expands professional master's programmes, with a focus on retaining international students in the Danish job market. EUR 4 million (DKK 30 million) has been allocated to this effort. The Pathfinder MDIA Digital Scholarship grant (EUR 120 000) in **Malta** supports postgraduate and PhD candidates researching emerging technologies, including AI, quantum computing and machine learning. Meanwhile, the Science+Training Programme in **Portugal**, backed by EUR 45 million from the RRF, fosters AI researcher retention and talent acquisition through knowledge transfer arrangements and recruitment calls.

In **Slovenia**, the COFUND SMASH project (2023-2028), led by the University of Nova Gorica, aims to attract 50 top-tier post-doctoral researchers from around the world to work on AI, machine learning and HPC. The total eligible costs for SMASH amount to EUR 9.95 million, with EUR 5.18 million coming from national funds (SMASH, 2024[86]).

Only one EU Member State has a specific measure to attract AI talent beyond academia

Despite the growing demand for AI specialists in the private sector, only **Finland** has reported a structured initiative to attract AI professionals outside academia. The Talent Boost programme, co-ordinated by the Work in Finland initiative (Business Finland), provides structured recruitment and relocation services for international AI professionals. This programme directly supports private sector companies in hiring AI talent, aiming to bolster the country's competitiveness in the AI job market.

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5 Build strategic leadership in high-impact sectors

The European Union Coordinated Plan on Artificial Intelligence is a strategic initiative developed by the European Commission and EU Member States to promote development, deployment and use of AI technologies across the European Union. Within this framework, this chapter looks at how EU Member States are building strategic leadership in five high-impact sectors. In the first section, it examines policies to support AI applications for climate and the environment. The next two sections discuss national initiatives leveraging AI to improve healthcare and drive transformation in the public sector. The fourth section analyses efforts to make mobility smarter, safer, and more sustainable through AI. Finally, the chapter reviews measures promoting the adoption of AI-enabled tools and solutions in agriculture.

Introduction

The EU Coordinated Plan on AI is a strategic initiative to promote development, deployment and use of AI technologies across the European Union. It represents a joint commitment between the European Commission and EU Member States to maximise the impact of investments in AI, foster synergies and encourage co-operation across the European Union. The plan outlines a series of concrete actions to facilitate investment decisions, aligning AI policy in the European Union to remove fragmentation. It also aims to contribute to strengthening the global position of the European Union regarding the development and adoption of human centric, sustainable, secure, inclusive and trustworthy AI technologies and applications.

Within this framework, this chapter looks at how EU Member States are building strategic leadership in five high-impact sectors. In the first section, it examines policies to support AI applications for climate and the environment. The next two sections discuss national initiatives leveraging AI to improve healthcare and drive transformation in the public sector. The fourth section analyses efforts to make mobility smarter, safer, and more sustainable through AI. Finally, the chapter reviews measures promoting the adoption of AI-enabled tools and solutions in agriculture.

Bring artificial intelligence into play for climate and the environment

The EU Coordinated Plan on AI identifies AI as a key enabler for achieving climate neutrality and advancing environmental sustainability. The 2021 update to the plan emphasises the need to harness AI for emissions reduction, circular economy innovation and natural resource protection. At the same time, it recognises the need to address the environmental footprint of AI systems themselves: the training of large language models can emit hundreds of tonnes of carbon dioxide, and their daily operation adds to the energy demands of global data centres (George, George and Martin, 2024[1]; Ruf, 2024[2]). These impacts extend across the full life cycle of AI compute, including hardware manufacturing, data storage and end-of-life disposal (Ligozat et al., 2021[3]; OECD, 2022[4]).The goal is to ensure that AI contributes to the objectives of the European Green Deal, both as a technological enabler of climate action and as a digital technology that must itself be sustainable.

To this end, EU Member States are encouraged to take the following actions:

> ***Share results from national efforts on 'green AI' and climate actions**, share best practices with other Member States and, on the basis of their experiences suggest cross-border projects, outreach efforts and action that could be taken at European level.*
>
> ***Share locally available expertise and know-how** through the EDIH network which can support training and knowledge-sharing activities.*
>
> *Support the inclusion of a 'green AI' component in **university and higher education** AI curricula and other AI training courses and programmes; and*
>
> *Work with national ICT and other sectoral stakeholders, including standardisation bodies towards defining **deployment guidelines and standardised assessment methodologies** to support 'green AI' in areas such as smart grids, precision farming, and smart and sustainable cities as well as communities.*

These coordinated efforts aim to ensure that AI becomes not only a catalyst for Europe's green transition, but also a technology developed and deployed in line with the Union's broader sustainability objectives.

In the climate and energy domains, AI applications are increasingly used to enhance modelling, support mitigation and adaptation planning, and improve the efficiency of energy systems. AI can help anticipate extreme weather events, optimise energy generation and storage, and use energy efficiently across sectors through smart resource management (Leal Filho et al., 2022[5]). In energy systems, AI-driven

solutions improve load forecasting, balance supply and demand, support integration of renewable energy and reduce losses in transmission and distribution (Chen et al., 2023[6]). AI also underpins digital twin simulations and smart grids that can enhance real-time decision making, automate grid management and promote decentralised energy production (Kar, Choudhary and Singh, 2022[7]).

AI can process vast volumes of environmental and geospatial data, offering unique opportunities for climate modelling, emissions monitoring and biodiversity tracking. For instance, AI techniques are now used to monitor land-use change, track deforestation and model hydrological systems for early flood warnings and drought prediction (Chen et al., 2023[6]; Leal Filho et al., 2022[5]). Moreover, public and private actors are increasingly employing AI tools to support carbon accounting, assess corporate climate risk, and improve the design and enforcement of environmental regulation (Muench et al., 2022[8]; Barnabas and Owen, 2025[9]).

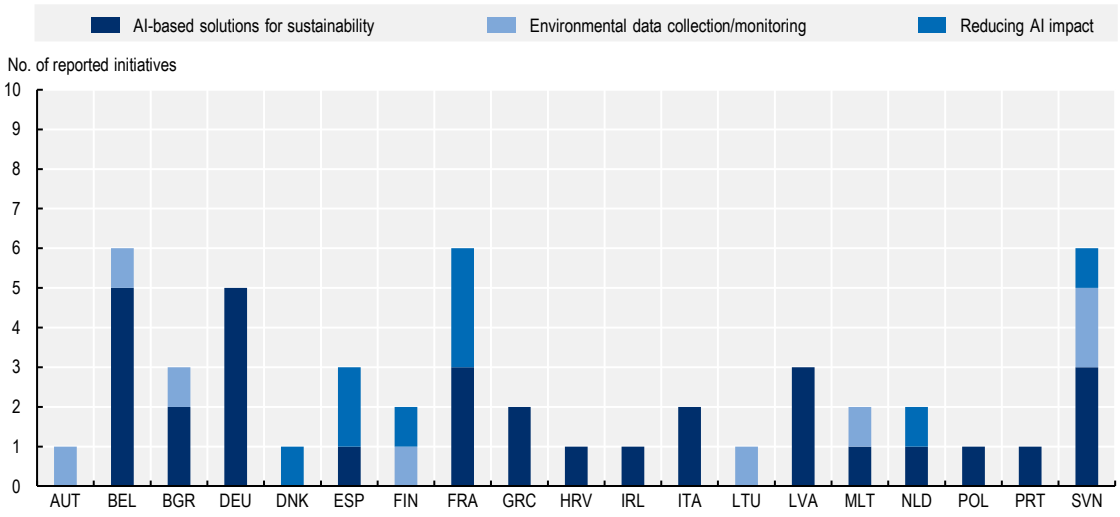
Table 5.1. Bring AI into play for climate and environment: Key findings

Dimension of survey	Description	Key findings
AI-based solutions for environmental sustainability	Policies supporting development and use of AI to address climate and environmental challenges	More than two-thirds of EU Member States report initiatives applying AI to domains such as energy efficiency, waste management, disaster resilience and climate science. However, efforts remain uneven and often fragmented across the European Union.
AI for environmental data collection and monitoring	Initiatives using AI to enhance environmental data systems, including emissions monitoring, geospatial analytics and integrated data infrastructures	Only a few EU Member States have launched initiatives in this area, despite its importance for effective AI-driven environmental action. Strengthening data systems remains an area with considerable room for development.
Policies to reduce the environmental footprint of AI	Measures to minimise the environmental impact of AI systems and infrastructure, including frugal AI and sustainable computing	A handful of EU Member States report structured efforts to reduce the environmental footprint of AI. While these initiatives mark important progress, additional action will be needed to align AI development with long-term sustainability goals.

More than two-thirds of EU Member States have adopted policies to support AI applications for climate and environmental sustainability

Most EU Member States have adopted policies to support AI applications for climate and environmental sustainability. Most of these applications foster development of AI-based solutions for sustainability. Fifteen countries reported initiatives to apply AI to areas such as energy efficiency, emission reduction, waste management and disaster resilience. Only seven EU Member States have launched dedicated initiatives to gather environmental data and enhance monitoring capabilities, and only six EU Member States have put forward policies to reduce the environmental impact of AI (Figure 5.1).

Figure 5.1. Initiatives to foster AI for climate and the environment

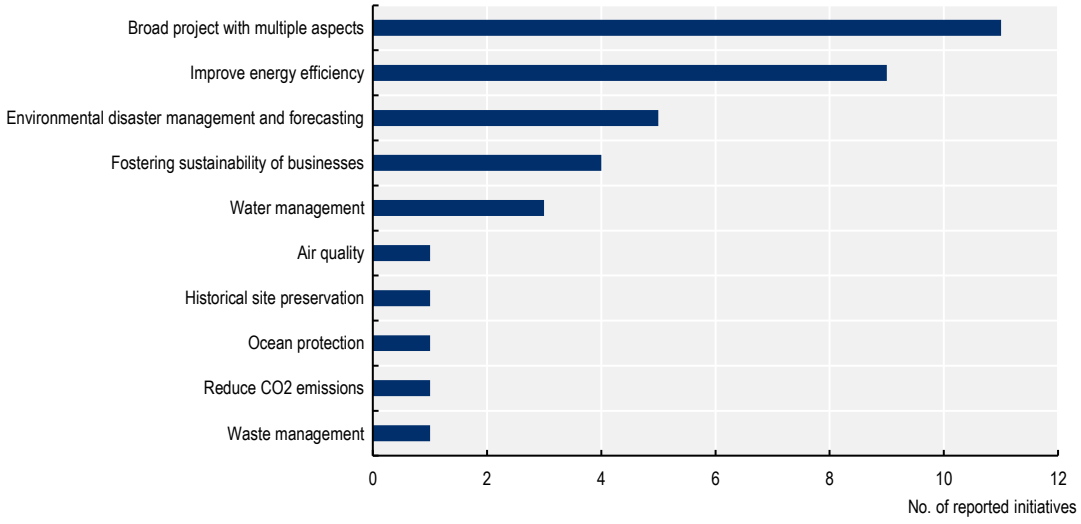


Source: Data reported by EU Member States through the survey and interviews.

More than half of EU Member States are investing in AI to tackle environmental challenges

Fifteen EU Member States have introduced policy initiatives leveraging AI to advance sustainability objectives (Figure 5.2). These initiatives span diverse domains, including energy optimisation, waste reduction, disaster forecasting and urban climate resilience, highlighting the potential of AI to address environmental challenges. However, the distribution of efforts remains uneven across the European Union.

Figure 5.2. AI-based solutions for sustainability



Source: Data reported by EU Member States through the survey and interviews.

Several countries have launched comprehensive programmes that integrate AI across multiple environmental application areas.

Germany is among the frontrunners with several large-scale initiatives. With a budget of EUR 150.9 million, AI-Lighthouses for Environment, Climate, Nature and Resources funds AI solutions for energy and resource efficiency, biodiversity protection and sustainable mobility (BMUV, 2024[10]). The Application Lab for AI and Big Data, operated by the German Environment Agency, leverages AI for environmental research, enforcement and administrative innovation (UBA, 2024[11]). Meanwhile, the AI Idea Workshop for Environmental Protection supports civil society organisations in co-developing AI applications for environmental challenges (KI-Ideenwerkstatt, 2025[12]).

Greece is applying AI-based tools in six urban centres under the EU 100 Climate Neutral Cities mission, targeting emissions reduction, waste management and energy optimisation (BBK, 2024[13]). **Italy** has scaled up simulation capacity through the Cassandra supercomputer, enabling new AI-powered climate science at the Euro-Mediterranean Center on Climate Change. **The Netherlands**, through its EUR 189 million AiNed programme, launched AI for Energy and Sustainability, creating AI Innovation Labs to support the energy transition (AiNed, 2024[14]). **Portugal**'s National Strategy for Smart Territories brings together municipalities, academia and industry to use AI, Internet of Things (IoT) and the fifth generation of cellular network technology (5G) for smarter water, mobility and energy systems (AMA, 2023[15]).

Spain funds two National Artificial Intelligence Strategy (ENIA) Chairs, one dedicated to sustainability and a decarbonised society, the other to green algorithms. Both focus on development and deployment of AI for environmental applications. The SMASH programme in **Slovenia** explores the use of machine learning in climate modelling, extreme weather analysis and air pollution source identification (SMASH, 2024[16]). The country is also participating in the EU NetZeroCities pilot programme, with the cities of Ljubljana, Kranj and Velenje, deploying AI and digital platforms to support urban decarbonisation strategies through improved data integration and planning (NetZeroCities, 2024[17]).

Energy efficiency

Multiple EU Member States are deploying AI-driven solutions to optimise energy consumption, grid resilience and renewable integration.

Belgium is advancing AI-powered energy management through the Coordination Mechanisms for the Sharing of Energy through Proxies (COOMEP) initiative, which enables households to optimise energy use via AI-based decision-making systems (VUB, 2024[18]). The country is also implementing the EUR 247 000 SIRIUS Simulator Project, an AI tool supporting electric grid planning (Europol, 2024[19]). This is a predictive maintenance initiative for wind turbine parks under the Prognostic Health Management and Improving Energy Production of Wind Turbine Parks project (Flanders AI Research Program, 2024[20]). Another Belgian initiative, Digital Twin in Support of Sustainable and Resilient Energy Systems, applies AI-powered simulations to improve grid stability and sustainability (VUB, 2024[18]).

Ireland is integrating AI into urban energy planning through Next Generation Energy Systems (NexSys). This EUR 18.3 million research initiative explores AI-based optimisation of neighbourhood energy distribution (NexSys, 2022[21]). **Italy**'s Transition Plan 5.0 incorporates AI into its EUR 6.3 billion national sustainability strategy. In so doing, it supports energy-efficient digital infrastructure and smart resource management. **Latvia** is leveraging AI to enhance energy sector efficiency through the EUR 5.59 million I-NERGY project (REA, 2021[22]) and a EUR 1.57 million research collaboration. The latter falls under the Swiss Latvian Cooperation Programme – Pre-defined Programme Component in Information and Communication Technology (ICT) and Smart Energy – which focuses on AI applications in smart grids and energy storage. In **Poland,** New Energy (*Nowa Energia*) programme, backed by EUR 590 million, supports AI-driven innovation in smart city energy systems and decentralised energy clusters (Government of Poland, 2025[23]).

Weather forecasting and risk reduction

EU Member States are increasingly applying AI in the context of weather disaster forecasting and risk reduction. **France** and **Germany** co-fund the CONTRAILS project to assess and reduce the climate impact of aircraft condensation trails through hybrid AI and physical modelling (Deutscher Wetterdienst, 2025[24]). In addition, the RenovAIte initiative applies AI to optimise infrastructure renovation (RenovAIte, 2025[25]). **Bulgaria** is part of the EU-funded ForeSight project, which uses real-time data and AI to predict and manage wildfires and urban emergencies. **Latvia** is developing an AI-powered system to forecast storm-induced damage to power grids, improving resilience against extreme weather events (Sadales tīkls, 2025[26]). **Slovenia** has deployed HIDRA, which uses deep neural networks to predict sea levels and coastal flooding risks.

Business applications

Several EU Member States are supporting AI adoption in businesses to foster sustainability. **Germany** launched the EUR 15.2 million Green-AI Hub Mittelstand, which supports small and medium-sized enterprises (SMEs) in implementing AI to reduce energy and resource consumption (BMUV, 2024[27]). Smart Attica in **Greece** and sustAIn.brussels in **Belgium** act as European Digital Innovation Hubs (EDIHs). They offer training and technical assistance to enterprises building environmentally focused AI solutions (sustAIn.brussels, 2024[28]; Smart Attica, 2024[29]). For its part, **Slovenia** has included AI-based pilot projects in its strategy to increase renewable energy uptake in the economy. This includes peer-to-peer energy marketplaces and improved emissions monitoring through digital tools (Slovenian Ministry of Economic Development and Technology, 2022[30]).

Waste management

AI is also being applied to improve waste management and recycling efficiency. **Germany** has established the Application Hub for a Circular Economy for Plastic Packaging through AI Methods. This EUR 30 million initiative supports research into AI-based solutions to reduce plastic waste and enhance circularity (AI Hub Plastic Packaging, 2024[31]). **Latvia** is advancing automated waste sorting through the WinGo Deposit system. It uses machine vision and neural networks to classify recyclable materials such as polyethylene terephthalate (PET) bottles, metal cans and batteries, with plans to expand to additional waste types (Labs of Latvia, 2023[32]).

Environmental subfields

Some countries reported AI initiatives in specific environmental subfields. **Bulgaria** is building a national real-time water management system that integrates AI to monitor precipitation, snowmelt and river flows for better flood risk assessment. These cases illustrate the diversity of potentially using AI for environmental challenges, even if such uses remain the exception rather than the norm among EU Member States. **Croatia** has adapted the ATMOSYS Air Quality Management System, originally developed in Belgium, to forecast localised air quality using machine-learning tools. The system supports compliance with EU air legislation at both the regional and urban levels. **France** supports marine science through the OcéanIA Challenge, a research initiative developing AI and mathematical modelling tools to study the ocean's role in climate regulation and biosphere preservation (Inria, 2025[33]). **Malta** is applying AI to cultural heritage preservation through the MEGALITH project, which uses climate modelling and simulation data to predict stone degradation in megalithic temple sites (University of Malta, 2023[34]).

Environmental monitoring

Seven EU Member States have launched dedicated initiatives for environmental monitoring and data-driven policymaking. Data collection and monitoring are essential for informed policymaking and efficient

resource management. AI is increasingly being leveraged to improve the accuracy, efficiency and integration of environmental data, enabling real-time monitoring, predictive analytics and cross-sector data sharing. Seven of 27 EU Member States have launched AI-driven initiatives focused on strengthening environmental data systems (Figure 5.1). These projects range from energy and emissions monitoring to geospatial mapping and data infrastructure development.

Countries have started to introduce **centralised platforms** to integrate and enhance access to environmental data. **Austria** has developed the Climate Change Cockpit, a national platform designed to consolidate fragmented environmental data, particularly for climate-sensitive sectors like tourism (InnoDays, 2024[35]). Similarly, in **Slovenia,** the Data Warehouse for the Creation of the Energy Information System EnergIS is establishing a scalable data infrastructure to integrate energy-related datasets and improve decision making for climate and energy policies (Slovenian Ministry of Digital Transformation, 2023[36]).

AI is also supporting real-time environmental monitoring and geospatial analysis, providing critical insights into emissions, energy usage and environmental conditions. The REASSURE project in **Belgium** provides an AI-driven data analytics toolkit to optimise the reliability and sustainability of energy systems through predictive modelling (VUB, 2024[37]). In **Bulgaria,** the Geospatial Data for Environment integrates AI-powered geographic information services for tracking biodiversity, water resources, land cover and pesticide use. In **Finland, the** Visiiri Project, part of the Green ICT ecosystem, assesses the environmental impact of the country's ICT sector while promoting AI-enabled solutions for sustainability. **Lithuania is using** AI in the Improvement of Greenhouse Gas Accounting programme to assess land-use changes and refine emissions monitoring methodologies, ensuring compliance with evolving EU climate regulations. **Malta** is piloting AI for Better Utilities, which applies AI to analyse water and energy consumption patterns, with the aim of improving the resilience and efficiency of its utility networks. DS2 – DataSpace, DataShare 2.0 project – is advancing cross-sector data sharing in **Slovenia** by linking multiple environmental data sources, facilitating real-time monitoring of air pollutants and greenhouse gas emissions (DS2, 2023[38]).

These initiatives mark an important step towards strengthening the environmental data ecosystem in the European Union. Expanding use of AI in emissions monitoring, geospatial analytics and integrated data platforms will be crucial for enhancing climate adaptation strategies and driving data-informed environmental policies across the European Union.

Six EU Member States are pursuing efforts to reduce the environmental footprint of AI

Six EU Member States have introduced structured initiatives to mitigate the energy and resource consumption of AI (Figure 5.1), highlighting a significant gap in policy action. More than three-fifths of Member States have not yet adopted measures to address the environmental footprint of AI, leaving efforts concentrated in a few countries. Reported initiatives focus on improving the energy efficiency of AI models and data centres, integrating AI into broader sustainable digitalisation strategies and promoting research on frugal AI. While these initiatives represent important progress, further action is needed to ensure AI development aligns with EU climate and energy goals, particularly as demand for high-performance computing continues to rise.

Some governments have launched strategy documents to foster **sustainable AI development**. **Finland** has outlined measures to reduce the environmental footprint of the ICT sector, including AI technologies, in its Climate and Environmental Strategy for the ICT Sector (Finnish Ministry of Transport and Communications, 2021[39]). Meanwhile, the **Netherlands** has developed the Sustainable Digitalisation Action Plan. It sets out 44 targeted actions to align digitalisation efforts with sustainability goals, including reducing AI-related energy and water consumption. Similarly, **Spain** has introduced the National Green Algorithms Program. It promotes "green-by-design" AI models that integrate environmental sustainability variables and encourage synergies between the green and digital transitions (PNAV, 2025[40]).

Investments in frugal, energy-efficient AI and measures to minimise the environmental footprint of AI infrastructure are gaining momentum. **The** Green Data Processing and Storage initiative in **Denmark** is developing best practices for energy-efficient data centres and AI applications, with a focus on procurement guidelines and energy efficiency assessments (Digitaliseringsstyrelsen, 2025[41]). **France** is supporting multiple projects in this area. The General Framework for Frugal AI provides a methodology for assessing and mitigating AI's environmental impact (Ecolab, 2024[42]). In addition, PEPR IA Projects on Frugal and Embedded AI advance research in energy-efficient AI models. France has also funded research into reducing the energy consumption of cloud computing, with projects such as Pushing Low-carbon Services towards the Edge and End-to-end Eco-design of a Cloud to Reduce its Environmental Impact, in collaboration with OVHcloud and Qarnot Computing. **Slovenia** has committed to using **renewable energy sources** to power new supercomputing infrastructure in Arnes, with plans to integrate hydroelectric power and repurpose waste heat from the system to heat parts of the town of Maribor. In **Spain,** Artificial Intelligence for a Sustainable Energy Transition also contributes to this effort by exploring AI-enabled efficiency improvements across the energy value chain.

Use the next generation of AI to improve health

With the increasing availability of high-quality health data, AI holds immense potential to transform healthcare by optimising health service management, improving clinical decision making, enhancing personalised medicine and facilitating predictive medicine. Beyond improving the quality of care, these advancements can collectively contribute to advance the quintuple aim for healthcare by reducing cost of care, improving individual and population health, enhancing patients' experience, increasing providers' satisfaction and promoting health equity (OECD, 2019[43]). The ability of the European Union to fully harness the benefits of safe, secure and trustworthy AI in healthcare depends upon the capacity of EU Member States to strategically align the approach for the responsible adoption of AI and related investments, as well as to implement and harmonise data governance frameworks.

Against this background, the EU Coordinated Plan on AI encourages Member States to:

> *Take actions to **increase the quality and semantic interoperability of health data**, which is fundamental for the development and use of AI.*
>
> *Develop actions and support initiatives to increase medical professionals' **understanding and acceptance of digital technology** to accelerate adoption of AI-based systems in the medical field.*
>
> *Implement recommendations that promote the **eHealth upskilling of healthcare workers** and agree on common European quality indicators for continued medical education.*
>
> *Advance the **'1+ million genomes'** initiative possibly through their national recovery and resilience plans, including as a multi-country project.*
>
> *Support investments in secondary use of health data, including for AI, using, for example, RRF funding.*
>
> *Take action to facilitate the **integration of innovative AI-based systems** (e.g. machine learning, autonomous systems, conversational agents, big data, robotics) in health and care facilities such as hospitals and care homes, and notably when the digitalisation of the health systems has been outlined in the national recovery and resilience plans.*
>
> *Support **EDIHs specialised in medical technologies and eHealth** in order to help regional/national health systems and industry in their research efforts to provide better treatments and advances towards beating the coronavirus; and*
>
> *Work with national, regional and international standardisation bodies to formulate towards defining and setting **common standards**, including on issues such as security, safety, privacy, interoperability, in an effort to update existing standards for AI for health.*

EU Member States still struggle to leverage AI benefits. European financial incentives such as the Recovery and Resilience Facility (RRF) and targeted funding for the *1+ Million Genomes* (1+MG) aim to develop a unified AI in healthcare approach. However, EU Member States continue to face challenges in fully leveraging AI benefits due to several factors. These comprise fragmented policies across borders; varying interpretation and application of EU legislation; and limited co-ordination between country-level initiatives. This divergence risks limiting opportunities for cross-border knowledge sharing and slowing progress in innovation. By fostering a robust collaboration – such as through the European Health Data Space (EHDS) – the European Union could create a more resilient, safe and innovative AI health sector. Such a sector could build on the individual strengths of EU Member States, while reinforcing the competitive edge of the European Union in the global health landscape.

Table 5.2. Use the next generation of AI to improve health: Key findings

Dimension of survey	Description	Key findings
Health data quality, interoperability and legal policies for secondary use of health data	Ensuring that policies, infrastructure and procedures encourage development of high-quality datasets and the seamless sharing of these datasets across systems for secondary health data use, including for AI	Health data quality, interoperability and legal frameworks for the secondary use of health data are key priorities for EU Member States. These efforts are further supported by health data access bodies. Nine countries have already set them up and eight are doing so, aligning with provisions of the **European Health Data Space (EHDS).**
Trust, understanding and acceptance of the public and health professionals of AI in health	Increase trust, understanding and acceptance of digital technologies (including AI) among the public and healthcare professionals to improve health experience and outcomes	Assessing trust, understanding and acceptance of public and healthcare professionals in AI does not seem to have received sufficient attention to date. Only four EU Member States report initiatives in this area.
Upskilling and EU quality indicators	Developing e-health upskilling and/or EU quality indicators for continued medical education	More than half of EU Member States are implementing e-health upskilling initiatives; however, the country-level approach highlights the need for developing standardised EU-wide quality

Dimension of survey	Description	Key findings
		indicators to build a resilient health workforce.
Cross-border and subnational co-operation	Co-operating with organisations across and within borders to advance policies, processes and standards for AI in health	EU-wide initiatives engage nearly all Member States, yet they operate with varying scopes and reflect diverse priorities tailored to each country's digital health maturity.
Alignment with EU initiatives	Use of EU Recovery and Resilience Facility (RRF) funds and alignment with 1+ Million Genomes (1+MG) initiative	The 1+MG initiative and Genomic Data Infrastructure (GDI) project see most EU Member States prioritising research-driven collaboration, while a smaller subset focuses on policy-led strategies or dedicated genomic infrastructures.
Integration and scaling of AI systems in healthcare	Large-scale implementation of AI-based systems in healthcare facilities	Based on the maturity of their data ecosystems, few EU Member States are integrating and scaling AI at various degrees. They focus instead on specific use-cases to generate impact in AI-driven initiatives. Countries with a broader set of use-cases are looking to establish a wider foundation for a larger set of potential uses and outcomes of AI.

EU Member States are making significant strides in AI-driven healthcare innovation

Although EU Member States are generally furthering AI-driven healthcare innovation, the complexity of health data and varied regulatory environments demand greater collective action and co-operation. Establishing a robust foundation for AI, built upon compatible data-driven policies and harmonised technical and semantic standards, is crucial to enabling AI to thrive across borders. These pillars are necessary not only for regulatory consistency but also to facilitate cross-border collaboration to enable the efficient sharing of leading practices. Building shared practices such as interoperable data systems, regulatory frameworks and ethical standards will enable countries to innovate while maintaining high security and privacy safeguards.

As country-level and EU-wide initiatives are developed and lessons are drawn from implementation, they can inform and update policies and regulations, leading to a stronger and more harmonised foundation. This process, in turn, incentivises EU Member States to develop robust enablers, such as comprehensive and quality health datasets, to implement more effective and relevant initiatives. In this way, they can achieve a greater impact on the quintuple aim for healthcare. Skipping these foundational steps risks further cross-national fragmentation, embeds long-standing data integration challenges and ultimately reduces the potential impact of AI on improving health outcomes.

The responses of EU Member States on the thematic areas highlight varying levels of maturity in establishing robust health data governance frameworks and technical infrastructure, particularly in light of the 2021 updates to the EU Coordinated Plan on AI. In one trend, EU Member States such as in Finland and the Netherlands – with reliable digital infrastructure, interoperable health systems and co-ordinated policies across governance, technology and people capacity – are further along in AI development (Box 5.1). However, this advancement depends highly on the structure and co-ordinated mechanisms within each health system. EU Member States have begun to scale AI across existing frameworks in specific use-cases. In addition, there has been limited assessment of AI acceptance among the public and health professionals. However, significant efforts are devoted to expanding medical curricula to ensure the health workforce is equipped with the right tools to leverage data-driven technologies.

Cross-border co-operation and partnerships are proving essential in supporting co-ordinated and harmonised development of AI across the European Union. Strong alignment to EU initiatives, such as the 1+MG project or Genomic Data Infrastructure (GDI) initiative, is accelerating these efforts. The forthcoming roll-out of the EHDS – which came into force in March 2025 – is also prompting a unified approach to develop AI, providing clear direction and incentives for harmonised integration.

Box 5.1. Health data authorities for responsible data governance and co-ordinated AI development

In preparation for the EHDS, several EU Member States have begun to establish health data authorities. These entities will oversee data governance, co-ordinate AI development and ensure that healthcare data can be securely accessed and used across sectors. They maintain compliance with EU data protection standards, support AI innovation and create a regulatory environment conducive to research and healthcare improvement.

Finland has taken a proactive approach with its Social and Health Data Permit Authority (Findata). It centralises data access services, providing a streamlined process for researchers and ensures that secondary use of health data complies with EU data privacy standards. Similarly, the **Netherlands** has launched the Health Data Access Body Netherlands (HDAB-NL), designed to co-ordinate secondary data use for research, innovation and healthcare policy.

In **Portugal**, HealthData@PT is setting up an HDAB that will manage data governance and facilitate national and cross-border access to health data, essential for AI model development and health research. **Austria** is similarly developing an HDAB within its national health data infrastructure, supporting the EHDS objectives to break down data silos and enable the collaborative use of health data across the healthcare system. The Slovenian National Institute of Public Health has launched the Supporting Health Data Access Bodies in **Slovenia** (SI-SUD) to develop data management, metadata cataloguing, secure processing capabilities and quality labelling. All these will help researchers access health data in compliance with EHDS requirements.

Through these health data authorities, EU Member States aim to centralise the management of health data access, ensuring that AI-driven research can proceed securely and responsibly. These bodies represent a foundational element of the EHDS, supporting harmonised and efficient data sharing across borders to foster a unified AI development within healthcare. With the upcoming roll-out of the EHDS, these health data authorities will play a central role in aligning national strategies with EU goals, creating an ecosystem where AI can be leveraged for healthcare effectively.

Sources: NIJZ (2023[44]), "Supporting Health Data Access Bodies in Slovenia – SI-SUD", https://nijz.si/nijz/javni-pozivi/javni-poziv-za-izbor-zunanjega-strokovnjaka-ki-bo-sodeloval-pri-izvedbi-evalvacije-projekta-v-okviru-pogodbe-supporting-health-data-access-bodies-in-slovenia-si-sud/; Dutch Ministry of Health, Welfare and Sport (2024[45]), "Health Data Access Body (HDAB)", https://www.datavoorgezondheid.nl/health-data-acces-body; Findata (2024[46]), "Homepage", https://findata.fi/en/); SPMS (2024[47]), "HealthData@PT", Phttps://www.spms.min-saude.pt/healthdatapt-eng/about/; BKA (2024[48]), *Änderung des Allgemeinen Sozialversicherungsgesetzes (BGBl. I Nr. 190/2023)*, https://ris.bka.gv.at/eli/bgbl/I/2023/190; EU (2025[49]), *Regulation (EU) 2025/327 of the European Parliament and of the Council of 11 February 2025 on the European Health Data Space and amending Directive 2011/24/EU and Regulation (EU) 2024/2847*, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ%3AL_202500327.

Most EU Member States are building a robust health data infrastructure, ensuring interoperability and expanding secondary use of health data

EU Member States are prioritising establishment of health data infrastructures by developing secure platforms to standardise, store and facilitate use of health data for primary and secondary use. The EHDS regulation provides for establishment of health data access bodies (HDABs) to grant access to health data for secondary purposes and ensure privacy and security guardrails (EU, 2025[49]). Twelve EU Member States have already established an HDAB, while ten more are doing so. However, five EU Member States have not yet made significant progress in that area. This indicates the need for further action to align with the EHDS until March 2027 – when HDABs are expected to be in place.

With the enactment of the Agreement Implementation Act 2024 and its amendment to the Health Target Steering Act, **Austria** established a national legal framework that enables key actors in the health system – the federal government, social insurance institutions and the federal states – to analyse data for public health. To this end, these stakeholders are jointly developing a national health data infrastructure that will serve the use of health data for public health purposes, support efficient responses to health emergencies and strengthen health system performance. At the same time, the platform lays the groundwork for key components of the national EHDS infrastructure.

Germany is laying the groundwork for the EHDS to make health data more available and useable (BMG, 2024[50]). The forthcoming Registry Act will also create a legal framework for medical registries to improve data usage for healthcare-related research, quality assurance and patient safety through regulations on facilitated data processing and linkage. In addition, it aims to improve transparency through a central hub for registry oversight (Deutscher Ärzteverlag, 2023[51]). Taken together, these initiatives aim at improving accessibility and linkability of health data across Germany and the European Union via the EHDS.

In **Portugal**, the OurHealth@PT and PATHeD initiatives (an EU-wide project involving 11 Member States) aim to improve secure access to health data, particularly for primary use, by integrating with the broader MyHealth@EU infrastructure. OurHealth@PT supports expansion of cross-border services, including the "Laboratory Results Reports" service, which will help share electronic health data for primary use across EU Member States. Similarly, PATHeD, which concluded in 2024, was designed to enable citizens to access their Patient Summary via a mobile app. In this way, they could present it to healthcare professionals in English or another language, further supporting cross-border care through MyHealth@EU. In parallel, Portugal is participating in the HealthData@PT joint actions, which focuses on the secondary use of health data. It supports the technical implementation of the national infrastructure, network and key services required to ensure secure access for research, innovation and health policymaking. The private sector plays a pivotal role in investing in health data platforms through secure infrastructure for managing and sharing electronic health records (EHRs), telehealth and remote monitoring services (SPMS, 2023[52]; EC, 2024[53]).

The roadmap for a national digital infrastructure in **Sweden** aims to centralise healthcare and dental data. In so doing, it will support efficient patient care while boosting data-driven healthcare research to advance precision medicine and training AI models (E-hälsomyndigheten, 2024[54]).

Table 5.3. Health data access body status by EU Member States

EU Member States with an established health data access body	EU Member States working on establishing a health data access body	EU Member States making limited efforts in establishing a health data access body
Belgium	Austria	Bulgaria
Denmark	Croatia	Cyprus
Estonia	Czechia	Hungary
Finland	Greece	Malta
France	Italy	Romania
Germany	Poland	
Ireland	Portugal	
Lithuania	Slovak Republic	
Latvia	Slovenia	
Luxembourg	Spain	
Netherlands		
Sweden		

Note: Timeline from 2021 until June 2024.
Source: Data reported by EU Member States through the survey and interviews.

Achieving seamless health data exchange across the European Union relies on interoperability frameworks that enable consistent and secure communication between systems

In the **Netherlands,** the Electronic Health Information Exchange Act mandates electronic health data sharing among healthcare providers and supports efficient health data transfer, aligning with future EHDS provisions (Dutch Ministry of Health, Welfare and Sport, 2024[55]). **Lithuania** participates in the EU e-Health Digital Service Infrastructure, which facilitates the international exchange of electronic prescriptions (e-prescriptions) and patient summaries, enhancing cross-border healthcare through oversight of the national Health Contact Centre (LKNC) (Esveikata.lt, 2023[56]). In **Portugal**, interoperability initiatives include the MyHealth@EU project, which expands services like Patient Summary, e-prescription and e-dispensation for healthcare professionals across Europe. Meanwhile, the National Health Interoperability Platform connects public, private and social healthcare providers, allowing real-time communication across systems (EIT Health, 2024[57]).

Cyprus is developing the Xt-EHR project, a platform that defines technical standards for interoperable EHRs, critical in improving efficiency of the health data ecosystem (Xt-EHR, 2024[58]). The e-health programme in **Greece** facilitates cross-border data sharing with a health hub that supports e-prescriptions, making it easier for citizens to access healthcare across EU Member States (iED, 2024[59]). In **Germany**, the Federal Ministry of Health has prioritised interoperability. The Digital Act, for example, expanded the Co-ordination Office for Interoperability into a Competence Centre for Interoperability. This centre will lead work on technical and semantic standards to ensure consistent and secure health data exchange (gematik GmbH, 2024[60]).

While the national interoperability initiatives above represent meaningful progress, the overall approach across the European Union remains uneven. Continued alignment with common frameworks like the EHDS, along with improved cross-border collaboration, will be essential to achieve an interoperable European health data ecosystem. **Sweden** has tasked its e-Health Agency with leading interoperability initiatives. It will work alongside the National Board of Health and Welfare to ensure a cohesive, interoperable health data infrastructure with a primary focus on semantic standards (Swedish eHealth Agency, 2024[61]).

Many EU Member States are enabling the secondary use of health data to support research, innovation and policymaking, with emphasis on AI development

Alongside other EU Member States, **Portugal** participates in several EU-funded initiatives, such as EUCAIM and QUANTUM, which focus on cancer imaging and data quality standards, providing valuable resources for AI-based research and clinical applications (EIBIR, 2024[62]; QUANTUM, 2024[63]). **Spain** has developed its National Health Data Space as part of the Digital Health Strategy, creating a national infrastructure for research and policy design (Datos.gob.es, 2024[64]). Spain also leverages platforms like HealthData 29, which makes open health datasets available to researchers, further driving health research and AI innovation (Foundation 29, 2024[65]). In **Finland**, the FinHITS project builds on the national infrastructure to enable international research collaboration and AI-driven analytics. It leverages the Findata platform, a legally backed service that offers secure and facilitated data access for research and policymaking (Findata, 2024[46]; Findata, 2025[66]). In **France, the** Health Data Hub simplifies health data access for researchers, supporting AI and data analytics projects to improve healthcare services (Health Data Hub, 2024[67]). MedReSyst and Translate-AD in **Belgium** foster data-sharing ecosystems to advance research into neurodegenerative conditions, such as Alzheimer's disease (ICT & Health, 2024[68]; Stratégie de Spécialisation Intelligente Wallonne, 2024[69]).

Croatia has launched AI4Health.Cro to establish a framework for AI innovation in healthcare, enabling structured data access for research and development (R&D) (AI4Health.Cro, 2021[70]). FinHITS in **Finland**

strengthens the country's health data infrastructure, enabling secondary use of data through streamlined access and international collaborations (Findata, 2025[66]). In **Denmark**, the Research Health Data Gateway initiative is developing a centralised metadata catalogue to streamline health data access for research. This will allow researchers to integrate data from multiple sources more efficiently and accelerate AI development (Ministry of Foreign Affairs of Denmark, 2022[71]). **Germany** is likewise emphasising AI-driven healthcare innovation, with 38 AI-focused projects funded from 2020 to 2025 supporting development and adoption of digital health applications (Lantzsch et al., 2022[72]). In addition, through the Medical Informatics Initiative, Germany provides clinical care data for research in a secure and accessible format. The Health Data Lab at the Federal Institute for Drugs and Medical Devices makes pseudonymised billing data from people insured in the statutory health system available for research to improve healthcare for all. **Sweden** is advancing secure access to health data for research, fostering AI-driven innovation and enabling precision medicine through the **AIDA Data Hub**, a national e-infrastructure designed to support data-driven healthcare research with an emphasis on medical imaging AI (AIDA, 2024[73]).

With varying maturity levels of health data ecosystems, EU Member States have begun integrating and scaling AI systems for specific use-cases in healthcare

Based on the maturity of their data ecosystem, EU Member States are integrating and scaling AI to various degrees, focusing on specific use-cases such as predictive analytics to promote AI-driven initiatives (Box 5.2). Countries that are exploring a diverse range of AI use-cases are working to build the infrastructure and capabilities to scale these applications for broader benefits (Table 5.4).

Given the potential of AI in clinical decision support and diagnostics, countries such Greece, Lithuania, Romania and Sweden are leveraging AI to provide healthcare providers with more accurate medical imaging. **Lithuania**'s Oxipit initiative focuses on radiology automation for diagnostic imaging (Oxipit, 2024[74]). Meanwhile, EUCanImage enables the linkability of clinical and genomic data to enhance cancer diagnosis through AI and precision medicine, particularly for breast, liver and colon cancers (EuCanImage, 2024[75]). The CellaVision system, developed in **Sweden**, uses AI to classify blood cells and support haematology diagnostics by improving accuracy in detecting abnormalities (CellaVision, 2024[76]). The start-up *Advantis Medical Imaging* in Greece employs AI to analyse brain magnetic resonance imaging, facilitating early diagnosis in neurology (Advantis Medical Imaging, 2024[77]). Some **Romanian** private healthcare facilities are starting to use Lunit INSIGHT MMG, an AI-based diagnostic tool, for detecting breast cancer on mammograms (Regina Maria, 2023[78]).

Table 5.4. AI in health use-cases driving adoption across EU Member States

Use case	EU Member States
Administrative workflow	Denmark, Netherlands, Poland, Sweden
Clinical decision support and diagnostics	Greece, Lithuania, Romania, Sweden
Emergency response and public health surveillance	Greece, Latvia
Home care solutions for older adults	Austria, Belgium, Croatia
Predictive analytics and treatment optimisation	Malta, Slovak Republic, Portugal

Source: Data reported by EU Member States through the survey and interviews.

As AI can improve administrative workflows, three EU Member States have launched initiatives with those specific AI applications. **Poland** is developing an AI-driven project to automate clinical text codification with International Classification of Diseases 10th Revision codes to improve overall efficiency and accuracy of medical documentation. **Sweden** is using AI-based transcription systems to convert speech to text in nearly real time, reducing the administrative burden on healthcare professionals (AI Sweden, 2024[79]).

With its AI platforms, Corti (2024[80]) and Radiobotics (2024[81]), **Denmark** is optimising workflows spanning across administration to predictive diagnostics in radiology, which in turn helps reduce human errors.

Box 5.2. Integration of AI for predictive analytics and treatment optimisation

AI-driven predictive analytics is increasingly playing an essential role in healthcare, supporting healthcare providers in forecasting health outcomes and managing chronic conditions.

In **Portugal**, initiatives such as Identification and Forecasting of Hospital Emergency Demand and FRAILCARE.AI leverage AI to predict peak times in emergency care and assess the needs of older patients. In this way, they enable healthcare systems to allocate resources more efficiently and tailor healthcare strategies for vulnerable populations. Similarly, the **Slovak Republic** uses predictive analytics to anticipate disease progression, re-admission risks and potential complications. This allows providers to make proactive, data-informed decisions that improve patient outcomes and streamline treatment pathways. In **Malta**, the Pharmacy of Your Choice platform uses predictive analysis to guide pharmacists towards safer, more cost-effective choices, ultimately enhancing resource management and promoting patient safety.

Despite being localised, these initiatives exemplify how AI-driven predictive analytics can integrate into healthcare systems to optimise treatments and resource allocation, contributing to a more responsive, efficient and patient-centred approach to care across the European Union.

Sources: EC (2021[82]), "Slovakia's Recovery and Resilience Plan", https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/slovakias-recovery-and-resilience-plan_en?locale=en; Government of Malta (2023[83]), "The Pharmacy of Your Choice National Scheme", https://poyc.gov.mt/en/poyc-scheme/the-pharmacy-of-your-choice-national-scheme/; FrailCare.AI (2024[84]), "Homepage", https://frailcareai.vohcolab.org/; WEF (2024[85]), "AI in healthcare: Buckle up for change, but read this before takeoff", https://www.weforum.org/stories/2024/01/ai-in-healthcare-buckle-up-for-big-change-but-read-this-before-takeoff/; Government of Malta (2024[86]), "Pharmacy of Your Choice", https://health.gov.mt/poyc/.

In light of ageing populations affecting all EU Member States equally, Austria, Belgium and Croatia have initiated AI-driven projects that support home care solutions for older citizens, addressing challenges such as social isolation, safety and personalised health monitoring. The Smart and Social Home Care in **Belgium** aims to assist older people in private households by integrating a network of caregivers and using AI for safety and social engagement (Sirris, 2021[87]). In addition, the KALTAZARD initiative further enhances care by predicting falls and other health-related risks through sensor-based monitoring. Through the AI4Health initiative, **Croatia** is developing a framework for AI-driven home care health solutions. This would particularly benefit older populations in need of personalised support (AI4Health.Cro, 2021[70]). The Linked Care initiative, developed in **Austria**, aims to connect various health and social data source to improve services for older adults and home care patients (FFG, 2024[88]).

As far as enhancing emergency response and public health surveillance is concerned, two EU Member States are integrating AI into specific use-cases. **Greece** is developing a special Meteo Operational Unit. It uses machine learning to understand the spread of Coronavirus disease 2019 (COVID-19) by correlating virus variables with meteorological data for informed public health responses (NOA, 2024[89]). For its part, the **Latvian** Children's Clinical University Hospital is integrating AI to support treatment management and operational efficiency (BKUS, 2024[90]).

Few EU Member States are taking steps to assess trust, understanding and acceptance of AI among the public and healthcare professionals

Across the European Union, assessing trust, understanding and acceptance of AI among public and healthcare professionals has not yet emerged as a priority. Only four EU Member States are actively pursuing initiatives in this area, underscoring the critical gap in understanding end users' acceptance of AI.

Slovenia demonstrates a leading practice by integrating feedback mechanisms with both healthcare professionals and the public to ensure that digital health initiatives are aligned with local needs (Box 5.3). The AI4Health initiative in **Croatia**, funded jointly by the Digital Europe Programme and NextGenerationEU, is investing in awareness campaigns. These target healthcare professionals, promoting knowledge sharing of best practices in digital health technologies, including AI (AI4Health.Cro, 2021[70]). In the **Slovak Republic**, the government collaborates with medical and healthcare professional associations to promote adoption of digital health technologies, recognising the pivotal role of these associations in advocating for technological advancements. In addition, it prioritises engagement of health professionals in the co-implementation of digital health initiatives, supported by informal feedback platforms that encourage open discussions on the digitalisation of the health system. This ensures the incorporation of health workforce perceptions to foster ownership and trust of these technologies (AmCham Slovakia, 2024[91]). In **Portugal**, under its National Recovery and Resilience Plan (NRRP), the National Strategy for Digital Transformation in Health aims to improve equitable access to health information through digital services, such as the SNS24 portal. This platform provides citizens with streamlined access to reliable health information and digital health services (Portuguese Ministry of Health, 2024[92]).

Box 5.3. Engaging the public and healthcare professionals for informed e-health decision making

Under the European Commission's Structural Reform Support Programme, **Slovenia** developed an e-Health strategy to advance digitalisation of its healthcare system, including integration of AI. A core priority is fostering a collaborative, patient-centred ecosystem by actively involving healthcare professionals and patients in the digital health transformation.

The strategy introduces a hybrid governance model that balances central oversight with local flexibility, allowing healthcare professionals to contribute meaningfully to e-health initiatives and tailor solutions to local needs. Central to this model is establishment of the New Central Unit (CNU), which will standardise and co-ordinate e-health practices while enabling providers to adapt solutions to local needs. Advisory committees and competency units, comprising healthcare and information technology professionals, will support this effort by providing policy recommendations and operational guidance to ensure digital health solutions are both practical and aligned with clinical workflows.

To build trust and engagement among patients, Slovenia is planning regular patient surveys to continuously refine e-health services based on user feedback. In addition, public awareness campaigns will inform the population about the benefits of digital health and improve digital literacy, fostering greater acceptance and understanding of digital health tools.

Sources: Slovenian Ministry of Health (2022[93]), *Slovenija – e-zdravje za bolj zdravo družbo*, https://www.gov.si/assets/ministrstva/MZ/DOKUMENTI/staro/Slovenija-E-zdravje-za-bolj-zdravo-druzbo-v2.pdf; Slovenian Ministry of Health (2024[94]), "Supporting the Digital Transformation of Healthcare", https://www.gov.si/zbirke/projekti-in-programi/podpora-digitalni-transformaciji-zdravstva/.

Several EU Member States are conducting upskilling initiatives for the health workforce, yet EU-wide quality indicators for continued medical education are lacking

Recognising the importance of equipping healthcare professionals with the right skills to leverage AI applications, EU Member States are investing significantly in various upskilling initiatives. Four countries have included workforce upskilling in their broader digital health strategies. Meanwhile, five EU Member States have implemented open-source platforms to provide continuous digital skills training for healthcare professionals.

Targeted digital literacy and long-term learning

Latvia, the **Slovak Republic** and **Sweden** are developing targeted digital literacy programmes and long-term AI learning courses. For their part, **Belgium**, **Czechia** and **Portugal** are formally integrating digital health curricula into public medical education to increase healthcare professionals' ability to use data-driven technologies (Box 5.4).

The Digital Health Acceleration Strategy (French Government, 2021[95]) in **France** and the Digital Health Strategy in **Spain** (Government of Spain, 2021[96]) exemplify national strategies that focus on extensive resource allocations. Both aim to ensure that healthcare professionals develop practical competencies in digital health, including AI applications.

Similarly, in **Romania**, Health Program 2021-2027 aims to develop digital and AI competencies among medical personnel. It emphasises e-health literacy as a necessary skill for remote consultations and public health data management (Government of Romania, 2023[97]). Meanwhile, the National e-Health Strategy 2030 in **Bulgaria** prioritises a structured approach to digitalising its healthcare system. This includes

developing an organisational model for e-health and capacity building among healthcare specialists. To that end, it encourages continuous professional development to ensure effective implementation of e-health initiatives (Ministry of Health of the Republic of Bulgaria, 2024[98]).

AI-driven training programmes

Austria, Cyprus, Ireland, Lithuania, the Netherlands and Portugal have dedicated platforms, academies and seminars offering structured data and AI-driven training programmes for healthcare professionals and the public.

The Xplain AI application is an educational tool in **Austria** to foster AI-based skills in healthcare (AK Wien, 2024[99]). As part of the MyHealth@EU project, **Cyprus** launched the e-Health Cross-Border Health Services, which provides seminars to doctors and pharmacists to familiarise themselves with cross-border medical data exchange (NEHA, 2024[100]). For its part, in collaboration with the National Association of Pharmacies (ANF), **Portugal** held an informational webinar for its pharmacists on the cross-border ePrescription and eDispensation services. Two additional webinars are planned to further support professional engagement with MyHealth@EU services (SPMS, 2023[101]).

Within the Further Education and Training Strategy 2020-2024, the SOLAS initiative in **Ireland** aims to enhance digital literacy among the public and healthcare professionals. It offers e-learning courses, with ongoing discussion to expand the provision of digital health literacy modules in academia (SOLAS, 2024[102]). In **Lithuania**, the Competency Platform for Healthcare Professionals monitors and manages the skills development of healthcare professionals, including specialists (EC, 2022[103]). Meanwhile, the Digizo.nu platform in the **Netherlands** supports the redesign of healthcare processes to improve efficiency through digital and hybrid integrations (Digizo.nu, 2024[104]). In addition, the Digital Skills in Healthcare initiative provides a national, open-source knowledge and information hub, offering a repository of online learning resources to enhance healthcare professionals' digital skills and boost the digital transformation of healthcare institutions (EU, 2021[105]).

Digital literacy and long-term learning for healthcare workers

Latvia, the Slovak Republic and Sweden focus on digital literacy and long-term learning for healthcare workers, aiming to gradually build digital and AI capabilities. Vision for eHealth 2025 (Swedish Government, 2020[106]) in **Sweden** and Riga TechGirls programme in **Latvia** (Riga TechGirls, 2024[107]) encourage healthcare professionals to pursue continuous education in AI through workshops, online courses, professional development sessions and knowledge banks (Kunskapsguiden, 2024[108]). These programmes, often locally administered, emphasise accessibility and adaptability to various healthcare roles. The National Health Information Centre in the **Slovak Republic** extends similar AI training, equipping healthcare workers with essential skills for telemedicine, EHRs and digital data management.

In several EU countries, AI upskilling initiatives are part of EU-funded programmes and cross-border collaborations such as the HelloAI programme (HelloAI, 2024[109]) and the Digital Skills for Healthcare Transformation project (DS4Health, 2024[110]). Co-financed by the European Commission, these initiatives offer health professionals accessible online courses to apply AI in healthcare settings. Advanced master's programmes in digital health focus on improving understanding of healthcare professionals of the design, use and development of digital health technologies.

As e-health upskilling programmes are still in the early stages of integration into medical curricula – either at the national or EU level – EU Member States have not yet focused on developing a commonly shared and EU-wide transferable skillset. Such a framework, supported by cross-country comparable indicators, could provide a consistent approach to assessing and improving continuing medical education across EU Member States.

Box 5.4. Gradual integration of tailored e-health upskilling into public medical curricula

By expanding public medical curricula in specific use-cases, three EU Member States are fostering a culture of a competitive, EU-wide health workforce. To that end, they provide the necessary skill sets to integrate data and digital technologies into clinical practice. This approach cultivates a digitally proficient and resilient workforce, actively involved healthcare providers in co-developing and co-implementing AI-driven tools within health systems.

In **Belgium**, the Flanders AI Academy offers specialised courses tailored to healthcare professionals. It provides training on AI-driven diagnostics, patient monitoring and clinical decision support. In this way, the academy aims to improve clinicians' qualifications and readiness to apply AI effectively in their workflow.

Similarly, in **Portugal,** the Shared Services of the Ministry of Health, part of the national public health sector, offer targeted digital health training across various healthcare roles, including doctors and nurses. This programme equips healthcare providers with basic digital skills to leverage data in different health information systems, digital health applications and platforms, cultivating a forward-oriented workforce aligned with future digital needs.

In **Czechia**, medical universities and the Institute for Postgraduate Medical Education, established by the Ministry of Health, have integrated digital health competencies into medical training. This integration prepares the future health workforce to work confidently with data-driven technologies.

Sources: VAIA (2024[111]), "Flanders AI Academy", https://www.vaia.be/en/; SNS (2024[112]), "Academy SPMS", https://academia.spms.min-saude.pt/.

Cross-border collaboration is enabling EU Member States to align their regulatory frameworks and fostering knowledge sharing of AI in healthcare

Cross-border collaboration in healthcare spans across a range of initiatives, each tailored to specific objectives, reflecting the diverse approach undertaken by EU Member States (Figure 5.3). Most EU Member States participate in the 1+MG initiative. This focuses on building secure genomic data-sharing architectures, essential for advancing research and AI-based healthcare solutions. More than half of EU Member States are actively engaged in EU-HIP, the EU health interoperability project. This initiative aims to enhance interoperability standards, aligning with platforms such as the Health Emergency Preparedness and Response Authorities (HERA) for AI-driven public health applications. In the Nordic region of Europe, five countries are collaborating to establish common technical and semantic frameworks to support cross-border e-health efforts (Box 5.5).

To strengthen international collaboration, the Global Digital Health Partnership (GDHP), with the participation of 14 EU Member States, fosters development of shared data standards and frameworks to support interoperability and digital health innovation. Research-driven collaborations, such as the ELIXIR project, are widely supported by 21 EU Member States to foster data sharing for genomics and personalised medicine. Similarly, the Transforming Health and Care Systems (THCS) project, involving 21 European countries, aims to create a framework for healthcare transformation, including AI testing in clinical settings.

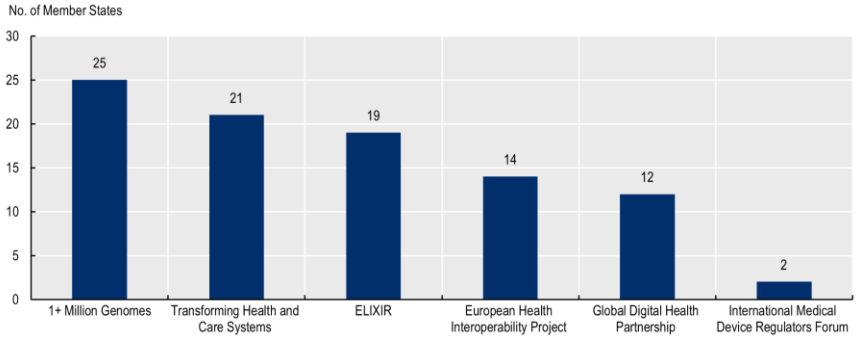
In addition, **Denmark**, **Germany** and **Portugal** participate in the International Medical Device Regulators Forum (IMDRF). They focus on regulating AI-enabled medical devices to ensure safety and efficacy. Initiatives on AI governance and ethics, led by the World Health Organization (WHO) and the Organisation

for Economic Co-operation and Development (OECD), include contributions from various countries, promoting global standards and responsible AI adoption in healthcare.

Austria, **Denmark**, the **Netherlands**, **Portugal**, **Slovenia** and **Sweden** are investing in cross-border collaboration that focuses on harmonising healthcare standards and regulatory frameworks. These efforts aim to align AI regulations within broader digital health frameworks. The THCS partnership, involving 21 EU Member States, aims to create a framework for healthcare transformation, including AI testing in clinical settings (THCS, 2022[113]). Similarly, the IMDRF, with the participation of **Denmark**, **Germany** and **Portugal**, has a working group on developing standards for AI-enabled medical devices, prioritising patient safety and performance requirements (IMDRF, 2024[114]).

Collaboration revolving around **research and innovation (R&I)**, involving 24 EU Member States, supports the *1+MG* initiative to build a secure data-sharing architecture for genomics, essential for AI-based research (GDI, 2024[115]).

Figure 5.3. Participation of EU Member States in health-related cross-border initiatives



Source: Data reported by EU Member States through the survey and interviews.

Czechia, **Portugal** and the **Netherlands** reported initiatives that focus on enhancing data-sharing standards for AI. The participation of **Portugal** in *EU-HIP, alongside* 15 other EU Member States, aims to ensure interoperability with the HERA platform, facilitating AI applications in public health (Statens Serum Institut, 2025[116]). Similarly, the *GDHP,* with the participation of 14 EU Member States, promotes international collaboration to develop and implement shared data standards and frameworks to support interoperability (GDHP, 2024[117]).

Several EU Member States are participating in international collaborations focused on sharing best practices for AI-driven healthcare. Supported by the WHO and the OECD, these partnerships provide platforms for countries to share knowledge on AI governance, ethics and real-world AI applications in healthcare. Through these collaborations, countries contribute to global knowledge-sharing practices that promote the responsible use of AI in healthcare by setting standards and guidelines.

Box 5.5. Nordic cross-border collaboration to promote well-being of clinicians and patient mobility

Nordic countries, including **Denmark**, **Finland**, **Iceland**, **Norway** and **Sweden**, are collaboratively advancing cross-border e-health initiatives under the guidance of the Nordic Council of Ministers.

A central focus of the Nordic collaboration is the establishment of standardised electronic health records with an emphasis on technical and semantic harmonisation across countries. This alignment enables the secure, efficient exchange of health information across borders, ensuring that patients can access their medical records and receive co-ordinated care throughout the Nordic region.

The collaboration extends to establishing common frameworks for mobile health applications, health databases and registries that enable secondary health data use for research, public health and policy development. By creating shared platforms and databases, the initiative facilitates high-quality data standards and innovation in healthcare, giving researchers and policymakers access to comprehensive cross-border health data. This approach strengthens public health monitoring and provides deeper insights into health trends across the Nordic countries, enhancing both preparedness and responsiveness in public health.

A notable feature of this partnership is its focus on clinician support. By implementing e-health standards that streamline documentation and reduce administrative tasks, the Reducing Clinician Burden initiative aims to free up clinicians' time, allowing them to focus on delivering quality care and enhancing patient outcomes.

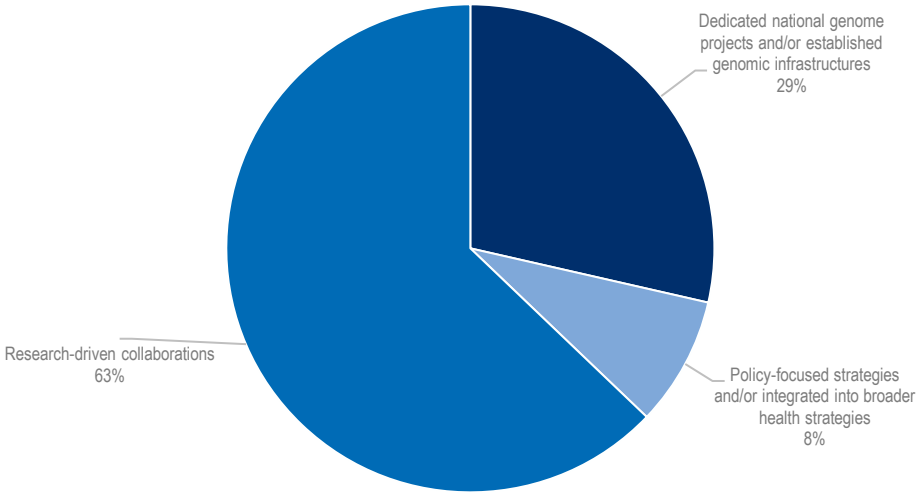
Sources: Nordic Council of Ministers (2019[118]), *e-Health Standardisation in the Nordic Countries*, https://norden.diva-portal.org/smash/get/diva2:1340369/FULLTEXT01.pdf; Nordic Council of Ministers (2024[119]), "Supporting the Healthcare Professionals' Work and Data Quality through e-Health Standards", https://pub.norden.org/temanord2024-514/index.html.

Most EU Member States are investing significant resources in cross-border, research-driven genomic initiatives, while a smaller subset is pursuing policy-led strategies or developing dedicated genomic infrastructure

The alignment of countries with the 1+MG initiative reflects a range of focal areas and objectives. Most EU Member States focus on research-driven collaboration, like the pan-European ELIXIR project, the **Danish** National Genome Center and Genomic Medicine Sweden (GMS), to facilitate data sharing and personalised medicine development.

Approximately one-third of EU Member States, including **Belgium**, **Bulgaria**, **Czechia**, **Germany**, **Lithuania** and **Sweden**, have launched dedicated national genome projects or established genomic infrastructures, often linked to biobanks or genomic databases. **Cyprus**, for instance, has established its first national biobank, which is integrated into the Genome of Europe (GoE) network and contributes to broader European genomic research efforts (Box 5.6). The European GDI project, with participation from 24 Member States, further supports the creation of EU-wide genomic infrastructure. Meanwhile, less than 10% of countries, such as **Finland**, **Ireland** and **Portugal**, are advancing their initiatives through policy-focused strategy led by national co-ordination bodies or integrated into broader health strategies (Figure 5.4).

Figure 5.4. Approaches of EU Member States in advancing the 1+MG initiative



Note: Belgium, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Romania, Slovenia, Spain and Sweden are advancing through research-driven collaboration; Belgium, Bulgaria, Cyprus, Czechia, Germany, Latvia, Lithuania, Slovak Republic, Slovenia and Sweden are advancing with dedicated national genome projects and/or established genomic infrastructures; Finland, Ireland and Portugal are advancing through policy-focused strategies and/or integration into broader health strategies.
Source: Data reported by EU Member States through the survey and interviews.

Belgium, **Bulgaria**, **Cyprus**, **Czechia**, **Finland**, **France**, **Germany**, **Latvia**, **Lithuania**, the **Slovak Republic**, **Slovenia** and **Romania** have launched dedicated national genome projects or established specific genomic infrastructures, often linked to the development of biobanks and genomic databases.

In **Germany,** the genomDE National Strategy for Genomic Medicine aims to establish a robust data infrastructure, while addressing ethical, regulatory and safety considerations to ensure its proper and responsible implementation (BMG, 2024[120]). **Lithuania** is developing a Lithuanian genome project through establishment of a national GDI (Minister of Health of the Republic of Lithuania, 2023[121]). The partnership involves the Vilnius University Hospital Santaros Clinics, the Lithuanian University of Health Sciences Hospital Kaunas Clinics and the National Cancer Institute. **Latvia** is building a national genome reference and associated IT infrastructure, strengthening its capacity for genomic research and data sharing within the GDI framework (Latvian Biomedical Research and Study Center, 2020[122]).

Other countries, such as **Finland**, **Ireland** and **Portugal**, are advancing the initiative through policy-focused strategies and co-ordination by national bodies. In **Finland,** a national co-ordination group under the guidance of the Ministry of Social Affairs and Health is directing efforts (STM, 2024[123]). Meanwhile, **Portugal** has incorporated 1+MG objectives into its National Strategy for Genomic Medicine (Government of Ireland, 2021[124]).

Research-focused collaborations also play a pivotal role in advancing the *1+MG* initiative. A network of **21 EU Member States** is working on ELIXIR (2024[125]), a pan-European infrastructure supporting genomic data sharing. In addition, since 2018, **Sweden** has been developing GMS through a national platform to ensure patients have equal and cost-effective access to genetics analysis (GMS, 2024[126]). Similarly, the **Danish** National Genome Center was created to improve diagnostics and personalised treatment through whole-genome sequencing (NGC, 2024[127]).

In addition, 24 EU Member States are investing in federated genomic data sharing through the GDI. This initiative aims to create secure, interoperable frameworks for cross-border data exchange. In this way, it will facilitate collaborative research and advance genomic medicine across the European Union (GDI, 2024[115]).

Box 5.6. Cyprus's Biobank, a hub for scientific R&I

Biobank.cy, the first national biobank in **Cyprus**, serves as a centralised repository for Cypriot genomic data, ensuring that data are collected, securely stored and made accessible while following ethical standards. By housing genetic samples of over 1% of the population in Cyprus, Biobank.cy can support a wide range of research applications – from genetic disease studies to personalised medicine approaches.

The biobank's integration with the Genome of Europe (GoE) network – spanning 26 EU Member States and aligned to the 1+MG initiative – will enhance its strategic relevance. In this way, it will enable Cyprus to contribute to a broader EU database, facilitating comparative genomic studies and cross-border research collaboration. Biobank.cy has prioritised adherence to the latest data-sharing protocols and interoperability standards, ensuring that data can be shared securely and effectively under the EHDS framework.

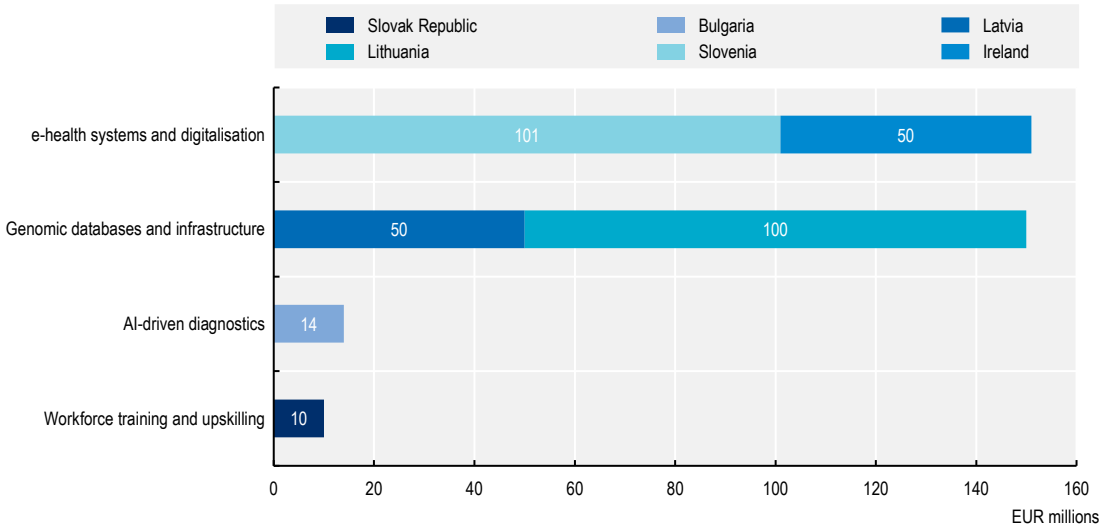
The example of Biobank.cy demonstrates how smaller countries can create robust genomic infrastructure that supports large-scale data integration and innovation. By contributing to the GoE network, Cyprus provides diversity to the EU genomic dataset. This is crucial for developing treatments that account for the genetic variability across EU populations.

Source: CY-Biobank (2024[128]), "The Center", https://biobank.cy/profile/.

Few EU Member States rely on EU financial mechanisms such as the RRF to advance AI in health, highlighting uneven national priorities

Despite eligibility across all 27 EU Member States, only 7 use RRF funds to advance AI in healthcare. **Bulgaria**, **Ireland**, **Latvia**, **Lithuania**, **Portugal**, the **Slovak Republic** and **Slovenia** report investments targeting AI advancements across various health areas (Figure 5.5). **Portugal** stands out with its Health Data Lake initiative, which centralises health data into a secure, interoperable platform aligned with EHDS standards (Box 5.7). The limited uptake suggests that these seven EU Member States have prioritised AI within their healthcare investment strategies. Meanwhile, others may have chosen not to allocate RRF funds to this area, potentially due to differing priorities or lack of immediate need to draw on these resources.

Figure 5.5. Allocation of reported Recovery and Resilience Facility funds for health, by focus area



Source: Data reported by EU Member States through the survey and interviews.

Ireland and **Slovenia** are integrating AI into their e-health systems, focusing on projects that improve data accessibility, patient management and healthcare delivery. In **Ireland**, the NRRP directs RRF funds towards community e-health, e-pharmacy and digital financial management to modernise healthcare services (Government of Ireland, 2021[124]). **Slovenia**, with EUR 101 million in RRF funds, is expanding telemedicine, digitalising medical records and developing AI-driven digital services (EC, 2021[82]).

Aligned with the *1+MG* initiative, **Latvia** and **Lithuania** are investing RRF funds to build national genomic databases and IT infrastructures. This is intended to enable genomic data collection, storage and analysis, enhancing each EU Member State's contribution to the GDI (Latvian Biomedical Research and Study Center, 2020[122]; Minister of Health of the Republic of Lithuania, 2023[121]).

RRF funds are also being used to develop AI healthcare applications. **Bulgaria** is investing around EUR 14 million into a National Digital Platform for Medical Diagnostics. This applies AI for real-time health data processing, supporting diagnostic accuracy and remote monitoring to improve patient outcomes (EC, 2024[129]).

Another aspect of RRF funding is its allocation towards workforce training and upskilling in digital health competencies. The **Slovak Republic**, for instance, includes workforce upskilling in digital health as part of its AI integration efforts, ensuring that healthcare professionals can use and manage new AI tools effectively (EC, 2021[82]).

AI is playing an increasingly central role in transforming the public sector. AI technologies enable governments to significantly improve operational efficiency by automating routine tasks, optimising workflows and reducing administrative processes. Natural language processing, machine learning and computer vision applications are helping public agencies sort citizen requests, automate eligibility checks for services and provide 24-hour/7-days-a-week digital assistance (OECD, 2025[130]).

Box 5.7. Centralised health data prompt responsible and harmonised AI model training in healthcare

In **Portugal,** Health Data Lake is a leading initiative to centralise and securely manage health data from public and private sources. This platform, supported by a EUR 10.5 million of RRF investment, is designed to consolidate EHRs, medical imaging and genomic data into a unified, interoperable repository. This, in turn, is aligned with EHDS standards and regulated by a national legal framework. As such, it provides a reliable foundation for training AI models on applications such as predictive analytics, diagnostics and personalised treatments. By consolidating data across multiple sources, the Health Data Lake ensures consistent standards and formats. It enhances the reliability and relevance of AI models, while fostering collaboration among healthcare providers, researchers and developers to drive innovation ethically and responsibly.

Source: EIT Health (2024[57]), *European Health Data Space in Portugal*, https://eithealth.eu/wp-content/uploads/2024/06/EHDS-white-paper-Portugal.pdf.

Make the public sector a trailblazer for using AI

AI is playing an increasingly central role in transforming the public sector.[1] AI technologies enable governments to significantly improve operational efficiency by automating routine tasks, optimising workflows and reducing administrative processes. Natural language processing, machine learning and computer vision applications are helping public agencies sort citizen requests, automate eligibility checks for services and provide 24/7 digital assistance (OECD, 2025[130]). AI also holds potential to enhance policy design and implementation, although adoption rates are lower than for its use in improving internal government operations (OECD, 2024[131]).

Moreover, AI empowers governments to deliver more responsive and personalised services that better meet citizens' evolving needs. Public institutions can now gain deeper insights into citizen requests through sophisticated data analysis, developing proactive responses to complex challenges. AI-powered systems are enabling the shift from one-size-fits-all approaches towards context-aware interactions tailored to individual circumstances. For example, AI chatbots have improved response times in welfare systems, and predictive analytics helps anticipate infrastructure needs and optimise budgeting decisions (OECD, 2025[130]). These innovations reflect a growing commitment to human-centred public services that prioritise accessibility, responsiveness and user empowerment.

Despite these promising developments, the deployment of AI in the public sector raises important concerns. Risks include the potential for skewed outcomes, lack of algorithmic transparency, data privacy breaches and erosion of trust in automated decision-making processes. Additionally, structural barriers continue to hinder effective and coherent AI adoption across government agencies (OECD, 2025[130]). These include fragmented data infrastructures, outdated legacy information technology (IT) systems, limited digital capabilities within administrations and inadequate procurement frameworks. Traditional procurement and talent acquisition processes may struggle to accommodate the speed and specificity of AI innovation (OECD, 2024[132]). Disparities in digital maturity across different levels and functions of government exacerbate implementation challenges.

These challenges can be addressed through measures that combine the right enablers, guardrails and engagement processes (OECD, 2025[130]). Enablers notably include robust governance structures, institutional safeguards and targeted digital capacity building. Equally important is addressing the digital

skills gap through comprehensive training programmes for civil servants, recruitment of AI specialists and partnerships with educational institutions to build and attract talent. Governments should invest in digital literacy initiatives across all administrative levels, creating clear career pathways for technology specialists in the public sector. Guardrails, in turn, include transparent algorithm registries, capacity building for civil servants and oversight, engaging a broad range of stakeholders. Embedding transparency, human oversight and participatory design (another example of engagement process) across the AI policy cycle helps ensure responsible innovation in the public sector (OECD, 2024[132]).

Table 5.5. Make the public sector a trailblazer for using AI: key findings

Dimension of survey	Description	Key findings
AI-based solutions for public service delivery	Initiatives using AI to improve the accessibility, responsiveness or efficiency of services to citizens	Fourteen EU Member States report initiatives to develop AI-powered administrative systems and services. Focus areas include document processing, workflow automation, citizen-facing AI services and tax administration applications. Several initiatives use generative AI technologies for tasks such as document processing and citizen communications.
AI for policymaking	Tools used to inform decision making, forecasting and strategic planning in the public sector	A handful of EU Member States have established AI tools to support regulatory compliance and policymaking processes.[1] Reported initiatives remain at early stages in most countries, with significant potential for expansion.
AI training and capacity building for civil servants	Programmes to develop AI competencies within public administrations	Eleven EU Member States report initiatives focused on AI training for civil servants. While some countries have established comprehensive education programmes, most Member States lack structured approaches to developing AI competencies in their workforce. This area remains underdeveloped compared to other dimensions of public sector AI adoption, despite its importance for successful implementation and governance of AI systems.

1. OECD work has also evidenced the use of AI for improving regulatory design (OECD, 2025[130]). Moreover, data from the OECD's Digital Government Index suggest that AI tends to be used much more often for improving internal governmental processes than for enhancing policy design and implementation (OECD, 2024[131]).

The EU Coordinated Plan on AI identifies AI as a crucial technology for enhancing public services, improving citizen-government interactions, enabling smarter analytical capabilities and increasing efficiency across public sector domains. It further recognises that implementation of AI systems can support democratic processes, bring benefits across all key public sector activities. Through early adoption, the public sector can lead the way in implementing AI that is safe, secure and trustworthy. To that end, the EU Coordinated Plan on AI encourages Member States to:

> *Take full advantage of the opportunities offered by RRF by including in their national recovery and resilience plans measures focusing (for example) on building capacity to seize the advantages of predictive analytics and AI in policymaking and public service delivery. The proposed reforms and investments under this component champion the RRF Flagship 'Modernise' focusing on digitalisation of public administration and services, including judicial and healthcare systems. They might also mirror the objectives of the RRF Flagship 'Reskill and upskill', by providing skills and new competences for civil servants and managers, notably in relation to green and digital transitions and to enhancing innovation in public administration.*

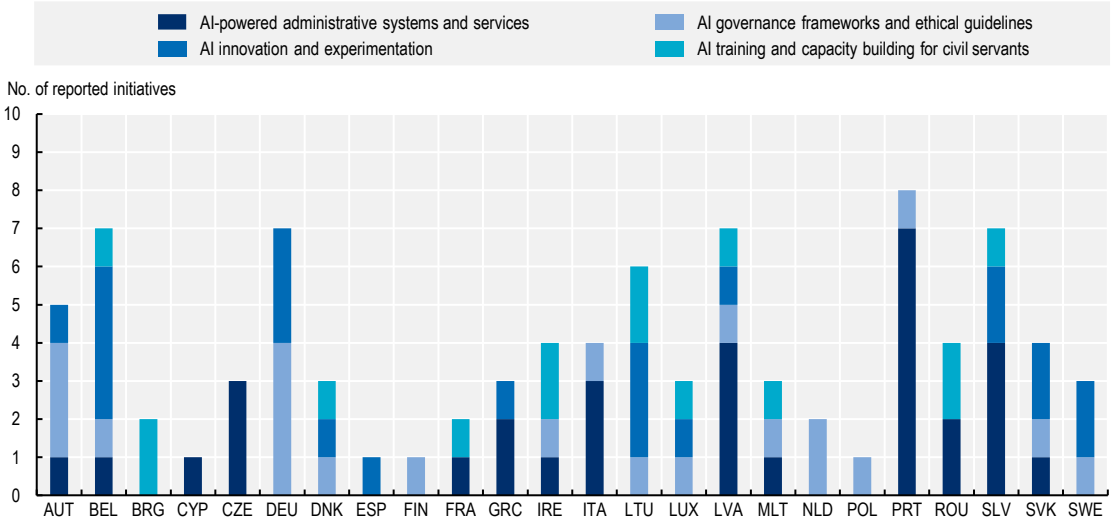
Use of AI in the public sector is a key focus area for EU Member States

Most EU Member States (16) identified promoting AI adoption in the public sector as a priority in their national AI strategies (see Chapter 2). In total, 91 initiatives were reported across 24 EU Member States (Figure 5.6). There is significant activity in areas such as improving administrative systems and establishing governance frameworks. However, other areas – such as training programmes for civil servants – are reported less frequently.

Half of EU Member States reported initiatives to develop AI-powered administrative systems and public services, making this the most common area of interest for AI use in the public sector. These initiatives aim to automate workflows, enhance service delivery and reduce administrative burdens.

Several countries have deployed AI systems for document processing and workflow automation. Through the AI-Supported Administrative Notification project, **Austria** is piloting automation possibilities in administrative processes through handwriting recognition, translation and knowledge management. The Cadastre system in **Greece** has automated the reading and categorisation of property contracts, applying relevant legal rules to generate assessments for approval. This has significantly reduced processing time from several hours to less than 10 minutes and cut costs from EUR 15 to just EUR 0.11 per assessment. In **Italy**, the PRODIGIT Project collaborates between the Presidential Council of Tax Justice and the Ministry of Economy and Finance to modernise judicial tax proceedings through AI-powered tools, enhancing efficiency in tax-related legal processes.

Figure 5.6. Initiatives to foster AI use in the public sector



Source: Data reported by EU Member States through the survey and interviews.

Citizen-facing AI services represent another significant trend. In **Latvia**, an AI virtual assistant/chatbot network creates a centralised platform for managing government websites, improving public access to information. **Malta** has deployed an AI chatbot providing 24-hour/7-days-a-week assistance to users seeking information about public services. ION in **Romania** serves as an AI counsellor to link citizens and the executive branch, capturing sentiments of Romanian citizens in real time. **Portugal** has implemented multiple AI assistants, including a social security chatbot created during the COVID-19 crisis and the Caixa Geral de Aposentações AI Virtual Assistant to enhance user navigation and reduce response wait times (CGA, 2023[133]). **Poland** aims to integrate the Polish Large Language Universal Model into mObywatel, a virtual assistant for citizens to use public administration services, to automate document processing, content analysis, information search and support in answering citizens' questions (GOV.pl, 2025[134]).

AI for regulatory compliance and specialised administrative tasks is gaining traction. **Czechia** developed an analytical AI platform to identify discrepancies between different sets of draft legislations. In **Latvia**, AI in the Evaluation of EU Projects assesses the applicability of generative AI for analysing procurement documentation related to EU-funded projects with the aim of testing AI prototypes for public sector applications.

Tax administration is also emerging as a key domain for AI adoption. In **Latvia**, the Artificial Intelligence in Preparing Responses to Taxpayer Inquiries programme explores AI applications in tax administration by using AI tools to generate responses on labour taxes. In **Italy**, the AI in Tax Administration leverages advanced analytics software to prevent tax avoidance by analysing data from the Tax Registry and Archive of Financial Relations. Finally, the financial administration in **Slovenia** uses AI in processing value-added tax returns to increase the effectiveness of controls through predictive analytics.

Countries are establishing governance frameworks and ethical guidelines for responsible AI use in the public sector

Sixteen EU Member States have developed AI governance frameworks and ethical guidelines in the public sector, reflecting growing recognition that AI adoption must be grounded in transparency, accountability and public trust. In all, 23 initiatives have been launched, with approaches ranging from central co-ordination hubs to legislative guidance and ethical charters.

Several countries have developed comprehensive AI advisory and oversight structures.

In **Austria**, the AI Directory creates a comprehensive overview of AI systems in use in federal public administration, identifying challenges and risks related to AI in the public sector. A complementary AI Map serves as a cross-ministerial register of ongoing and planned AI initiatives. The country has also published a *Practical Guide on Digital Administration and Ethics* to help public sector servants navigate AI use, covering opportunities, challenges, ethical issues and legal frameworks.

The **Netherlands** has pioneered algorithmic accountability frameworks with two key initiatives. The Algorithm and AI Register catalogues systems in use by the public sector, enhancing transparency. This is complemented by Fundamental Rights and Algorithm Impact Assessment, which involved 18 pilot projects across public sector organisations. These aimed to ensure that algorithm deployment aligns with human rights principles and prevents unintended negative consequences. This systematic approach to algorithmic assessment and transparency offers a model for other EU Member States considering similar governance mechanisms.

Germany is establishing an AI Advisory Centre as a central co-ordination hub for AI adoption across the federal public sector. With a budget of EUR 9.18 million, the centre will offer legal, technical and ethical support to government ministries and agencies. The country has also developed an AI Framework that focuses on human-centred design, transparency and fairness, and is developing AI Guidelines to ensure a harmonised inter-ministerial approach to AI use.

Several other EU Member States are developing similar ethical principles and guidelines for AI implementation. **Belgium** is developing a Charter for the Responsible Use of AI in Public Services to define ethical principles for AI in public services, ensuring trust and accountability. **Finland** has issued guidelines for responsible use of generative AI in government. In **Ireland**, Interim Guidelines for Use of AI in the Public Service provide operational principles for government departments, with a full framework expected in 2025. (Government of Ireland, 2021[124]). **Luxembourg** has adopted an AI Charter outlining ten key guidelines for responsible use of AI in parliamentary activities (Chamber of Deputies, 2024[135]). **Malta**, in turn, issued its Generative AI Tools Usage Policy for its public administration in September 2024. This policy seeks to foster human-centred accountability and transparency, security and safety, data confidentiality, responsible innovation and sound complaint handling practices.

Several EU Member States have adopted sector-specific or institutional approaches. In **Denmark**, the Digital Taskforce for Artificial Intelligence is working across agencies to remove deployment barriers and accelerate responsible scaling. AI Guidelines for Employment and Social Protection Services in **Germany** focus on ethical and inclusive deployment in social programmes. **Sweden** has tasked the Swedish Agency for Digital Government and Swedish Authority for Privacy Protection with developing rules for using generative AI in public administration. In **Lithuania**, the Working Group on Artificial Intelligence within the

Committee for the Future of the Seimas (Parliament of the Republic of Lithuania) advises on AI policy and fosters a culture of innovation in government. Innovation hubs and experimental spaces for AI in the public sector are gaining momentum.

Twelve EU Member States have established innovation hubs and experimental initiatives to accelerate AI adoption in the public sector. These initiatives create environments where new AI technologies can be safely tested, refined and deployed to address government challenges. The 22 reported initiatives notably include sandboxes, innovation labs, marketplace solutions and collaborative platforms.

Environments for AI testing and experimentation in the public sector have developed in recent years

Several countries have created dedicated testing environments for AI experimentation under controlled conditions. This aligns with the EU Artificial Intelligence Act (AI Act) requirement that each Member State establish at least one AI regulatory sandbox by 2 August 2026, or participate in joint sandboxes with other countries. In **Greece**, the GovTech AI Sandbox helps public sector organisations overcome barriers to innovation by providing a supervised space to deploy and test AI solutions before wider implementation. The **Slovak Republic** is developing Experimental Regulatory Environments for AI with preparation scheduled for 2025, focusing on legislative analysis and methodologies aligned with the EU AI Act. **Ireland** has created a “safe space” sandbox where civil servants can experiment with AI tools without operational risks. **Denmark** has a sandbox for testing AI solutions as part of its broader plan for new technology and automation of the public sector.

Multiple countries have established dedicated platforms to accelerate AI adoption. In **Germany**, Datalabs recruit experts from academia, civil society and the private sector to support federal administration in implementing AI-driven solutions. The Law as Code project in **Austria** uses symbolic AI to implement laws and legally binding documents in machine-readable formats. In **Slovenia**, the Semantic Analyser applies natural language processing to analyse legal texts and identify essential concepts. **Lithuania** operates the GovTech Lab to help public sector institutions identify challenges addressable through AI and other emerging technologies.

Several initiatives focus on creating the technical foundations for AI experimentation. **Germany** has developed the AI Platform KIPITZ (2024), an overarching infrastructure supporting large language models for federal administration. It is also creating an AI Marketplace for Opportunities to connect ministries with AI solutions (BMI, 2024[136]). Smart digital public services (2024-2029) in **Slovenia** establishes an interoperable ecosystem supporting algorithmic and analytical tools. In **Latvia**, the Memorandum of Understanding with Microsoft (2024) establishes a national centre for AI to accelerate digital transformation in public administration.

Several EU Member States have created structured frameworks for collaborative innovation. The Digital Wallonia strategy in **Belgium** aims to transform Wallonia into a digital platform by innovating public services and serving as a testing ground for scalable digital solutions (Digital Wallonia, 2022[137]). In **Sweden**, the eSam collaboration brings together 41 government agencies implementing AI initiatives, while the Collaboration for AI in Municipalities provides tailored support to local governments. The GovTech Challenge Series (EUR 1 million annually) in **Lithuania** connects public sector challenges with providers of innovative solutions through a structured process. This is supported by the country’s GovTech Sandbox (2024) involving 14 public organisations in experimental AI concepts. In **Luxembourg,** the Public Sector Innovation Hub (2020) serves as a platform for collaboration between government entities and technology innovators (Government of Luxembourg, 2024[138]).

Some countries are establishing specialised incubators for public sector AI solutions. In **Spain**, the incubator of AI solutions for the public administration focuses on generative AI use-cases, with more than 300 requests from ministries. In **Portugal**, an innovation approach applies AI to enhance regulatory impact

assessments through the PLANAPP Project (PLANAPP, 2021[139]). An initiative in **Belgium,** A Land for Tomorrow, uses AI to process citizen proposals for government reform, generating insights for policymaking.

These diverse innovation approaches demonstrate a growing recognition that dedicated experimental spaces are essential for successful AI adoption in government. By providing structured environments where new technologies can be safely tested and refined, EU Member States are creating pathways for AI solutions to move from concept to operational deployment. At the same time, they are managing technical and organisational risks.

AI training and capacity building for civil servants remain limited in EU Member States

Eleven EU Member States have reported initiatives focused on AI training and capacity building for civil servants. These programmes aim to develop AI literacy and skills among government employees, enabling them to implement and manage AI systems effectively. The 15 reported initiatives range from basic awareness programmes to specialised technical training.

Several countries have established comprehensive AI education programmes for public officials. In **Belgium**, the AI Expertise Centre at the Flanders Digital Agency identifies the needs of civil servants for AI upskilling and reskilling. In so doing, it supports public sector innovation by equipping civil servants to use AI for improved policymaking and operational efficiency. The Institute of Public Administration in **Bulgaria** offers training (EUR 16 500) in AI applications through multiple formats, including self-learning e-modules, face-to-face training and interactive workshops. In **Latvia**, the E-course for Basic Competence Level in AI for Public Administration Employees will train 1 000 public administration employees through four modules: introduction to AI; AI concepts and applications; AI issues and ethics; and future and practical use of AI. **Romania** has an advanced digital skills training programme for civil servants (EUR 20 million through the RRF). It aims to train 32 500 civil servants (including 2 500 senior people) in advanced digital skills, including database management, system management, business analysis, data analysis and programming.

Specialised AI training is targeting specific competency needs. The knowledge centre for municipalities in **Denmark** helps share knowledge about digitalisation and explore how AI can create value in municipalities. In **France,** AI-related training for civil servants includes the *Campus du numérique public*, which covers digital topics and methods, including AI-related skills. **Ireland** offers capacity building for civil and public servants through one-day courses administered by the Department of Public Expenditure, Infrastructure, Public Service Reform and Digitalisation. In addition, about 120 public servants have completed a Certificate in Foundations of Artificial Intelligence (part-time over 12 weeks). **Luxembourg** has also developed digital learning resources focused on emerging technologies, including AI. In **Malta**, the Institute for the Public Services has integrated AI training into its curriculum, including a module that introduces AI.

Some initiatives focus on generative AI and its applications in government. The KURSUOK one-stop-shop platform in **Lithuania** is also available for civil servants, providing AI education resources. In **Slovenia**, the Strengthening the Digital Skills of Civil Servants programme aims to improve competencies in core digital skills, including specialised skills on AI. It was designed in accordance with the OECD Framework for Digital Talents and Skills in the Public Sector.

Make mobility smarter, safer and more sustainable through AI

AI is playing an increasingly transformative role across the mobility sector, driving significant gains in efficiency, sustainability and safety; optimising transport operations; and enhancing overall mobility systems. In public transport, AI enhances scheduling, optimises multimodal mobility and improves passenger experiences through predictive analytics (Moumen, Abouchabaka and Raflia, 2023[140]). In

freight and logistics, AI-driven route optimisation, demand forecasting and predictive maintenance boost supply chain efficiency and reduce operational disruptions (Du Plessis et al., 2025[141]). Automated vehicle (AV) technologies rely on AI for perception, navigation and real-time decision making, while AI-powered traffic management systems use dynamic signal control and congestion prediction to improve road capacity and flow (Garikapati and Shetiya, 2024[142]).

More broadly, AI-driven automation streamlines transport operations, reducing delays and improving service reliability. AI-powered traffic optimisation lowers congestion, shortens travel times and decreases emissions, supporting sustainability goals (Nikitas et al., 2020[143]). Advanced driver-assistance systems and AI-based hazard detection enhance road safety, reducing accidents and improving overall transport security (Fernández-Llorca and Gómez, 2023[144]). AI also plays a role in the transition to less resource-intensive mobility, optimising electric vehicle charging networks, improving fuel efficiency in freight transport and supporting low-emission urban mobility strategies (de Queiroz et al., 2021[145]).

Despite these advantages, AI adoption in mobility faces multiple challenges. Key barriers are data accessibility and interoperability, as transport networks rely on vast datasets collected from multiple sources, including public authorities, private mobility providers and IoT devices. Fragmented data infrastructures and inconsistent data-sharing protocols can hinder the ability of AI to optimise mobility services (Paiva et al., 2021[146]). Additionally, high implementation costs and the need for advanced computational resources pose financial challenges, particularly for SMEs in the mobility sector (Ma et al., 2020[147]). Ethical and regulatory concerns, such as liability in automated driving, algorithmic biases in AI-driven traffic enforcement and cybersecurity risks in connected vehicle networks, are further barriers for large-scale AI deployment (Bathla et al., 2022[148]).

Maximising the benefits of AI in mobility

Given the transformative potential of AI in mobility, policy frameworks play a critical role in maximising benefits while addressing these challenges. Standardising data governance and promoting open-data platforms can facilitate AI adoption by ensuring interoperability and secure data-sharing mechanisms (Craglia et al., 2021[149]). Investment in AI-specific infrastructure can further support the scalability and efficiency of AI in mobility applications. This could include high-performance computing resources and 5G-enabled transport networks (Wang et al., 2023[150]). Regulations help mitigate risks related to transparency, safety and accountability (Craglia et al., 2021[149]). By fostering innovation-friendly regulations, incentivising AI adoption and ensuring that AI-driven mobility solutions align with sustainability goals, policymakers can position AI as a key driver of the future transport ecosystem in the European Union.

The update to the plan reinforced the need for strategic investment in AI-driven mobility, highlighting the importance of data availability, interoperability and cross-border co-operation. The goal is to maintain EU leadership in smart mobility, while ensuring that AI deployment aligns with key EU values of safety, transparency and inclusivity.

The EU Coordinated Plan on AI encourages Member States to undertake several actions related to AI in mobility:

> *Actively promote the **development and testing of AI technologies in automated functions** for all modes of transport, with the help of the relevant European partnerships.*
>
> *Analyse and facilitate the **deployment of trustworthy AI solutions in all modes of transport** that can enhance efficiency with the help of automated mobility services and freight transport operations in order to reduce the burden on the environment.*
>
> *Share lessons learned from **R&I projects and pilots** to create a European common knowledge base*
>
> *Assess the **potential of vehicle automation for urban transport** and support cities in their transition while rethinking mobility systems, including public transport services, infrastructure maintenance, logistics, fares and regulation; and*
>
> *Take full advantage of the opportunities offered by RRF, for instance in line with the actions described in the example of component on '**Clean, smart and fair urban mobility**'.*

These actions aim to position the European Union as a global leader in AI-powered sustainable mobility, ensuring that AI adoption aligns with key EU values. By fostering collaboration between Member States, industry and research institutions, the EU Coordinated Plan on AI aims to enhance EU competitiveness in AI-driven transport, while ensuring that mobility innovations benefit all citizens.

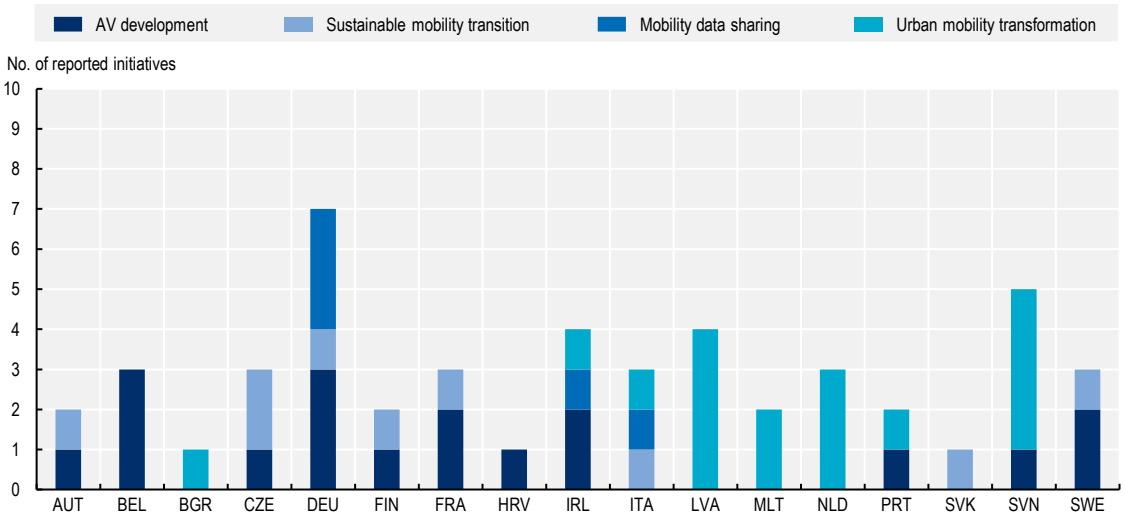
Table 5.6. Make mobility smarter, safer and more sustainable through AI: Key findings

Dimension of survey	Description	Key findings
Automated vehicles (AVs)	Initiatives supporting AV development, testing, regulatory frameworks and integration into transport systems	Eleven EU Member States report initiatives on AVs, focusing on testbeds, legislative reform and AI safety. Integration into public transport is emerging but more than half of EU Member States lack dedicated AV policies.
AI for sustainable mobility	Policies that embed AI in sustainable transport strategies, including emissions reduction and system efficiency	Some EU Member States are leveraging AI to promote sustainability in transport, investing in traffic optimisation, multimodal integration and low-emission mobility planning.
Urban mobility and AI	AI-based solutions for urban traffic management, public transport and multimodal mobility services	One-third of EU Member States have launched AI projects in urban mobility. These include real-time traffic management, smart lighting, dynamic public transport and multimodal mobility platforms.
Mobility data sharing and AI interoperability	Initiatives facilitating secure data exchange for AI-driven transport systems	Only three EU Member States report dedicated initiatives on mobility data sharing.

Initiatives to foster AI adoption in mobility vary significantly across EU Member States

More than half of EU Member States (17 of 27) have launched initiatives to foster AI adoption in mobility, although their distribution remains uneven. Certain areas – such as AVs and urban mobility transformation – have received more policy attention. Conversely, data sharing for mobility appears to be in its early stages. In total, 49 AI-driven mobility initiatives have been reported.

Figure 5.7. Initiatives to foster AI in mobility



Note: AV stands for automated vehicle.
Source: Data reported by EU Member States through the survey and interviews.

Automated vehicles are a major focus of AI in mobility

Eleven EU Member States have reported initiatives to foster development and deployment of AVs. While this signals interest in AI-driven mobility innovation, the absence of dedicated AV policies or projects in over half of EU Member States highlights uneven progress across the region. The 18 reported initiatives refer to testing and innovation hubs, regulatory adaptations, AI safety and verification, and AV integration into public transport and urban mobility.

Several countries have established dedicated AV testing environments to advance research and real-world deployment. In **Austria,** Automated Transport Innovation Labs provide physical and digital testing infrastructures for AVs, funded by the Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK) (ALP.Lab, 2024[151]; Digitrans, 2024[152]). In **Belgium**, Mobilidata 2 Proloog focuses on real-world trials of remote driving technologies, including a Remote Driving Test Week (MobiliData, 2024[153]). Additionally, the Flemish Task Force on Automated Driving, launched in 2023, connects research institutions, stakeholders and logistics operators to create a more robust AV innovation ecosystem. **Slovenia** has launched the SRIP ACS+ Strategic Research Innovation Partnership, which facilitates AV testing through an industry-driven platform that integrates research institutions and manufacturers (Slovenian Ministry of Higher Education, Science and Innovation, 2023[154]). **Sweden** has taken a broad approach with Drive Sweden (2024[155]), a national platform involving over 200 stakeholders from business, academia and government, aimed at testing connected and automated mobility solutions.

Some governments are adapting legislative frameworks to enable AV deployment while ensuring responsible governance. **Finland** has initiated Legislative Amendments for Road Transport Automation, which is undergoing public consultation; a government proposal was expected by 2025 (Finnish Ministry of Transport and Communications, 2021[39]). **Czechia** has followed an ethical governance approach by setting up the Ethics Commission for the Assessment of Automated and Autonomous Vehicles. It provides guidelines on responsible AI use in AV research and deployment, ensuring that ethical considerations are embedded in the country's automated mobility strategy (Czech Ministry of Transportation, 2024[156]).

Ensuring AI safety in AVs remains a key policy area. **Germany** has introduced several large-scale AI-driven AV initiatives. The Safe AI Engineering project, funded with EUR 17.2 million, focuses on verifying AI systems in AVs to ensure safety and reliability (BMWK, 2023[157]). AI Applications for

Connected and Automated Driving supports multiple projects exploring AI-driven automation, safety enhancements and the integration of Level 4 AVs into public transport, with an investment of EUR 47.2 million (BMDV, 2018[158]; BMDV, 2021[159]). Another initiative, nxtAIM, aims to develop and train generative AI methods for automated driving, focusing on overcoming key barriers to the deployment of automated and autonomous vehicles (nxtAIM, 2025[160]). **France** has invested in AI-driven AV safety through the PRISSMA project, a EUR 13 million initiative that validates AV systems with AI components. Additionally, the IRT SystemX research centre contributes to AV safety through multiple projects co-funded by public and private stakeholders. In **Sweden,** the Traffic-safe Automation initiative, led by the Strategic Vehicle Research and Innovation programme, seeks to position road safety as a key driver of automation. The initiative aims to enhance transport sustainability through safe, connected and automated vehicles designed for shared use (FFI, 2025[161]).

Some EU Member States are integrating AVs into public transport and urban mobility strategies. **Croatia** has invested significantly in AV infrastructure through Autonomous Vehicles in Zagreb, a EUR 452.7 million project, including EUR 179.5 million from the RRF. **Ireland has set up** the testing authorisation regime for connected and automated mobility on public roads. It also has a large-scale pilot focusing on Cooperative Intelligent Transport Systems (C-ITS) to facilitate safe deployment of AV (Transport Infrastructure Ireland, 2025[162]). Additionally, the Smart Dublin (2022[163]) initiative is trialling AI-powered last-mile delivery robots using computer vision technologies. **Belgium** is advancing automated public transport solutions through NAVAJO, a pilot project introducing an automated shuttle service in Ottignies-Louvain-la-Neuve. Funded under Digital Wallonia's Intelligent Territories programme, the project tests and validates AV technologies for integration into urban mobility frameworks (TEC, 2022[164]). **Portugal** has launched the Route 25 Project to develop connected and automated transport systems. The total investment of EUR 80 million includes EUR 32.5 million in RRF funding (Instituto de Telecomunicações, 2025[165]).

AI is often being integrated into broader sustainable mobility projects

Eight EU Member States have reported initiatives to integrate AI into larger programmes to foster sustainable mobility solutions, supporting the transition to resilient and efficient transport systems. These efforts focus on **AI-driven optimisation of mobility systems; multimodal transport integration; innovation in mobility R&D; and long-term strategic planning for transport digitalisation.**

EU Member States are investing in AI-driven optimisation of transport systems to improve efficiency, reduce emissions and enhance traffic management. **Germany** is funding the EUR 75 million AI Applications in Mobility and Logistics programme. It supports AI-based analysis, forecasting and real-time information systems to improve the sustainability, efficiency and safety of mobility and logistics networks (BMDV, 2018[158]). Through its Sustainable Mobility initiative, which is part of its NRRP, **Italy** is seeking to optimise environmental and energy resources through AI-driven traffic and transport management (AGID, 2024[166]). **France** has adopted a broad approach with its Digitisation and Decarbonisation of Mobility strategy, which allocates EUR 570 million to AI-based mobility systems that support sustainability and emissions reduction. The **Slovak Republic** has embedded AI into its Strategic Transport Development Plan until 2030, aiming to develop a cohesive national transport information system. The plan prioritises AI-driven real-time traffic management; multimodal transport modelling; and automation in rail, road and water transport.

Countries are also supporting AI-driven R&D for mobility transformation. In **Austria**, the National Funding Call Mobility Transition 2024/1 – Mobility Technologies and Components provides EUR 5 million to projects that align with the country's sustainability goals. These focus especially on avoiding emissions and shifting to more efficient transport modes (Mobilitätswende, 2024[167]). **Czechia** has established two key programmes. Transport 2030, a EUR 78 million applied research programme, supports AI in automation, digitalisation and advanced transport technologies (TACR, 2024[168]). Meanwhile, the Mobility Innovation

Hub is a national incubator linking start-ups, research institutions and industry to accelerate sustainable mobility solutions (Technology Incubator, 2024[169]). **Sweden** launched Strategic Vehicle Research and Innovation in 2009, a joint public-private programme investing EUR 86 million per year in sustainable road transport innovations (EC, 2025[170]). The programme finances AI-driven projects in transport electrification, automation and emissions reduction. In **Finland,** Future Mobility Finland (2025[171]) promotes AI adoption in public and private transport, logistics and sustainable urban mobility projects as part of the country's National Programme for Sustainable Growth in the Transport Sector.

Although mobility data sharing is essential for AI-driven transport, only three EU Member States have reported targeted initiatives

Despite the relevance of mobility data for AI-driven transport, only three EU Member States have reported initiatives that target the sharing of these data. The ability to share and access mobility data securely is a critical enabler of AI-driven transport systems, supporting real-time traffic management, multimodal mobility services and logistics optimisation. However, **only three EU Member States have reported dedicated initiatives to foster mobility data sharing.** This indicates that **mobility data sharing remains an underdeveloped area in most EU countries,** despite its relevance for AI-powered transport solutions.

A key challenge in mobility data sharing is balancing **data sovereignty with interoperability**, ensuring that private and public sector data can be securely exchanged without centralising sensitive information. **Germany** has taken the most structured approach with the Mobility Data Space (MDS), a federally funded initiative to facilitate the secure and voluntary exchange of transport data (Mobility Data Space, 2025[172]). Unlike traditional data platforms, the MDS does not store data centrally but allows original holders to control access. The EUR 13.76 million initiative aims to support AI-based mobility services by unlocking access to non-public datasets in a controlled manner.

Another key **German** initiative, AIAMO Mobility Data Hub and Services, focuses on creating a data-sovereign platform for mobility services. Led by the Federal Ministry of Transport, AIAMO integrates various mobility services, making AI-driven transport solutions more accessible for SMEs and smaller cities. By simplifying data collection and analysis, AIAMO enables insights into multimodal and resilient traffic management, helping smaller mobility operators access AI applications. AIAMO is supported by EUR 22.29 million in funding (BMDV, 2023[173]).

Germany also leads efforts on another priority: open-source data sharing for logistics and supply chains. The Silicon Economy ecosystem project, funded with EUR 33.77 million, provides logistics companies with open-source AI-based data models, interfaces and software components. In so doing, it helps automate business processes and improve supply chain transparency (Silicon Economy, 2025[174]).

Beyond logistics, mobility data integration for urban transport planning is an emerging focus. **Ireland** is experimenting with AI-based data mapping through Mapping City Assets from Street Level Imagery, part of the Smart Dublin (2020[175]) Initiative. This project collects detailed geospatial data on infrastructure elements such as traffic signs, bins and storm drains, allowing for improved city planning and operations. **Italy** is working towards a broader national framework with Urban Mobility Data Integration. This initiative will aim to establish a national registry of datasets and models for mobility applications, supporting real-time optimisation of transport networks (AGID, 2024[166]).

The small number of countries investing in mobility data-sharing initiatives suggests that data availability and interoperability are not yet prioritised as much as AI-driven automation or digital mobility services**.** As AI applications in mobility continue to expand, the lack of structured data-sharing frameworks across most EU Member States could become a bottleneck for future innovation.

A third of EU Member States have launched AI-driven initiatives to help transform urban mobility

One-third of EU Member States have introduced initiatives to support transformation of urban mobility. These 17 efforts reflect growing momentum across diverse sub-domains such as traffic management, public transport and mobility-as-a-service (MaaS), laying the groundwork for more integrated and sustainable urban transport systems.

AI applications for **road maintenance and traffic management** account for the largest share of initiatives, with projects in **Ireland, Italy, Latvia, Malta, the Netherlands and Slovenia:**

- **Ireland** is piloting AI-enabled cameras to analyse vehicular flows in real time, allowing authorities to monitor traffic patterns and improve road safety (Smart Dublin, 2020[175]).
- **In Italy, AI for Smart Cities Mobility** focuses on using AI to optimise traffic flow in high-density areas and improve public transport operations (AGID, 2024[166]).
- **Latvia has introduced four AI-driven traffic management systems.** Winter Road Maintenance Using AI assesses road conditions in real time to optimise maintenance (Labs of Latvia, 2023[176]). The LMT traffic monitoring tool, an AI-powered General Data Protection Regulation-compliant video technology, detects traffic intensity and violations such as red-light running and improper lane use (LMT, 2025[177]). The country has also deployed smart LED lighting, which integrates AI-driven adaptive lighting solutions that monitor road conditions and violations to enhance urban safety. Lastly, the **3visionD** (2025[178]) project employs AI-powered video analytics to manage urban parking, monitor public spaces and implement automated traffic control measures.
- **The AI for Traffic Management Pilot Project in Malta** embeds AI into national traffic control systems to reduce congestion and improve journey planning. Meanwhile, Intelligent Transport Systems uses AI-driven route optimisation to improve traffic flow and introduce low-traffic zones (Malta.AI, 2019[179]).
- **The Netherlands has developed the A12 Traffic Forecaster**, a machine-learning application that predicts traffic congestion based on real-time and historical data, helping commuters make informed route decisions (A12 Slim Reizen, 2024[180]). The country has also launched Smart Traffic Analysis and Traffic Safety, which applies AI and computer vision to improve road safety by monitoring accident-prone intersections and pedestrian crossings (NHL Stenden, 2024[181]).
- **Slovenia** is integrating AI into **national traffic management** through two initiatives. The National Traffic Management Centre consolidates road and traffic data for improved mobility insights. For its part, the DARS AI Initiative leverages machine learning to predict congestion and accidents on motorways (Slovenian Ministry of Infrastructure, 2022[182]).

Several EU Member States are also using AI to enhance public transport, as well as to **promote multimodal mobility and MaaS solutions**. In **Bulgaria, the INNOAIR project** is a demand-responsive transport system using AI to optimise public transport routes dynamically. The initiative includes AI-powered electric minibuses that adjust routes based on passenger demand, improving connectivity for underserved urban areas while reducing emissions. In **Portugal, the Cooperative Streets initiative** tested Cooperative Intelligent Transport Systems in urban environments, applying AI for multimodal access, parking management and public transport integration (EC, 2025[183]). Through the **NetZeroCities** (2024[17]) **initiative, Slovenia** is upgrading its digital transport platform by integrating AI-driven public transport and traffic data. At the same time, it is developing a **MaaS mobile application** to consolidate urban mobility services.

The **Netherlands** has launched a unique initiative targeting **cyclist safety**. **BikeSafeAI** applies AI-powered traffic analysis to identify high-risk intersections and road segments for cyclists (SIA, 2024[184]). By mapping dangerous traffic patterns, the system helps city planners improve cycling infrastructure and implement safety measures to prevent accidents.

Harness AI to foster sustainability and innovation in agriculture

AI technologies such as deep learning, machine learning and artificial neural networks offer great promise in improving farming practices and enhancing the sustainability of agriculture through data-driven approaches (Rejeb et al., 2022[185]). The ability of AI to process and analyse data from sensors and IoT allows for precise analytics regarding soil fertility, disease diagnostics, irrigation levels and pest control (Lin et al., 2019[186]). Combining computer vision with AI algorithms can result in benefits such as task automation, improved food quality in grains through disease identification and pest infestation detection (Patricio and Rieder, 2018[187]). AI-powered robots and agricultural machines can automate labour-intensive tasks, optimise resource efficiency and increase agricultural output, helping the sector meet its growing demands despite environmental constraints and labour shortages (Rejeb et al., 2022[185]).

As one of the world's leading agrifood players, the European Union faces a triple challenge of ensuring food security and nutrition; supporting the livelihood of farmers and other stakeholders in the agricultural supply chain; and improving environmental resilience (OECD, 2023[188]). Changing weather conditions exacerbate these challenges, threatening agricultural production and quality, particularly for fruit crops. (EC, 2024[189]).

In response to these challenges, recent years have witnessed an increased adoption of automation tools, including precision farming, automated feeders, drop irrigation systems and mechanised harvesting (EC, 2024[189]). The digitalisation of agriculture in the European Union stands as a combination of wireless technologies, IoT, AI and blockchain under the umbrella of precision farming (Kondratieva, 2021[190]). AI is being combined with traditional agricultural methods and IoT to improve agriculture by monitoring crop growth using the principles of precision farming (Elbasi and Mostafa, 2023[191]). This integration can enable farmers to increase crop yields, control pests, monitor soil conditions, manage workloads, predict optimal time for sowing and harvesting, and improve agricultural tasks in the food supply chain (Zhou and Chen, 2023[192]).

The EU Coordinated Plan on AI has identified AI and digital technologies as a key enabler for agriculture, emphasising its potential to increase farm efficiency and economic and environmental sustainability. 25 EU Member States signed a declaration in 2019 to foster a smart and sustainable digital future for European agriculture and rural areas. Since 2020, the European Commission has allocated EUR 175 million to Horizon 2020 research projects to digitalise agriculture, focusing on deployment of digital technologies such as AI, robotics and IoT.

The EU Coordinated Plan on AI outlines several key actions for Member States to help leverage AI in agriculture:

> *Take full advantage of RRF funding for the digitalisation of the agri-food sector, as envisaged in the national plans, for example to set up additional AI and robotics TEFs and EDIHs in agri-food, in addition to those already planned under the Digital Europe programme.*
>
> *Take an active role in the partnership Agriculture of Data.*
>
> *Consider funding of national R&I projects that link AI and robotics technologies to their use in agriculture, forestry, rural development and bioeconomy.*

Table 5.7. Harness AI to foster sustainability and innovation in agriculture: Key findings

Dimension of survey	Description	Key findings
AI use in agriculture and food production	Initiatives and research funding to promote AI use in agriculture and food production	Two-thirds of EU Member States have launched initiatives to foster adoption of AI in agriculture. However, distribution of these efforts remains uneven across countries due to factors such as geographical features, farm type and size, agricultural output and levels of digital literacy. Scientific and industrial research is the primary focus, indicating substantial investment in developing foundational AI technologies for agriculture.
AI initiatives in forestry	Programmes to apply AI solutions for sustainable forest management and monitoring	Only a few EU Member States report initiatives focused on AI applications in forestry. This represents a significant gap in the deployment of digital technologies across the complete agricultural and environmental management spectrum, despite the critical importance of forests for biodiversity and climate goals.
AI initiatives for the bioeconomy	AI solution R&D to support sustainable biological resource management and circular economy principles	Minimal initiatives targeting AI for the bioeconomy have been reported across EU Member States. While some broader agricultural initiatives may indirectly contribute to bioeconomy goals, the lack of dedicated focus suggests an underdeveloped area with considerable potential for future EU-wide co-ordination.
AI initiatives for rural development	Programmes leveraging AI to enhance services, connectivity and economic opportunities in rural areas	A handful of EU Member States have integrated AI components into their rural development strategies. The application of AI specifically for broader rural development remains limited across the European Union, highlighting an opportunity for more comprehensive approaches that extend beyond farm-level applications.
AI applications in agriculture	Examples and case studies of practical AI implementations in agriculture-related areas	Seven EU Member States report initiatives to support knowledge and technology transfer of AI solutions, mainly through the EDIH network and similar knowledge hubs. However, only five Member States report targeted initiatives for agricultural data sharing – essential for effective AI implementation. This indicates a critical gap in the infrastructure needed for widespread adoption. Specific applications in livestock farming and crop management are limited to three Member States, suggesting the sector is in the initial phases of AI adoption.

Initiatives to foster adoption of AI in agriculture are expanding among EU Member States

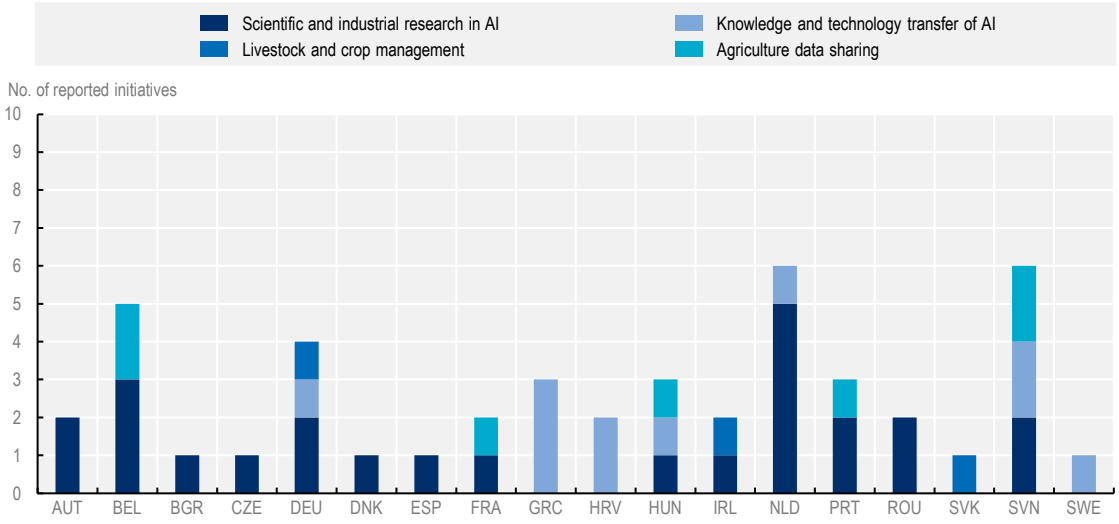
Two-thirds of EU Member States – 18 of 27 countries – have launched initiatives to foster adoption of AI in agriculture (Figure 5.8). While this represents significant progress, the distribution of these efforts remains uneven across countries. This disparity arises from factors such as geographical features, barriers to widespread AI adoption, farm type and size, agricultural output and levels of digital literacy. Additionally, the focus on agriculture varies depending on the sector's economic importance within each country. Countries where agriculture plays a central role in the economy are more likely to prioritise AI integration into farming practices.

Initiatives focused on AI in agriculture within the European Union primarily emphasise fostering scientific and industrial research. In all, 25 initiatives across 14 EU Member States advance AI-driven technologies for agriculture at a foundational level. Additionally, seven EU Member States report 11 initiatives to transfer these technologies and knowledge to farmers. While fewer in number, initiatives promoting agricultural data sharing are also gaining momentum, highlighting growing recognition of how data are essential in leveraging AI for agricultural transformation. Lastly, initiatives focusing on livestock farming and crop management practices are limited to three Member States only.

Fourteen EU Member States have reported 25 initiatives to foster scientific and industrial research in agrifood technologies. Reported initiatives focus on testing and innovation hubs, institution-led projects and ministry-led cross-sectoral collaboration. In **Austria**, for example, the AI for Green initiative promotes R&D projects that develop new AI technologies and contribute to the country's climate goals (FFG, 2025[193]). In **Belgium**, the Flanders Research Institute for Agriculture, Fisheries and Food (ILVO) focuses

on AI-driven precision farming (Vangeyte, 2025[194]) and agricultural robotics use-cases through its Flanders AI Research Programme (Flanders AI Research Program, 2025[195]). With a EUR 2 million grant, the Flemish government and ILVO co-fund the testing and experimentation facility on AI in agrifood. Over 2023-2027, **Bulgaria** aims to support 120 operational groups on innovative projects related to use of AI as part of its Strategic Plan for the Development of Agriculture and Rural Areas (Government of Bulgaria, 2023[196]).

Figure 5.8. Initiatives to foster AI in agriculture



Source: Data reported by EU Member States through the survey and interviews.

With a budget of EUR 32.4 million, the Ministry of Agriculture in **Czechia** supports the purchase of AI-powered agricultural robotics as part of its Research, Development and Innovation Strategy (2023-2032) (Ministry of Agriculture of the Czech Republic, 2022[197]). **Denmark** funds various R&D projects through its *Grønt Udviklings- og Demonstrationsprojekt* programme (GUDP, 2025[198]).

EU Member States have widely funded scientific and industrial research to develop AI-driven agriculture technologies, with 14 countries having launched initiatives

Fourteen EU Member States have launched research initiatives to develop AI-driven agriculture technologies. In **Hungary**, as part of the national AI Strategy, the Ministry of Agriculture supports projects for predictive analytics and optimised plant and livestock management (EC, 2021[199]). In **Ireland,** Crop Optimisation through Sensing, Understanding and Visualisation (CONSUS) is a EUR 17.6 million five-year strategic research programme focused on digital agriculture. The research of several other EU Member States is highlighted below.

Along with Austria and **France** (which participates with EUR 30 million funding), **Germany** is part of the European Testing and Experimentation Facilities for Agrifood Innovation. This fosters a network of digital facilities and helps assess and validate AI and robotics solutions in real-world conditions (agrifoodTEF, 2025[200]). As part of its national AI strategy, Germany initiated 36 agriculture research projects in February 2020 (EUR 44 million) (BMEL, 2025[201]).

The **Netherlands** promotes use of AI in the agrifood sector through several government initiatives:

- The Knowledge and Innovation Agenda for Agriculture, Water and Food (KIA LWV) supports development of technologies such as sensors, robots and digital twins through three dedicated innovation programmes (KIA LWV, 2024[202]).
- The AI-hub Noord-Nederland focuses on sharing data, fostering knowledge about digitalisation and AI, and developing autonomous systems (NL AIC, 2024[203]).
- The NXTGEN Hightech (2025[204]) programme develops autonomous agricultural machinery.
- The Action Program Digitalisation of the Ministry of Agriculture, Fisheries, Food Security and Nature (LVVN) supports AI systems addressing smart farming and food processing through its EUR 52.7 million (2023-2029) (LVVN, 2023[205]).
- The Farm of the Future initiative in Lelystad – a pilot programme of the European Innovation Partnership FieldLabs – demonstrates circular agriculture solutions with AI applications through collaboration between Wageningen University & Research (WUR) and Dutch farmers (Boerderij van de Toekomst, 2025[206]). From 2019 to 2024, the LVVN funded the WUR (2025[207]) on various research on AI in animal and arable systems.

In Portugal, the national AI Strategy supports R&D projects focused on AI solutions for agriculture through the COMPETE 2020 (2025[208]) programme (EUR 12.9 million). Fraunhofer Portugal AWAM, the country's R&D centre for agriculture, has been researching the potential role of AI in agriculture since 2018 (Portugal INCoDe.2030, 2022[209]; Fraunhofer Portugal, 2025[210]).

Romania invests in its Research Institute for Artificial Intelligence as an integral part of the Romanian AI Hub (Lucuț, 2022[211]), supporting digital and robotic technologies in agriculture. Its national AI strategy supports research into automation solutions, AI-driven robotics and R&D projects under the Horizon Europe programme. The ADER 2026 programme (EUR 39.2 million) funds research on climate adaptation, biodiversity conservation and implementation of innovative technologies (Secretariatul General al Guvernului, 2024[212]).

The **Slovak Republic,** through the ICT-AGRI-FOOD2024 Joint Call and the Smart Villages initiative, supports projects that transform agrifood systems using ICT technologies and AI for precision farming, smart resource management and enhancing rural services such as healthcare and education.

In **Spain**, the EUR 10 million AgrarIA consortium project develops AI solutions for intelligent agriculture (GMV, 2022[213]).

Some EU Member States are recognising the importance of knowledge and technology transfer of AI solutions in agriculture

Seven EU Member States have reported 11 initiatives to support the knowledge and technology transfer of AI solutions, mainly through the EDIH network and similar knowledge hubs (Table 5.8).

Table 5.8. Initiatives to support knowledge and technology transfer of AI solutions in agriculture

EU Member State	Initiative(s)	Key focus areas
Croatia	EDIH CROBOHUB++	Use of AI across sectors
	JURK EDIH	Blockchain, IoT applications, including automated driving in agriculture
Germany	AI and Data Accelerator in the Food and Agriculture Sector (*KI- & Daten-Akzelerator im Bereich Ernährung und Landwirtschaft*, KIDA) project	AI competency centre for agrifood, enabling authorities to handle AI and big data cases
Greece	Smart Attica EDIH	Training programmes on AI for smart grid management and precision agriculture
	Digital Innovation Hub for Agriculture and Food Production (DIH AGRIFOOD)	Sustainable farming practices and environmental monitoring
	Greek Public Employment Service (DYPA)	Vocational training courses on AI for environmental monitoring and sustainable agriculture
Hungary	Agricultural European Digital Innovation Hub (AEIDH)	Digital innovation ecosystem, incubation of AI-driven agritech start-ups
Netherlands	National Field Lab for Precision Farming	AI-based precision farming techniques for farmers and horticulturists
Slovenia	EDIH DIGI-SI	Digital transformation of SMEs and start-ups in agrifood
	BrAIn programme	Knowledge and technology transfer, SME competitiveness
Sweden	Knowledge Hub for the Digitalization of Agriculture (Linköping University)	AI-based digitalisation to enhance agricultural productivity and sustainability

Source: Data reported by EU Member States through the survey and interviews.

AI is being integrated to boost efficiency in livestock farming, crop and aerial management

Several countries are integrating AI to boost efficiency in farming. In **Germany**, the Development of a Remote Sensing and Model-based Decision Support System for Sustainable Agriculture project aims to aid farmers in sustainable decision making. It uses an integrated system that combines remote sensing and modelling (FNR, 2025[214]). In **Ireland**, the VistaMilk (2025[215]) SFI Research Ireland Centre uses AI to improve sustainability in dairy farming practices. The **Slovak Republic** invested EUR 3.5 million to build a fully operational aerial monitoring system. It monitors agricultural land with the potential to expand to agricultural production when integrated with commercial AI solutions.

Agriculture data sharing is essential for better AI-driven agricultural practices, yet only five EU Member States have reported targeted initiatives

While sharing of agriculture data is essential to improve AI-driven agriculture, only five EU Member States have reported initiatives in this area. In **Belgium**, ILVO invests in the data-sharing project DjustConnect (2025[216]) that returns control to the data producer. The Flemish government also co-funds participation in the Agricultural Data Space at the EU level. **France** has financed the Agdatahub, *Intermédiaire de données du secteur agri et agro*, a platform for agricultural and agrifood data. It unites public and private players to facilitate the digital transformation of agriculture based on real-world use-cases. In **Hungary**, the Agri-Data Framework enhances structuring and accessibility of agricultural data. In **Portugal**, AGRISPACE – part of the national consortium Portuguese AGRIculture Data SPACE – is developing a national data space for agriculture (Diário da República, 2024[217]). **Slovenia** supports agricultural data spaces for AI through two projects: Green.Dat.AI (EUR 6.66 million) for smart farming optimisation through digital twins and water management techniques. DS2 – DataSpace, DataShare 2.0 – a modular software facilitates compliance of precision agriculture data sharing with EU regulations.

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Note

[1] Reflecting this trend, the OECD.AI Policy Observatory encompasses a dedicated space on AI in Government.

Annexe A. Survey questions

1. Does your country have a national AI strategy?
   a. What are the main pillars of your country's national AI strategy?
   b. What sectors does your country's national AI strategy address as a priority?
   c. To what extent has the EU Coordinated Plan on AI been considered when designing the national AI strategy?
   d. What is the budget allocated to the national AI strategy? Please indicate total amount and average annual amount over the relevant period.
   e. Are Recovery and Resilience Facility (RRF) resources used to support initiatives based on the national AI strategy?
   f. Please indicate the name of the initiatives and funding amounts concerned. Please provide any relevant references or weblinks.
   g. Has the national AI strategy been reviewed or updated since 2021 or is an update planned within the next year?
   h. Please explain and provide any relevant references or weblinks.
   i. Have decisions to review or update the national AI strategy been motivated by the rise of generative AI?
   j. Please explain and indicate any related initiatives and associated public expenditure.
2. What is the leading entity (e.g., ministry, agency…) for the governance and implementation of the AI strategy/AI policy initiatives?
3. Are there any mechanisms or instruments in place for co-ordination of AI policy initiatives across ministries and agencies?
   a. Please explain and provide any relevant references or weblinks.
4. Are there any mechanisms or instruments for monitoring AI policy initiatives?
   a. Are any key performance indicators (KPIs) used?
   b. Please explain which KPIs are used and provide any relevant references or weblinks.
5. Has an evaluation been conducted on initiatives relating to AI/the national AI strategy?
   a. Please explain the main evaluation results and provide any relevant references or weblinks.
6. Is there a formal structure bringing together public and private stakeholders (e.g., a national AI coalition)?
   a. Please indicate this structure's name, main functions, and any relevant references or weblinks.
7. Does your country have any regional AI networks?
   a. Please indicate, for each AI network, their name, main functions, and any relevant references or weblinks.
8. Does your country have a data strategy, policy initiative or action plan?
   a. Please provide the name of the initiative(s), a short description, and any relevant references or weblinks.
9. Does your country have a cloud strategy, policy initiative or action plan?

   a. Please provide the name of the initiative(s), a short description and any relevant references or weblinks.

10. Does your country have any initiatives to support investment in next-generation cloud?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
11. Does your country have any initiatives to support investment in edge technologies?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
12. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Tap into the potential of data”?
    a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
13. Does your country have any initiatives to support investment in large-scale data centres?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
14. Does your country have any initiatives to support the development of high-performance computing (HPC) capacity?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
15. What are the estimated HPC resources in your country?
16. How are HPC resources being leveraged for AI purposes? E.g. training of large-scale deep learning models.
17. Does your country have any initiatives to support investment in the semiconductor ecosystem? Please limit your response to initiatives involving public sector expenditure.
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
18. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Foster critical computing capacity”?
    a. Pease indicate the RRF amounts involved.
19. Does your country have any initiatives to foster the development of AI research capacities?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
20. Are there any national or regional AI excellence research centres in your country?

   a. Please provide details including name of the centres concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).

21. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Build and mobilise research capacities”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
22. Does your country have any initiatives pertaining to AI-related testing and experimentation facilities in areas other than those funded by the EU?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
23. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Provide tools through an AI-on-demand platform and an environment for developers to test and experiment (TEFs), and for SMEs and public administrations to take up AI (EDIH)”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
24. Does your country have any initiatives to help AI start-ups and/or scale-ups access financing?
   a. Are any of these initiatives AI-specific?
   b. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   c. Please indicate the associated committed budget including currency units (EUR or national currency).
25. Does your country have any initiatives to help SMEs adopt digital or novel technologies including AI? You may include initiatives related to (European) Digital Innovation Hubs in your response.
   a. Are any of these initiatives AI-specific?
   b. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   c. Please indicate the associated committed budget including currency units (EUR or national currency).
26. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Fund and scale innovative ideas and solutions for AI”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
27. Does your country have any initiatives to enhance AI-related skills in primary and/or secondary education?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
28. Does your country have any initiatives to integrate AI in university studies other than computer science/ICT areas?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.

   b. Please indicate the associated committed budget including currency units (EUR or national currency).

29. Does your country have any initiatives to promote inclusion and diversity in AI ecosystems?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
30. Does your country have any re-skilling or up-skilling initiatives focused on AI?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
31. Does your country have any initiatives aimed at attracting and/or retaining AI-related talent and skills?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
32. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Nurture talent and improve the supply of skills necessary to enable a thriving AI eco-system”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
33. Does your country have any initiatives to promote AI-based solutions that help reduce greenhouse gas emissions and/or prevent environmental degradation?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
34. Does your country have any initiatives to reduce the energy consumption of AI technologies? These may include actions to develop guidelines and assessment methodologies.
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
35. Does your country have any initiatives to support the inclusion of the climate or environmental dimensions of AI in education and training?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
36. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “Bring AI into play for climate and environment”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).

37. Could you please provide information, data or examples of AI applications in environment- and climate-related areas in your country? Please feel free to provide weblinks to initiatives and relevant reports or contacts.
38. Does your country have any initiatives to improve quality and semantic or technical interoperability of health data?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
39. Does your country have any initiatives to advance the '1+ million genomes' ("1+MG") initiative?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
40. Has your country developed any initiatives, including regarding infrastructure, legal policies and operational processes, to promote the secondary use of health data, including for AI?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
41. Does your country have any initiatives to increase health professionals' understanding, trust, and acceptance regarding the impact of digital technology to improve health experience and outcomes?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
42. Does your country have any initiatives for eHealth upskilling and/or developing European quality indicators for continued medical education?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
43. Does your country have any initiatives to facilitate integration and scale of AI-based systems in health and care facilities?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
44. Is your country involved in any cross-border or sub-national cooperation initiatives on policies, processes, and standards for AI in health?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
45. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area "Use the next generation of AI to improve health"?

a. Please indicate the RRF amounts involved including currency units (EUR or national currency).

46. Could you please provide information, data or examples of AI applications in health-related areas in your country? Please feel free to provide weblinks to initiatives and relevant reports or contacts.
47. Does your country have any initiatives to promote AI use for better policymaking and/or public service delivery?
    a. Do any of the above-mentioned initiatives focus on generative AI?
    b. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks. Please considered all initiatives to promote AI use for better policymaking and/or public service delivery regardless of whether they involve the use of generative AI.
    c. Please indicate the associated committed budget including currency units (EUR or national currency).
48. Does your country have any initiatives to re-skill or upskill civil servants to enable AI use for better policymaking and/or public service delivery?
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
49. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “AI in the public sector”?
    a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
50. Could you please provide information, data or examples of AI applications to improve policymaking or public services in your country? Please feel free to provide weblinks to initiatives and relevant reports or contacts.
51. Does your country have any initiatives to promote the development and testing of AI technologies in automated transport functions? Please consider all modes of transport in your response.
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
52. Does your country have any initiatives to facilitate the deployment of trustworthy AI solutions to enhance efficiency and/or reduce the environmental footprint of automated mobility services and/or freight transport operations? Please consider all modes of transport in your response.
    a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    b. Please indicate the associated committed budget including currency units (EUR or national currency).
    c. Do any of these initiatives focus on urban mobility?
    d. If you have not already done so in your responses to the previous questions, please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
    e. If you have not already done so in your responses to the previous questions, please indicate the associated committed budget including currency units (EUR or national currency).
53. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “AI for smarter, safer and cleaner mobility”?

   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).

54. Could you please provide information, data or examples of AI applications in mobility-related areas in your country? Please feel free to provide weblinks to initiatives and relevant reports or contacts.
55. Does your country have any initiatives (including R&I funding) to promote AI use in the agri-food sector?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
56. Does your country have any initiatives (including R&I funding) to promote AI use in forestry?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
57. Does your country have any initiatives (including R&I funding) to promote AI use for the bio-economy?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
58. Does your country have any initiatives (including R&I funding) to promote AI use for rural development?
   a. Please provide details including name of the initiatives concerned, a short description, and any relevant references or weblinks.
   b. Please indicate the associated committed budget including currency units (EUR or national currency).
59. Have funds from the Recovery and Resilience Facility (RRF) been used in any of the initiatives you have mentioned in your responses relating to the area “AI for sustainable agriculture”?
   a. Please indicate the RRF amounts involved including currency units (EUR or national currency).
60. Could you please provide information, data or examples of AI applications in agriculture-related areas in your country? Please feel free to provide weblinks to initiatives and relevant reports or contacts.
61. Please report here any additional AI-related initiatives that your country has undertaken in areas or sectors not previously mentioned in this survey. Please indicate the name of the initiatives concerned, a short description, and any relevant references or weblinks. If possible, please indicate the associated committed budget including currency units (EUR or national currency).

Progress in Implementing the European Union Coordinated Plan on Artificial Intelligence (Volume 1)

Member States' Actions

This report reviews the implementation of national strategies and policy initiatives by EU Member States to foster the development and uptake of artificial intelligence (AI), in line with the European Union Coordinated Plan on AI. It draws on findings from an ad-hoc survey and interviews with policymakers conducted in 2024. It maps policy actions related to data, infrastructure, research, firm support, and skills, as well as Member States' initiatives in five high-impact sectors: mobility, health, agriculture, the public sector, and climate and environment.

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