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Going beyond the AI Act: Time for a more holistic approach across Europe?

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INTRODUCTION

This Policy Brief builds on our previous research on the transformative potential of progressive AI integration in the workplace, concluding that augmentation is more likely than automation. The focus of the research has now shifted to assessing Europe's AI competitiveness.

In this research we explore Europe's strengths and weaknesses, focusing on the latter. In particular, we discuss issues like insufficient funding, lack of skills, and brain drain. Our objective is to highlight weaknesses in Europe's AI strategy and explore opportunities for improved pan-European collaboration. These opportunities are detailed as concrete policy recommendations in the conclusion.

BACKGROUND

Europe's AI Strategy

The EU began its AI journey in 2018 with a Declaration of Cooperation on AI² and a coordinated AI plan, which was revised in 2021.³ Since then, the EU published a White Paper on AI in early 2020⁴ and proposed the AI Act (AIA) in early 2021,⁵ its first piece of comprehensive legislation, which passed in early 2024.⁶

The EU's White Paper on AI⁷ aims to promote AI uptake to enhance the EU's competitiveness in the data economy while addressing associated risks in alignment with European values. It advocates for a pan-European strategy, covering the entire AI ecosystem and its stakeholders, with policy recommendations and a clear EU stance, open for public feedback via consultation.

The 2021 EU coordinated plan⁸ aims to boost the EU's global AI competitiveness through increased investment and adoption. It addresses issues like regulatory fragmentation, with goals including €20 billion annual investment and the Adopt AI Programme for public sector uptake.

Supporting these measures, in early 2024, the Commission published an AI innovation package,⁹ which is set to boost European competitiveness and technological sovereignty through the creation of "AI factories."¹⁰ The package is geared towards European startups and small and medium-size enterprises (SMEs), which will benefit from an increased access to supercomputers, with a clear focus to boost AI development in Europe.

The EU AI Act

A key part of Europe's digital strategy is the AI Act (AIA), which was passed in early 2024, and lays down harmonised rules to regulate AI in the EU.¹¹ The AIA follows a risk-based approach, which classifies uses of AI based on their expected risk and mandates appropriate assessments to mitigate them or, in some cases, an outright ban.

A key part of Europe's digital strategy is the AI Act, which was passed in early 2024, and lays down harmonised rules to regulate AI in the EU.

The text also includes provisions regulating general-purpose AI, prompted by the recognition of the potential for harm posed by tools like ChatGPT, as well as their role in the compliance of applications based on them. For this reason, regulators decided that spreading accountability along the value chain was key to promoting trustworthy AI. This decision was fiercely opposed by some member states during the negotiations.¹²

Despite the backlash, the provisions remained and could turn into a catalyst for the EU's competitiveness. Since the EU's economic fabric is made of mostly smaller players, most of its AI systems will likely be based on bigger models developed by non-EU companies. Therefore, shifting the regulatory burden towards upstream players could mean moving it outside the EU's borders, ultimately helping European companies flourish.

Under the von der Leyen Commission, striving to replicate the large-scale impact of the General Data Protection Regulation (GDPR), the EU has pushed for new policy initiatives.

The AI Act remains mostly unrelated to strategic measures to enhance Europe's technological competitiveness. This finding adds to the list of shortcomings of the AI Act, which we started with our previous research by emphasising the regulation's disregard for the societal dynamics stemming from AI development and use.

AI STATE OF PLAY IN EUROPE: STRENGTHS

The EU's "Regulatory" Edge

Europe is characterised by one of the most developed digital *acquis*, setting high compliance standards for companies and governments. This has prompted several foreign regions to follow suit and set up similar digital governance frameworks. At the same time, businesses worldwide have adopted EU standards as default to minimise compliance costs.

This process of regulatory globalisation has become a strategic tool for the EU to assert its dominance in the regulatory landscape and reduce its foreign dependencies.¹³ Under the von der Leyen Commission, striving to replicate the large-scale impact of the General Data Protection Regulation (GDPR), the EU has pushed for new policy initiatives.

Among these, the Digital Services Act (DSA) and the Digital Markets Act (DMA) regulate digital services and establish a level playing field in Europe.¹⁴ The DSA targets online service providers, enhancing online safety, transparency, and data subject rights.¹⁵

Meanwhile, the DMA promotes fair competition among businesses by introducing new rules for large digital platforms, preventing market concentration and benefiting smaller players.¹⁶

Thus, effective DSA and DMA enforcement, especially against Big Tech,^{17, 18} promises to shape the way forward for antitrust and digital governance in Europe and can potentially play a pivotal role in relaunching European industrial policy.

A Single Market for Data

The volume of global data produced by digital technologies has increased exponentially in the last decade and is set to quintuplicate in the period between 2018 and 2025.¹⁹ As data volumes grow, so does their value. According to the Commission, the data economy in 2025 will be valued at €829 billion, or 5.8% of the EU's Gross Domestic Product (GDP).²⁰

Building on the backbone of its Single Market, the EU has announced its vision for an internal market for data across Europe. This will allow the region to tap into the potential of non-personal industrial data and public data to achieve its digital objectives of creating human-centric technology, a fair and competitive economy, and a more sustainable society.²¹

As part of this strategy, the Commission proposed a package of three policy initiatives: the Open Data Directive, the Data Governance Act (DGA), and the Data Act (DA). These three legislative measures lay down the legal framework to allow for greater public data re-use, promote data-sharing, and increase data access by creating sector-specific data spaces, respectively.²²

Nevertheless, although crucial to harness the transformative potential of data-driven innovation, Europe's regulatory prowess and considerable market size on their own will not be sufficient to become AI champions. Other than proving it can effectively enforce its sharper regulatory tools, the EU must overcome considerable obstacles, such as the lack of competitive edge in AI, skills shortages, and scarce investments.

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AI STATE OF PLAY IN EUROPE: WEAKNESSES

Environmental concerns such as the massive energy consumption of data centres, though also relevant to the discussion, are outside the scope of this research.

Insufficient funding to innovate

AI research and development require massive data and capital. Given the evident economic burden of AI innovation, it is no surprise that the industry – especially based in the US – has been at the forefront in the past ten years. However, with the global AI market approaching the €2 trillion mark by 2030, more players are looking to enter this race.

As part of its 2024 strategic vision,²³ the EU announced new funds to enhance Europe’s competitiveness and technological sovereignty. Nevertheless, EU and US disparities in regional AI investments, remain pronounced in public and private.

Under the 2021-2027 Digital Europe programme, the EU has made available €2.1 billion in public investments for AI R&D. This sum is complemented by additional funds targeting start-ups and SMEs and an additional €665 million through the European Innovation Council (EIC) and the InvestEU programme.²⁴

These EU funds pale compared to the \$3.2 billion that the US government spent in 2023 on AI-related innovation.²⁵ The EU’s private investments in AI fall even shorter than US numbers, which in 2023 counted for 70% of the market’s total.

Two relevant dynamics underpinning this bleak picture are the EU’s repeated failures to deliver on the creation of the Capital Markets Union (CMU) and its lack of strategic vision regarding the financing of its industrial ecosystem.

Meant to create a Single Market for capital and fairly redistribute investments across Europe, the CMU has now been ten years in the making, with its chances of success getting slimmer by the year. Secondly, the European financial ecosystem seems to be more focused on the needs of smaller players, such as start-ups and SMEs, whereas midcaps – which are an integral part of the European economic fabric - are underrepresented and underfinanced.²⁶ This lack of focus, in return, affects the EU’s ability to scale up and hampers the rollout of innovation at the EU level.

The EU’s technological dependencies

Europe performs rather poorly in terms of AI capacity with only a few exceptions and has so far been behind the undisputed leaders of the AI race for the last four years, namely the US and China.²⁷ According to the 2023 Global AI Index, the EU’s most competitive countries in AI are Germany and Finland, which are still far from closing the gap with China and the US.

One root cause of Europe’s lag in AI is its dependency on competitors for critical technological components such as semiconductors – for the creation of which critical raw materials are also needed – and cloud computing. Semiconductors are essential for the CPUs and GPUs behind AI models, yet no European company can compete with the state-of-the-art chips produced by US giant NVIDIA.²⁸ Cloud computing plays a key role in the training of AI models, allowing EU developers to rent computing capacities they cannot acquire on their own. Here too, the market is dominated by non-European companies.²⁹

The EU, instead of perpetually catching up with the US and China, could carve out its niche in the AI landscape by focusing on Small Language Models (SLMs). This area, promising³⁰ and relatively underexplored, doesn’t demand massive compute, data, or capital. Leveraging its linguistic and cultural diversity, the EU could spearhead research in this domain, offering expertise to nations seeking a local alternative to the dominant US- and China-centric models.

Lack of Adequate AI skills

Other than strictly technical gaps, Europe is in dire need of addressing its “softer” gaps, too. In 2021, at least 62% of companies faced challenges in hiring information and communications technology (ICT) talent.

With the fast pace of AI advancements,³¹ these difficulties are only expected to increase, as the workforce struggles to keep pace. An AI skills deficiency poses a significant challenge both among individuals already in the workforce and among younger generations. Addressing this gap is crucial for ensuring Europe’s competitiveness in the global AI landscape.

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There’s an urgent need to upskill and reskill individuals to meet the demand for AI competencies in evolving jobs and industries. This requires tailored training programmes and resources across sectors and skill levels, making sure vocational education and training schemes (VET) are not only up to date with changes in labour markets but harmonised across the bloc.³²

[The Digital Skills and Jobs Platform](#) provides materials on AI, career guidance, and access to the [EURAXESS](#) job database, but the latter is focused on academia and lacks AI as a research field. Investing in AI education for younger generations and underrepresented groups is essential for fostering a future workforce and citizens equipped for AI-driven environments.

Initiatives such as “[AI+: Developing an AI Intelligence Curriculum adapted to European High Schools](#),” part of the Erasmus+ programme, aim to integrate AI education into high school curricula across Europe. This initiative exposes students to AI concepts and technologies early, preparing them for future careers with hands-on experience and practical skills.

There’s an urgent need to upskill and reskill individuals to meet the demand for AI competencies in evolving jobs and industries.

However, most important, is to ensure that no generation is left behind by technological advancements and all are prepared for the risks that may spring from a wider adoption of AI in their daily lives.

Brain Drain

On top of addressing the lack of adequate skills among the workers and younger generations, Europe also needs to develop strategies to increase its currently low number of scientists and innovators. Except for Germany, the number of tertiary education graduates in science, technology, engineering, and mathematics (STEM) fields in Europe is considerably low, and women especially are largely underrepresented in these fields.⁵³

Adding to these low numbers, the OECD indicates that European STEM talent is predominantly drawn to countries leading global innovation, like the US.^{54,55} This talent outflow results from inadequate investments in European R&D facilities, alongside low wages and poor working conditions in certain EU countries.

There are also significant intra-EU migratory trends pointing towards an internal brain drain of sorts. Due to Single Market failures and regional “development traps,” professionals from underdeveloped regions of Europe feel compelled to relocate to wealthier regions.⁵⁶

Overall, these two types of brain drain deprive the region of its talent and strengthen regional disparities.

The lack of coordination is not due to a lack of effort. The Commission has been working on concrete EU AI initiatives for years, aiming to promote central

coordination and cooperation through platforms like “AI Watch” or “AI4EU Consortium,” now “AI on Demand.” However, the implementation of these projects is underwhelming. They serve more of a passive, reporting role rather than a coordinative one. The information gathered through these projects and made publicly available on the Commission’s websites is often scarce, incomplete, and outdated.

The issue underpinning the lack of cooperation between member states is the tendency of EU countries to act in an individualistic manner. Specifically, national AI strategies are developed in silos, resulting in 27 different strategies and undermining the Commission’s push for harmonisation. Although arguably meant to protect the prosperity of each member state, this approach feeds into a weaponisation of competitiveness, which pits EU countries against each other.

POLICY RECOMMENDATIONS

The following policy recommendations aim to address critical challenges identified during the session, focusing on the different shortcomings and limitations of the current EU AI strategy.

To address the insufficiency of private and public investments:

1. Mobilise more substantial funds to accelerate Europe’s digital transition under the new 2021-2027 multi-annual financial framework (MFF).
2. Finalise the Capital Markets Union (CMU) to increase private investments in European AI projects and redistribute such investments fairly across Europe.

To strengthen competitiveness in AI:

3. Promote a European Cloud Initiative. The EU should invest in creating a fully European cloud initiative to boost AI innovation in the region while altogether reducing its foreign dependencies.
4. Wield EU competition policy tools to their full potential to combat foreign monopolies in Europe. Specifically, the scope of the DMA should be expanded to include foreign cloud providers and possible AI providers among the designated gatekeepers.
5. Following the strides made with the AI Act and the regulation of general-purpose AI, further regulations must be developed with a fair spread of the regulatory burden among players. This not only means taking each actor’s capacity to comply into account, but also which ones are most strategic to the EU’s competitiveness.
6. Incentivise Small Language Model (SLM) development with research grants as well as region- and EU-wide projects to harness the EU’s linguistic diversity and pioneer breakthroughs in underrepresented languages.

To address the lack of skills:

7. Develop national and international platforms to share best practices on how to upskill and re-skill the population. These platforms should be domain-specific and follow the encouraging example of the [Applied AI Network](#) at the Technical University of Munich.

8. Leverage existing funds, particularly under the Erasmus+ and the European Social Fund+ programmes, and resources, such as the University of Helsinki's courses on elements and ethics of AI,³⁷ to increase the number of European VET initiatives with a specific emphasis on AI and address the skills gap interesting different age and social groups.

9. Ensure that these programmes are free of charge, readily accessible to all EU citizens and workers, inclusive and offered in multiple languages, provided by employers, and focused on promoting a culture of continuous learning rather than sporadic trainings.

10. Promote greater harmonisation. To address the AI skills shortage and the brain drain, which is affecting Europe, it is fundamental to ensure the recognition of VET credentials across Europe and greater permeability with the overall education and training systems.

To address overall fragmentation across Europe:

11. Allocate more funding under the Recovery and Resilience Facility (RRF) to increase regional cooperation instead of promoting further fragmentation along member states' borders.

12. Boosting investments in regional and cross-regional AI R&D in Europe will counter the logic of individual thinking among member states. This will result in more coherent strategies to enhance performance across Europe.

13. Create an AI job database on the [European Digital Skills and Job Platform](#) that is not focused on academia. This will help citizens on their reskilling journey and increase access to AI jobs on a European level.

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