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From Dialogue to Delivery: Advancing Europe's Competitiveness

B. Ala, A. Caramitti, S. Compagnucci, S. da Empoli, A. D'Amato, C. Orlando, T. Osborn

Europe's competitiveness agenda is increasingly defined by the convergence of regulatory, industrial, environmental and territorial challenges. In a context of increasing geopolitical instability, technological acceleration, climate pressure and global competition, the European Union needs to overcome its fragmented policy response.

I-Com identifies digital regulation, industrial policy and resilience as the interdependent pillars of Europe's economic security and strategic autonomy. Competitiveness should be understood as the result of mutually reinforcing choices: a simpler and more coherent regulatory framework, a stronger industrial base, a credible path to decarbonization, more resilient infrastructure and a long-term budget capable of aligning economies and supporting strategic priorities across all regions. A predictable and investment-friendly digital framework is essential to support innovation, artificial intelligence, data-driven services and advanced connectivity across the Single Market. However, regulatory simplification must remain compatible with the protection of fundamental rights, transparency, consumer trust and network resilience. In this sense, Europe's digital agenda involves creating conditions that encourage innovation while preserving the values and safeguards that define the European model.

The same logic applies to the relationship between decarbonization and industrial policy. The green transition can become a driver of European competitiveness only if it strengthens, rather than weakens, the Union's productive capacity. Reducing emissions, lowering energy vulnerabilities, scaling clean technologies, diversifying supply chains and supporting strategic sectors are part of the same policy equation. Transport, clean-tech manufacturing and life sciences all illustrate the need to combine regulatory certainty with industrial support, innovation capacity, infrastructure deployment and trade diversification. Without an integrated approach, Europe risks replacing dependence on imported fossil fuels with new dependencies on imported technologies, raw materials and strategic inputs.

Competitiveness also depends on the resilience of territories, infrastructure and natural resources. The EU long-term budget, including Cohesion Policy and the post-2027 financial framework, will play a decisive role in this sense. Water resilience is particularly emblematic of this challenge: it is simultaneously an environmental necessity, an industrial input, a territorial development issue and a condition for the stability of key sectors such as agriculture, energy, semiconductors, hydrogen and data centres.

This report argues that advancing Europe's competitiveness requires a coherent strategy that links simplification, investment, decarbonisation and resilience. It also presents policy recommendations to this end. Europe's future economic strength will depend on its ability to compete globally while preserving social cohesion, territorial balance, strategic autonomy and long-term sustainability.

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Executive summary

Streamlining the EU Digital Rulebook

In late 2025 and early 2026, the European Commission presented two major initiatives that signal a new phase in the development of the EU digital policy framework: the Digital Omnibus package and the Digital Networks Act. Although different in scope and legal focus, both proposals respond to the same underlying challenge: the need to make Europe's digital environment simpler, more coherent and more capable of supporting innovation, investment and resilience across the Single Market. Presented in November 2025, the Digital Omnibus package should be understood as comprising two related but distinct initiatives: a general Digital Omnibus, aimed at simplifying the broader digital legislative framework, and a separate Digital Omnibus on AI, focused specifically on targeted amendments to the AI Act. The general Digital Omnibus is designed to streamline the EU's increasingly dense digital rulebook.

Over the past two decades, the Union has developed a complex architecture of rules covering data protection, ePrivacy, data reuse, cybersecurity, digital identity, artificial intelligence and platform governance. This architecture has contributed to the creation of common European standards and has strengthened the protection of fundamental rights. At the same time, overlapping obligations, fragmented enforcement and diverging interpretations have generated uncertainty and administrative burdens for businesses, public authorities and citizens. The general Digital Omnibus therefore seeks to reduce regulatory friction by clarifying rules on data processing and reuse, simplifying the interaction between the GDPR and the ePrivacy framework, creating a single-entry point for incident reporting, consolidating parts of the data acquis under the Data Act, and introducing lighter regimes for SMEs and small mid-caps. By contrast, the Digital Omnibus on AI recalibrates certain AI Act obligations through a separate legislative proposal and has moved more quickly through the legislative process. Following the provisional political agreement and the availability of the consolidated compromise text, its most relevant changes include the postponement of high-risk AI obligations to fixed dates, namely 2 December 2027 for stand-alone Annex III systems and 2 August 2028 for AI systems embedded in regulated products under Annex I, while preserving the relevance of 2 August 2026 for certain transparency obligations and introducing new prohibitions concerning AI-generated non-consensual intimate material and child sexual abuse material. These AI-specific changes remain subject to formal adoption and publication in the Official Journal.

On 21 January 2026, the Commission complemented this regulatory simplification agenda with the Digital Networks Act, a proposed regulation intended to replace the European Electronic Communications Code. The Act addresses the physical and institutional infrastructure of connectivity. It seeks to overcome the persistent fragmentation of the telecommunications market, improve spectrum management, facilitate cross-border operations, strengthen EU-level coordination, accelerate the copper-to-fibre transition, and reinforce the resilience of digital

networks. In doing so, it links the simplification of rules to the broader need to meet the Digital Decade targets, close investment gaps, support 5G and future 6G deployment, and ensure that Europe's connectivity infrastructure is secure, reliable and fit for strategic competition. The two initiatives therefore cover the two essential foundations of the digital economy: the legal framework governing data, AI systems, digital services and cybersecurity obligations, and the infrastructure through which these services are delivered, scaled and protected. A coherent and predictable regulatory framework can encourage businesses to invest in digital tools, data-driven services, and AI applications. However, such tools and services require advanced, secure and widely accessible connectivity networks, and the fragmented authorisation procedures, inconsistent regulatory obligations and unclear rules on data and digital compliance that accompany them must be addressed.

The intersection between the two proposals is therefore particularly important. Both aim to reduce fragmentation in the Single Market, increase legal certainty, and shift EU digital governance from accumulated complexity towards more coordinated, risk-based and investment-friendly regulation. Both also reflect the apparent tension between competitiveness and the protection of European values. In the general Digital Omnibus, this tension is visible in the debate over personal data, data reuse, cookie rules, incident reporting and the possible impact of simplification on fundamental rights. In the Digital Omnibus on AI, it appears in the postponement and recalibration of AI Act obligations, the treatment of transparency duties, the processing of sensitive data for bias detection, the strengthening of the AI Office, and the introduction of new prohibitions aimed at protecting individuals, minors and victims of non-consensual intimate material. In the Digital Networks Act, it appears in questions concerning centralisation, spectrum governance, consumer protection, net neutrality, resilience and the balance between investment incentives and affordability for end-users. However, this tension can be overcome by slightly adjusting the proposals so that neither competitiveness nor values need be sacrificed. This chapter – after having examined in detail the two initiatives – concludes with policy recommendations to move in this direction.

Industrial Policy and Decarbonization

Energy transition, industrial competitiveness and strategic autonomy can no longer be considered and managed as separate policy domains. The European Union has found itself repeatedly exposed to external shocks that have demonstrated its vulnerability as not merely cyclical, but structural. The EU remains highly dependent on imported fossil fuels, increasingly exposed to critical raw material bottlenecks, and under pressure from persistently higher energy prices than its global competitors. At the same time, the EU has constantly adapted to the ever-changing global panorama: each crisis has prompted profound shifts and an overall evolution of the European energy system, allowing the Union to equip itself with diversified energy sources, multiple suppliers and several alternative trade routes. The rapid expansion of renewables, growing clean-tech manufacturing capacity and the emergence of the Clean Industrial Deal have

shown that decarbonization can become a powerful industrial and geopolitical lever if supported by coherent long-term policy.

For European institutions, the challenge is therefore not only to accelerate the green transition to meet climate goals, but to leverage it as a driver of energy resilience, innovation and economic leadership. This requires a shift from a solely regulatory approach toward a fully integrated industrial strategy capable of scaling investment, supporting innovation and deploying infrastructure across the Union. Industrial policy and decarbonization are increasingly intertwined: Europe's ability to reduce emissions will depend on its capacity to strengthen strategic sectors, protect critical value chains, reduce external dependencies and ensure that the transition reinforces, rather than weakens, its productive base.

This is particularly evident in the transport sector, where decarbonization has become one of the defining tests of the EU's ability to reconcile climate ambition with industrial resilience. The automotive sector remains a strategic pillar of the European economy, generating millions of jobs, driving innovation and sustaining a significant trade surplus, yet it is simultaneously facing mounting external and internal pressures. Rising competition from Chinese manufacturers, growing dependence on Asian battery supply chains, fragile demand for battery electric vehicles and trade tensions with the United States are reshaping the global automotive landscape at a moment when the EU is imposing some of the world's most ambitious climate targets. While the transition toward low-emission mobility is clearly underway, the current pace of fleet renewal remains insufficient to significantly reduce emissions from a vehicle stock still overwhelmingly dominated by internal combustion engines. In this context, the challenge for European policymakers is no longer whether to decarbonize transport, but how to do so without undermining Europe's industrial base, technological sovereignty and social cohesion. The Automotive Package represents an important signal of greater pragmatism and industrial awareness, but its success will depend on the EU's ability to combine regulatory certainty with industrial support, infrastructure deployment and technological flexibility.

The same broader industrial-policy logic applies to the life sciences sector, which is a strategic industrial asset for the European Union and its Member States. Beyond its economic value in terms of exports, skilled employment and R&D investment, it is central to Europe's health security, technological competitiveness and strategic autonomy. In a geopolitical context marked by trade tensions, supply-chain fragmentation and growing competition between economic blocs, strengthening the resilience of the sector is no longer optional. Europe must act more effectively on medicine shortages, external dependencies for raw materials and active pharmaceutical ingredients, and the development of an ecosystem that supports innovation, investment and timely access to new therapies. This urgency is reinforced by the United States' Most Favored Nation pricing policy. By linking US prices to lower European benchmarks, MFN risks discouraging companies from launching innovative medicines in regulated-price markets. For Europe, this is not only an industrial or trade issue: it may directly affect patients' access to care, reducing the

availability of new treatments and creating real gaps in therapeutic options. Against this backdrop, timid and cautious strategies in the field of life sciences are no longer sustainable: measures that position the EU as a competitive, attractive and innovation-friendly environment are becoming increasingly urgent. This is particularly evident in the field of clinical trials, where the EU has lost significant ground to the United States and China in recent decades, neglecting the fundamental importance of this innovative and critical field for public health. In this context, agreements such as those with India and Mercosur can provide strategic value, as they can help diversify supply chains, open new markets, reduce critical vulnerabilities and support a more outward-looking European health industrial policy.

Taken together, energy, transport and life sciences illustrate the same underlying policy challenge: decarbonization and industrial policy must be embedded in a broader strategy for competitiveness, resilience and strategic autonomy. Without a coordinated approach that links climate policy, industrial policy, infrastructure deployment, innovation and trade diversification, Europe risks becoming dependent not only on imported fossil fuels, but also on imported technologies, raw materials and strategic inputs that will define the next global industrial cycle.

Long-term Budget and Resilience

This part examines how the EU long-term budget can support resilience across sectors, territories and value chains. It focuses on Cohesion Policy, both in the 2021-2027 period and in the post-2027 reform debate, and on water resilience as an emerging strategic priority. Together, these two dimensions show that Europe's competitiveness agenda will be effective if it is also territorially balanced, climate-resilient and capable of delivering long-term economic stability, as also suggested by the final policy recommendations.

Water resilience is rapidly emerging as one of the most strategic – yet underfinanced – dimensions of European competitiveness and security. While the proposed 2028-2034 Multiannual Financial Framework introduces a more ambitious and centralized investment architecture through the European Competitiveness Fund, the absence of a dedicated funding pillar for water resilience reveals a growing disconnect between the EU's policy ambitions and its budgetary priorities. This gap is particularly striking given the accelerating impact of water scarcity, droughts and floods across Europe, the increasing exposure of strategic sectors to water stress, and the recognition – embedded in the European Water Resilience Strategy – that water is no longer solely an environmental issue, but a critical economic, industrial and geopolitical asset. From semiconductors and hydrogen production to agriculture, energy systems and data centers, Europe's strategic industries are becoming increasingly dependent on secure and efficient water management. At the same time, the EU already possesses significant technological and industrial advantages in the water sector, including leadership in patents, digital water technologies and infrastructure expertise. The challenge for European institutions is therefore not only to manage water scarcity, but to transform water resilience into a pillar of industrial competitiveness, strategic autonomy and long-term economic stability. At the same time, the long-term budget

debate cannot be separated from the territorial dimension of European resilience. Cohesion Policy remains one of the EU's most important investment frameworks and has historically served a dual function: reducing economic, social and territorial disparities while strengthening the productive capacity of the Single Market. In the 2021-2027 period, cohesion instruments such as the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund and the Just Transition Fund have supported infrastructure, innovation, skills, social inclusion, climate adaptation and structural transformation. Their role goes beyond redistribution, contributing directly to competitiveness by improving connectivity, human capital, administrative capacity and access to investment in regions with different levels of development. Additionally, the 2025 mid-term review demonstrated the capacity of Cohesion Policy to adapt to emerging priorities, including competitiveness, defence preparedness, housing, water resilience and energy connectivity. This flexibility is increasingly necessary in a context marked by geopolitical instability, industrial restructuring and climate-related shocks. However, it also raises a central policy dilemma for the post-2027 framework. If cohesion resources are repeatedly repurposed to address new EU priorities, the policy risks becoming overloaded and losing its core mission of convergence. Water resilience illustrates this tension particularly clearly. The regions most exposed to droughts, floods, agricultural stress or infrastructure deficits are often also those with weaker fiscal and administrative capacity to respond. Without a territorial lens, resilience investments could concentrate in already competitive regions and reinforce existing agglomeration effects. Conversely, if water resilience is embedded into Cohesion Policy and the post-2027 budget architecture, it can become a platform for place-based development: modernising networks, supporting wastewater reuse and creating industrial opportunities in vulnerable territories.

1. Streamlining Digital Rules

1.2 The Digital Omnibus

1.1.1 Regulatory landscape: the puzzle of digital legislation

Mapping the European Digital Legislative Landscape

The European Union has progressively constructed a sophisticated and multi-layered digital regulatory framework that seeks to balance economic competitiveness, fundamental rights, and systemic resilience across the Digital Single Market (DSM).

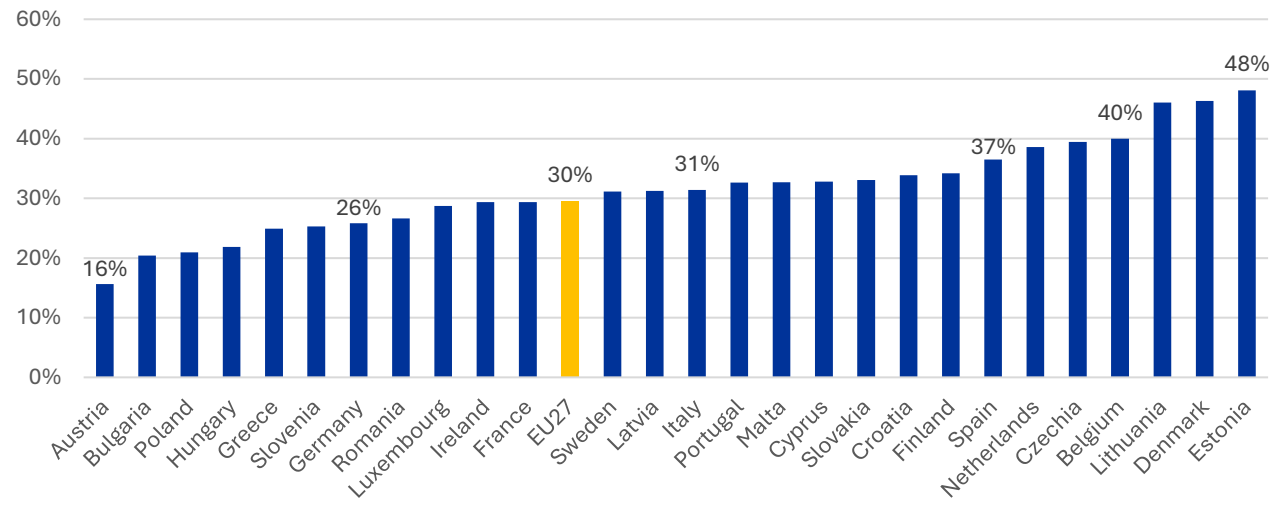
The *ePrivacy Directive* (ePD, Directive 2002/58/EC, amended 2009) is one of the most relevant elements of the European digital rulebook and continues to regulate confidentiality in electronic communications, including tracking and monitoring, and especially cookies and traffic data. Anchoring the modern architecture of the DSM is the *General Data Protection Regulation* (GDPR, Regulation 2016/679), a landmark privacy regime that harmonised personal data protection across the EU with extraterritorial effect and strong individual rights, but whose complexity and stringent compliance obligations have been criticised for imposing significant implementation burdens on organisations and creating a perception of regulatory fatigue among stakeholders. The ePD was meant to be modernized and harmonized with the GDPR through a ePrivacy Regulation, but the proposal was ultimately withdrawn by the Commission in 2025[1]. The *Free Flow of Non-Personal Data Regulation* (Regulation 2018/1807) removed localisation requirements for non-personal data, thereby reinforcing cross-border data mobility at an early stage of the EU's digital agenda, though it currently operates alongside other regimes whose overlapping scopes can create compliance complexity. The *Open Data Directive* (Directive 2019/1024) obliged public sector bodies to make high-value datasets reusable, advancing transparency and economic reuse of public information. Building on the GDPR's emphasis on data control, the *Data Governance Act* (Regulation 2022/868) established a trust-enhancing framework for voluntary data sharing and reuse across sectors, facilitating Common European Data Spaces and reducing barriers to innovation. Complementing these efforts, the *Data Act* (Regulation 2023/2854) introduced horizontal rules on fair access to and use of data – particularly data generated by connected products and services – aiming to stimulate competition and data portability while preventing monopolistic control of data; the Act's broad scope and novel obligations, however, present

[1] For more information on the ePrivacy Regulation, https://www.european-eprivacy-regulation.com/ ; https://edri.org/our-work/the-eprivacy-regulation-proposal-has-been-withdrawn-but-the-fight-for-your-privacy-is-far-from-over/

implementation challenges for manufacturers and service providers, particularly regarding data classification and compliance timelines.

Fig. 1.1: Share of European SMEs that perform data analytics, 2025

Source: Eurostat [Data analytics by size class of enterprise]



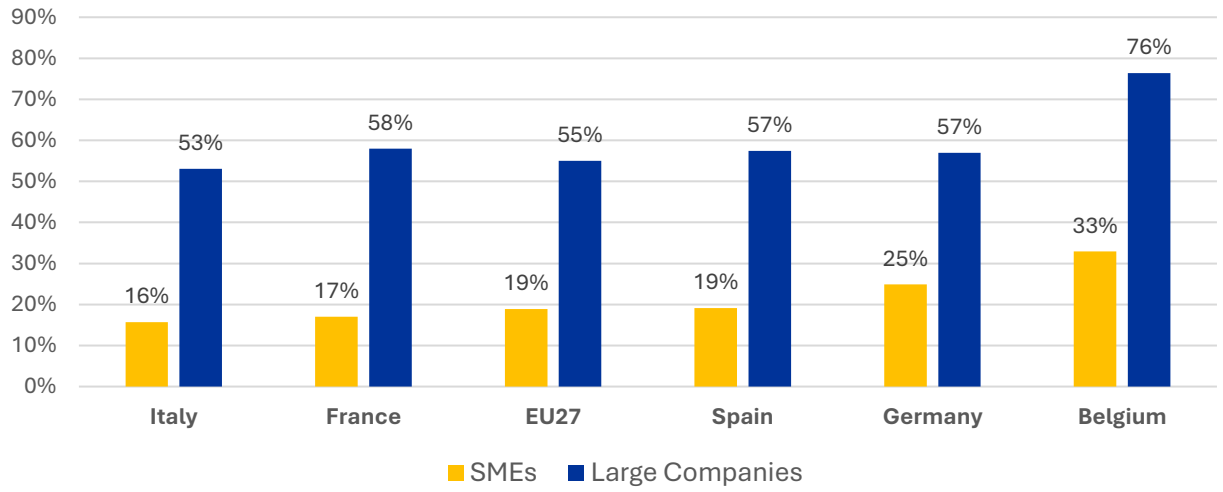
To secure digital infrastructure, the *NIS2 Directive* (Directive 2022/2555) established risk-based cybersecurity obligations for essential and important entities across multiple sectors, seeking to harmonise national responses and incident reporting, yet businesses frequently highlight the administrative overhead and heterogeneity in national transpositions of such directives. Alongside NIS2, the *Critical Entities Resilience* (CER) Directive mandated identification and resilience-building measures for organisations critical to societal functions, broadening risk management beyond cyberspace to include physical and logical threats. The *Digital Operational Resilience Act* (DORA, Regulation 2022/2554) implemented a unified operational resilience standard for the financial sector and its ICT supply chain, significantly strengthening cyber risk governance. Recent advances in digital identity, particularly *eIDAS2* (Regulation 2024/1183), aimed to deliver interoperable digital identity wallets across the EU to facilitate secure cross-border authentication. Additional horizontal instruments such as the *Cyber Resilience Act* (CRA, Regulation 2024/2847) extended baseline cybersecurity requirements to products with digital elements, though debates persist over its impact on open-source software and small suppliers.

Artificial intelligence is governed by the *AI Act* (Regulation 2024/1689), which established a comprehensive, risk-based framework. The bulk of compliance duties are allocated to providers of high-risk AI systems, while narrower obligations are imposed on professional deployers (entities that use AI in a professional capacity, as opposed to affected end users). The Act prohibits a defined set of 'unacceptable-risk' practices and regulates 'high-risk' systems that function as safety components or products subject to third-party conformity assessment under Annex I, or that fall within Annex III. There are specified carve-outs for narrowly procedural or preparatory tools, and the Commission has the possibility to recalibrate the list via delegated acts where evidence

justifies it. The provider requirements for high-risk systems cover lifecycle risk management, data governance (i.e. representative, relevant and quality-controlled datasets), technical documentation, record-keeping, instructions to enable downstream compliance, transparency, human oversight enablement and ensuring appropriate accuracy, robustness and cybersecurity. These are complemented by post-market monitoring and serious incident reporting. The Act also introduces a dedicated regime for general-purpose AI (GPAI) models. All GPAI providers must supply technical documentation and downstream information. They must also adopt a copyright-compliance policy and publish a sufficiently detailed summary of the content of their training data. 'Free and open licence' GPAI models are generally subject only to the latter two duties, unless they are deemed to be 'systemic'. In this case, additional requirements apply, such as evaluations and adversarial testing, systemic risk assessment and mitigation, and incident reporting to the AI Office and national authorities. There is also a duty to notify the Commission within two weeks if 'systemic' status is triggered, for example by training compute exceeding 10^{25} FLOPs. Governance is reinforced through the establishment of an AI Office within the Commission and the introduction of codes of practice to demonstrate compliance in the absence of harmonised standards, as well as through the implementation of staged application deadlines.

Fig. 1.2: Share of enterprises using at least one AI technology in 2025, by class size

Source: Eurostat (isoc_eb_ai)



Efficiencies and Inefficiencies of European digital regulation

European-level digital legislation generates value by expanding national markets onto the European stage. Digital products and services greatly benefit from economies of scale and network effects, meaning that the more users use a service, the more the profits they generate will exceed the costs of delivering the service. Moreover, for digital products such as social networks, the more users engage with the platform, the more value is generated for each user (e.g. the greater the variety of content available), and the more likely it is that the community will thrive and expand. The establishment of common supranational standards, rules and practices serves to

construct the Digital Single Market, a globally relevant stage in which European businesses, users and activities alike can operate (in theory) seamlessly across borders.

The imposing legislative approach pursued in the past by the European Institutions – together with the relevance of the market itself – has sparked the so-called "Bruxelles Effects", effectively setting standards and shaping regulations around the world in various sectors, with GDPR being amongst the most prominent examples (Bradford, 2019). Nevertheless, this regulatory constellation is often considered complex to navigate and burdensome for the economy due to its overlapping obligations and risk-averse approach, which, according to some analysts, hampers innovation at its earliest stages. However, other analysts have noted that this strict and burdensome regulation has only recently been introduced, suggesting that factors other than regulation, such as the incomplete implementation of the DSM, are hindering innovation and putting the EU at a disadvantage compared to other competitors.

While drafting the digital rulebook, the European Union pursued specific objectives, such as the protection of fundamental rights and the prevention of the excessive exploitation of personal information by companies for commercial purposes, or by hostile actors for the perpetration of interference and destabilisation[2]. Similar to how it cannot be expected to generate the same revenues from fishing after the implementation of marine protection laws, the protection of personal data, and other rights and values, comes at a cost. Indeed, as Mario Draghi explained that *"one of the clearest demands is for a radical simplification of GDPR,"* which has *"raised the cost of data by about 20 percent for EU firms compared with US peers"* (Draghi 2025), the GDPR deliberately embeds higher data-related costs through its design, notably via the principle of data minimisation, which obliges controllers to limit processing to what is strictly necessary for specified purposes.

The GDPR surely carries inefficiencies, resulting in total annual compliance costs estimated to up to €500,000 for small and medium-sized enterprises (SMEs) and up to €10 million for large organisations (Draghi, 2024). However, it is complex to untangle the costs related to inefficiency to the intrinsic costs that data protection practices carry – and the broad benefits that data protection can generate.

The current European digital rulebook presents inefficiencies that are objectively recognisable and others aspect that can be seen either as inefficiencies or strengths, based on the perspective of the stakeholder analysing them. For example, data subjects' rights, such as access to personal data, on the one hand represent a democratic approach to data collection and treatment, effectively empowering citizens to exercise control over information that concerns them. On the other hand, however, the exercise of this right represents a cost for companies and data holders, which are required a precise management of their databases by the GDPR, especially when handling large datasets or highly sensitive data. These processes involve significant fixed costs,

[2] The information leaked by Edward Snowden and the Cambridge Analytical scandal are two concrete examples of exploitation of data harvest against democratic rules.

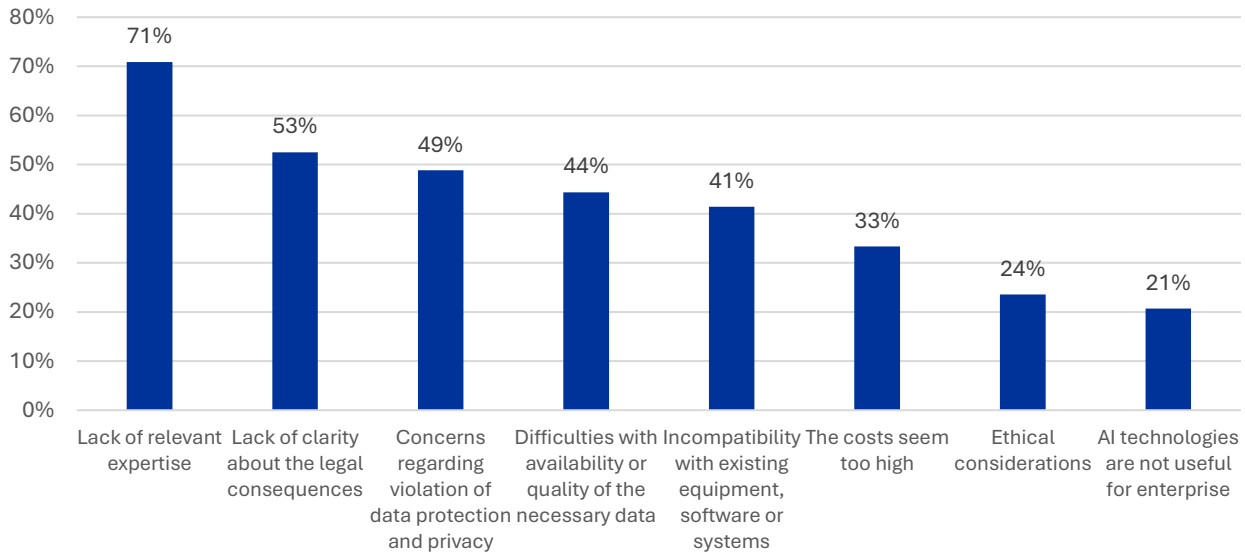
which confer a comparative advantage on larger firms, for whom the relative cost of compliance is lower than for SMEs due to economies of scale (Marino, 2025).

Moving forward, the notification of cyber incidents surely falls under the category of clear inefficiencies. Indeed, a single cyber incident can trigger parallel notification duties under multiple EU legal acts – GDPR, NIS2, DORA and CRA – despite being based on the same underlying facts. For example, incidents involving both service disruption and personal data breaches must be reported simultaneously to Data Protection Authorities, Computer Security Incident Response Teams (CSIRTs), national competent authorities, and in some cases ENISA, while also requiring communication to affected data subjects, service recipients, or clients. These obligations differ markedly in terms of scope, thresholds, recipients, timelines and reporting formats: GDPR imposes a 72-hour deadline focused on risks to individuals' rights and freedoms; NIS2 introduces a three-phase reporting model starting within 24 hours and centred on service continuity; DORA establishes sector-specific, harmonised reporting to financial supervisors with phased notifications; and the CRA adds further layers of early warnings and vulnerability disclosures for manufacturers of products with digital elements. The lack of alignment between these regimes obliges organisations to run multiple reporting processes simultaneously, often under severe time pressure and before full technical clarity is available, increasing the risk of inconsistent disclosures and regulatory scrutiny. This fragmentation is further exacerbated by national-level add-ons, such as law-enforcement notification requirements linked to insurance coverage, and by the possibility of cumulative sanctions under different legal instruments for the same incident (FERMA, 2024).

Subsequently, the regulatory framework governing tracking technologies is currently marked by fragmentation and operational inefficiencies, largely stemming from the simultaneous application of the ePrivacy Directive and the GDPR. The ePD regulates the storage of and access to information on users' terminal equipment, such as cookies, while the GDPR applies to the subsequent processing of that information insofar as it qualifies as personal data. This dual-layered regime has generated overlaps, uncertainty, inconsistent enforcement practices, and a significant compliance burden for regulated entities. From the users' perspective, the requirement to provide consent on a site-by-site basis has resulted in widespread "cookie consent fatigue", encouraging routine acceptance of choices that are often poorly understood. This dynamic has been systematically exploited through the deployment of unlawful and manipulative consent architectures, frequently leading to consent that is neither fully informed nor genuinely voluntary. For businesses, persistent legal uncertainty acts as a deterrent to legitimate technological innovation and constrains the deployment of non-intrusive, data-driven analytics, particularly in areas such as website performance measurement, service optimisation, and user experience improvement (Euroconsumers, 2025; noyb, 2024).

Fig. 1.3: Enterprises that have ever considered using any of the AI technologies by reason for not using, EU, 2025. (% of the enterprises that have ever considered using any of the AI technologies)

Source: Eurostat (isoc_eb_ai)



Furthermore, it is widely recognised that the enforcement of data protection rules is one of the digital acquis's weakest spots. The persistent lack of effective GDPR enforcement, particularly in cross-border contexts, reflects deep and systematic shortcomings in the regulation's enforcement model, in addition to inadequate actions by individual supervisory authorities[3]. As argued by Gentile and Lynskey (2022), the GDPR relies on complex composite administrative procedures – such as the one-stop-shop, cooperation, and consistency mechanisms – which combine national and EU-level decision-making without sufficiently harmonised procedural rules or clear lines of accountability. This architecture has generated significant procedural ambiguity, delays, and fragmentation, as key concepts such as "draft decision", "without undue delay", and the scope of investigations are interpreted differently across Member States. In practice, the system confers a structurally dominant role on lead supervisory authorities, enabling them to shape the scope, pace, and outcome of investigations, while relegating other concerned authorities to a largely reactive position. This imbalance undermines the principle of equal application of EU law and allows national enforcement cultures, priorities, and resource constraints to decisively influence outcomes in cases with EU-wide impact.

[3] For example, as reported in Gentile and Lynskey (2022): 2020/2789(RSP), 'European Parliament resolution of 20 May 2021 on the ruling of the CJEU of 16 July 2020 – *Data Protection Commissioner* v *Facebook Ireland Limited and Maximillian Schrems* ('Schrems II'), Case C-311/18'. The Parliament criticised the Irish Data Protection Commission (DPC), expressing 'deep concern that several complaints against breaches of the GDPR filed on 25 May 2018, the day the GDPR became applicable, and other complaints from privacy organisations and consumer groups, have not yet been decided by the DPC, which is the lead authority for these cases.'

These issues of enforcement and compliance are supported by a survey conducted by noyb (GDPR: a culture of non-compliance?, 2024), which targeted data protection professionals. In this survey, 74.4% of respondents agreed (53.1% strongly agreed and 21.3% somewhat agreed) that "*If a DPA would walk into the door of an average controller tomorrow, they would surely find relevant GDPR violations*.", while almost 70% (47.0% strongly agreed and 22.9% somewhat agreed) agreed that better enforcement was needed to improve user privacy in practice. Nevertheless, slightly more than half of respondents (51.4%; 19.7% strongly agree, 31.4% somehow agree) agreed with the statement that "Independent of the paperwork, the GDPR has significantly improved how organizations process personal data".

At the same time, procedural fairness[4] deficits further weaken enforcement. Data subjects are largely excluded from meaningful participation in cross-border proceedings and face substantial obstacles in accessing effective judicial remedies, particularly where decisions are taken by foreign authorities acting as lead supervisors. The interaction between national procedural autonomy and limited EU-level safeguards has resulted in lengthy proceedings, inconsistent sanctions, and, in some cases, strategic under-enforcement, especially where large multinational companies concentrate their EU operations in jurisdictions perceived as more lenient or resource-constrained. These dynamics diminish deterrence and increase risk of forum shopping, unequal levels of fundamental rights protection, and erosion of trust in the GDPR framework (Gentile and Lynskey, 2022).

1.1.2 The Digital Omnibus package

The Digital Omnibus is structured as a legislative package built around three proposals (COM(2025) 835, 836 and 837), intended to operationalise the Data Union Strategy through targeted, technical amendments to core instruments of the EU digital acquis, coupled with repeals of rules deemed outdated or of residual relevance. The proposal is explicitly framed as part of the Commission's wider "implementation and simplification" agenda (COM(2025) 47 final) and responds to repeated calls from the European Council (March, June and October 2025) and the European Parliament (resolution of 11 September 2025) to "stress-test" and streamline the EU acquis in support of competitiveness, while maintaining high standards of fundamental-rights protection.

These three pieces of legislation aim, firstly, to coordinate the GDPR, NIS2, DORA and eIDAS2. Secondly, the proposals intervene on the obligations for high-risk AI systems, by delaying their entry into force, strengthen the AI Office and better connect the AI Act with the GDPR. Finally, the

[4] "In its general meaning, procedural fairness the framework through which public decision-making can be structured in such a way that key values such as factual and legal accuracy, transparency, the balancing of all (public) interests involved and the consultation of all relevant parties are considered." From Van Cleynenbreugel and Grozdanovski (2025)
More information on the concept of procedural fairness in Europe: https://academic.oup.com/book/7683/chapter-abstract/152747587

Digital Omnibus proposes to consolidate the digital rulebook under the Data Act. The reform is meant to clarify the rules governing data processing and reuse, simplify the cookie regime and streamline the interaction between the GDPR and the ePrivacy framework, ensure closer coordination between rules on artificial intelligence, data governance and cybersecurity, and provide targeted support to SMEs and small mid-caps through exemptions or lighter regulatory regimes.

In more detail, one of the main and most controversial reforms introduced by the Digital Omnibus is a new definition of 'personal data'. The concept of identifiability shifts from being an abstract, objective property of information to being a concept according to which information relating to a natural person is not necessarily personal data for every other person or entity "merely because another entity can identify that natural person". Information is not personal to a given entity if that entity cannot identify the person in question, taking into account the means 'reasonably likely to be used' by that entity. Furthermore, it does not become personal to that entity merely because a subsequent recipient may have means reasonably likely to identify the person in question. This change follows the European Court of Justice's (ECJ) interpretation of personal data[5]. The proposal also anticipates implementation support: the Commission, together with the European Data Protection Board, will support controllers by stipulating technical criteria in an implementing act to operationalise the updated approach in practice.

Moreover, data subject rights are impacted. Indeed, the subject's right to access data can be denied when considered as abusive or for purposes different from the protection of their data. The explanatory text provides concrete illustrations of abusive patterns, such as strategic requests designed to trigger refusal and then leverage compensation claims; excessive requests made with the intent of causing harm; or requests offered to be withdrawn in exchange for a benefit. In operational terms, the GDPR's fee/refusal mechanism for manifestly unfounded or excessive requests is expressly extended to include situations where, for Article 15 on access requests, the data subject abuses the right for non-protective purposes. Transparency obligations are also derogated when the processing is not likely to result in a high-risk application or where it is assumed that the data subject already has the information about the controller's identity and contact details and the processing purposes. The explanatory memorandum illustrates the intended scope through examples such as craftsperson–client relationships and sports clubs where processing is confined to membership management and communications, while explicitly excluding data-intensive contexts (for example, employment). The derogation is also bounded: it does not apply, inter alia, where the controller transmits data to other recipients/categories, transfers data to a third country, carries out automated decision-making (including profiling), or indeed where the processing is likely to result in high risk.

[5] *EDPS v SRB* C-413/23 P. However, it has been argued that alignment with the ECJ has been conducted selectively and without a systematic engagement with the Court's broader case law on data protection, surveillance, and algorithmic decision-making.

Emphasis has also been placed on the so-called “cookie fatigue”, arising from the ePrivacy Directive first and the GDPR after, which set the “privacy by default” standard, requiring the explicit consent by the user to store and process identifying trackers (cookies, digital fingerprints and similar). The proposal aims to harmonise the interactions between the two legislations by shifting the legal treatment of personal data for natural persons in relation to terminal equipment entirely under the GDPR (continuing however to apply the requirements from the ePrivacy Directive for non-personal data), and to introduce a new consent mechanism. In particular, consent will be centrally managed at the level of the terminal equipment of the user (implemented through the browser), rather than through a cookie banner for each website. Media services are excluded from this centralized mechanism: they are allowed to ignore users’ browser signals and initiate their own consent request.

The newly introduced article 88a GDPR, which governs the lawfulness of stored or accessed information, also provides a list of low-risk purposes for which consent is not required. The proposed exemptions under the new article are narrowly defined and confined to specific activities: the transmission of communications; the provision of services explicitly requested by the data subject; the generation of aggregated audience measurement for the provider’s own online service; and the maintenance or restoration of the security of a service offered by the controller or of the terminal equipment used for that service. In addition, Article 88a(4) further strengthens consent requirements by mandating a “one-click refusal” option, prohibiting repeated consent requests while consent remains valid, and introducing a six-month cooling-off period following a refusal for the same purpose.

The Digital Omnibus also tackles data breach notification obligations. Firstly, in case of a data breach, a notification is required only if the breach is likely to result in a high risk to the rights and freedoms of the data subjects. The notification period is also extended from 72 to 96 hours. Secondly, a single-entry point for incident reporting will be implemented and will cover reporting obligations under NIS2, GDPR, DORA, Digital Identity Regulation, and CER.

As already mentioned, the Digital Omnibus proposes a consolidation of the data acquis. Indeed, the Data Governance Act, the Free Flow of Non-Personal Data Regulation and the Open Data Directive are set to be merged under the Data Act. Simultaneously, key terms such as “data user”, “data holder” and “public emergency” are harmonised and further clarified. Moreover, data owners are allowed to refuse the disclosure of data if it may lead to the transfer of sensitive information to third countries lacking an adequate level of protection or may otherwise jeopardise the Union’s essential security interests, therefore strengthening the protection of trade secrets. Finally, Article 35 GDPR is amended to streamline and consolidate the data protection impact assessments (DPIAs), which are required when processing personal data is likely to result in a high risk to the rights and freedoms of individuals. The proposal replaces existing national lists of processing operations subject to DPIA with a list at EU level, provided by the European Data Protection Board, which should also introduce common methodologies. However, there is no

clarity on how the new list will correlate with the existing ones and how it should apply to existing products.

Regarding artificial intelligence, the Digital Omnibus is relevant under both the GDPR and the AI Act. The proposed amendments to the GDPR aim to provide legal certainty for the development and operation of AI systems while preserving a high level of data protection. The introduction of point (k) under Article 9(2) would allow the processing of sensitive data for AI-related purposes with robust safeguards and the removal of sensitive data where identified. At the same time, the new Article 88c would clarify the use of legitimate interests as a possible legal basis for AI development and operation, with appropriate safeguards and within the meaning of Article 6(1)(f) GDPR. However, it adds the caveat that this does not apply where other EU or national laws explicitly require consent. The latter passage has been deemed problematic for the DSM since AI providers/deployers might have to comply with up to 27 different cases where consent is explicitly required. These GDPR-related amendments should nevertheless be distinguished from the provisional political agreement on the Digital Omnibus on AI, which concerns targeted amendments to the AI Act and related sectoral legislation.

The consolidated compromise text recalibrates key obligations under the AI Act by combining regulatory simplification with more gradual and differentiated implementation. It no longer removes the binding requirement for providers and deployers to address AI literacy altogether but reformulates it as an obligation to take measures to support the development of AI literacy among staff and other persons dealing with the operation and use of AI systems, without requiring any specific level of individual literacy. Obligations for high-risk AI systems are substantially deferred, but the compromise replaces the Commission's initially proposed standards-linked mechanism with fixed application dates. High-risk obligations for stand-alone systems under Article 6(2) and Annex III would apply from 2 December 2027, while those for AI systems embedded in regulated products under Article 6(1) and Annex I would apply from 2 August 2028. For high-risk systems intended to be used by public authorities and already on the market, the 2 August 2030 compliance deadline remains relevant.

The proposal further clarifies and expands transitional arrangements for high-risk systems and confirms that 2 August 2026 should not be treated as a generally suspended compliance date. In particular, the Article 50 transparency obligations largely remain on the original schedule. A more limited transitional period is introduced for AI systems, including GPAI systems, generating synthetic audio, image, video or text content that were already placed on the market before 2 August 2026, for which the relevant marking obligation under Article 50(2) would have to be met by 2 December 2026.

The compromise also introduces a new prohibition under Article 5 of the AI Act concerning AI systems that generate or manipulate non-consensual intimate or sexually explicit material of identifiable persons, as well as material connected to child sexual abuse. The new prohibitions are structured so as to distinguish the position of providers from that of deployers and are aimed at

the unlawful destination or use of such systems, rather than at generative AI capability as such. Procedural burdens are reduced through closer integration with existing sectoral product conformity regimes, streamlined conformity-assessment procedures, and measures aimed at avoiding overlaps with sectoral legislation, including machinery. At the same time, the compromise intervenes on the database-related obligations: it simplifies registration requirements for non-high-risk systems, while restoring registration in the EU database where providers consider their systems to be exempted from classification as high-risk.

Moreover, the framework expands Union-level and national AI sandboxes, postpones the deadline for national AI regulatory sandboxes to 2 August 2027, broadens the scope for real-world testing, and enhances the AI Office's supervisory and enforcement powers. This reinforcement is particularly relevant for AI systems based on general-purpose AI models where the model and the AI system are developed by the same provider, as well as for systems constituting or integrated into very large online platforms or very large online search engines, subject to specific exceptions where national authorities remain competent. This selective centralisation may reduce fragmentation, although some actors consider it capable of creating a single point of failure and potential bottlenecks for high-risk systems.

Finally, the proposal extends the possibility to process special categories of personal data where strictly necessary for bias detection and correction, subject to safeguards such as limits on re-use, security and pseudonymisation measures, restrictions on transmission to third parties, deletion once the bias has been corrected, and recording in the records of processing activities. The proposal also introduces additional facilitations and proportionality measures for SMEs and small mid-cap enterprises, including simplified technical documentation, proportionate quality-management requirements, simplified arrangements for SMEs and start-ups, and lower fine caps.

1.3 The Digital Networks Act and the Tech Sovereignty Package

1.2.1 The Digital Networks Act

The market of digital infrastructure has remained fragmented in national markets with barriers that do not allow operators to scale-up and operate cross-border, as highlighted by both the Draghi and Letta reports. Furthermore, the Union's preparedness and resilience is seriously undermined by the strong dependences and the lack of capacities for crisis response in the electronic communication sector, as underlined by the Niinistö report.

To tackle these issues and to reach the connectivity target set by the Digital Decade 2030, the European Commission presented the Digital Network Act (DNA, Procedure 2026/0013/COD) in January 2026, which will replace the EU Electronic Communications Code (Directive 2018/1972, hereinafter EECC).

The EECC, adopted in 2018, had the objective of improving connection speed and coverage and fostering connection accessibility throughout the Union, resulting, however, in fragmented approaches across the Union, which have arisen from the transposition of the directive into national law by Member States. The Commission seeks to overcome this issue by proposing the DNA as a regulation, a legislative design that is directly and equally applicable throughout the Union.

In addition to the EECC, the DNA will replace the BEREC Regulation (2018/1971), which established the Body of European Regulators for Electronic Communications (BEREC), the Radio Spectrum Policy Programme (Decision No 243/2012/EU), which defined policy objectives and principles for managing radio spectrum efficiently, and parts of the Open Internet Regulation (2015/2120), which set rules for an accessible, equal and functioning internet. Finally, the new regulation will continue the dismantling of the ePrivacy Directive, a long-awaited process which effectively began with the Digital Omnibus.

The DNA intervenes on several fronts, from harmonisation, regulatory burdens and innovation to copper networks and resilience.

As a first intervention, the DNA significantly revises the governance structure for telecom regulation in Europe, strengthening coordination at the EU level through institutional changes. It redefines the roles of BEREC, creates a new RSPB (Radio Spectrum Policy Body, out of the Radio Spectrum Policy Group, RSPG) and transforms the BEREC Office into a more expansive Office for Digital Networks (ODN). The ODN will have a coordination task which will strengthen the existing link between BEREC and RSPB.

In addition to the harmonisation arising from a regulation, the proposal aims to strengthen the Single Market for connectivity with a “Single Passport” authorisation that enables pan-European operations via notification in only one Member State and a EU-level satellite spectrum authorisation. It also pursues simplification by reducing regulatory and administrative burdens across its provision, especially by allowing greater flexibility in business-to-business relations while maintaining a high level of consumer protection.

Moreover, to foster innovation across the digital ecosystem, the proposal introduces mechanisms to clarify the application of Open Internet rules to innovative services and establishes a voluntary cooperation framework on IP interconnection, traffic efficiency, and other emerging areas.

The DNA seeks also to strengthen resilience through an EU-level Preparedness Plan, addressing growing risks from natural disasters and foreign interference in networks and radio signals, while embedding security and resilience criteria into the selection of pan-EU satellite communications. To attract investment, the proposal scales up spectrum-assignment best practices – such as longer licence durations, renewal at expiry, and spectrum sharing – while adding safeguards for market-shaping measures, including an ex-ante consistency mechanism for assignment conditions and the promotion of investment-friendly commitments. Finally, the DNA supports and accelerates the

transition from copper to full-fibre networks by requiring mandatory national transition plans for an orderly and sustainable copper phase-out by 2035, and by updating the ex-ante regulatory framework to facilitate fibre deployment while anticipating challenges in a future full-fibre environment, with the intended objective of maximising benefits for end users.

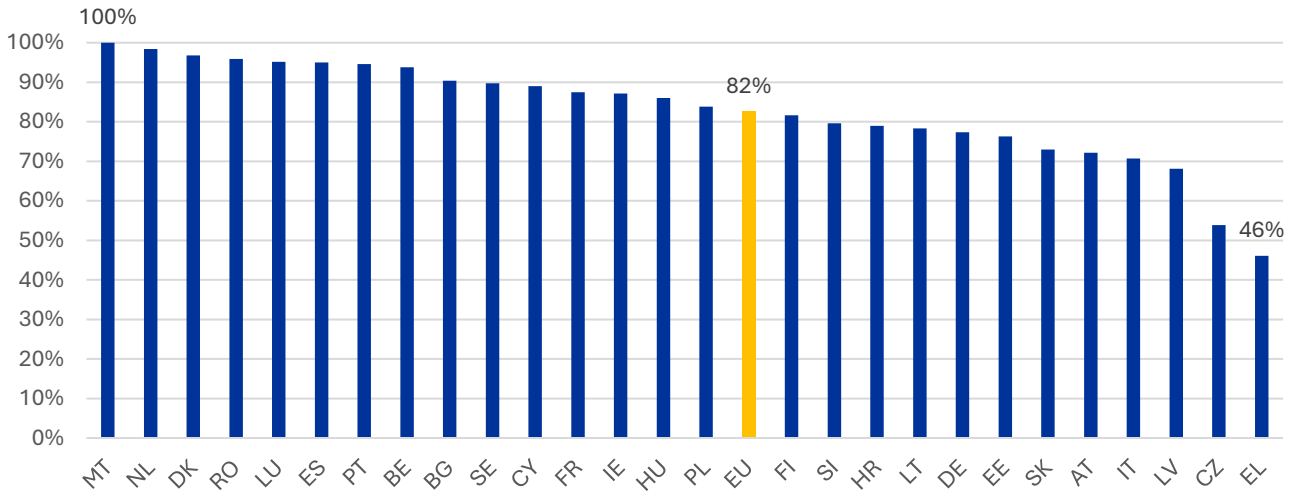
1.2.2 Connectivity targets and investment

The DNA is closely linked to the EU's Digital Decade connectivity objectives and to recurring Commission analysis on the investment required to meet those targets. The proposal explicitly states the objective of enabling investment in advanced fixed (e.g., fibre) and mobile (5G and beyond) networks. The Digital Decade targets include gigabit connectivity for all households and all populated areas covered by 5G.

The DNA's objective of fostering investment in connectivity networks reflects the Union's progress of reaching the Digital Decade's targets. According to the latest data, from 2024, fixed gigabit coverage for all households is within reach of several Member States, however, eleven countries are still covering less than 80% of households - Germany (77%), Italy (71%) and, lastly, Czechia (54%) and Greece (46%) of households covered by VHCN (Very High Capacity Networks)(Fig. 1).

Fig. 1.4: Share of households covered by Fixed Very High Capacity Networks (VHCN), 2024

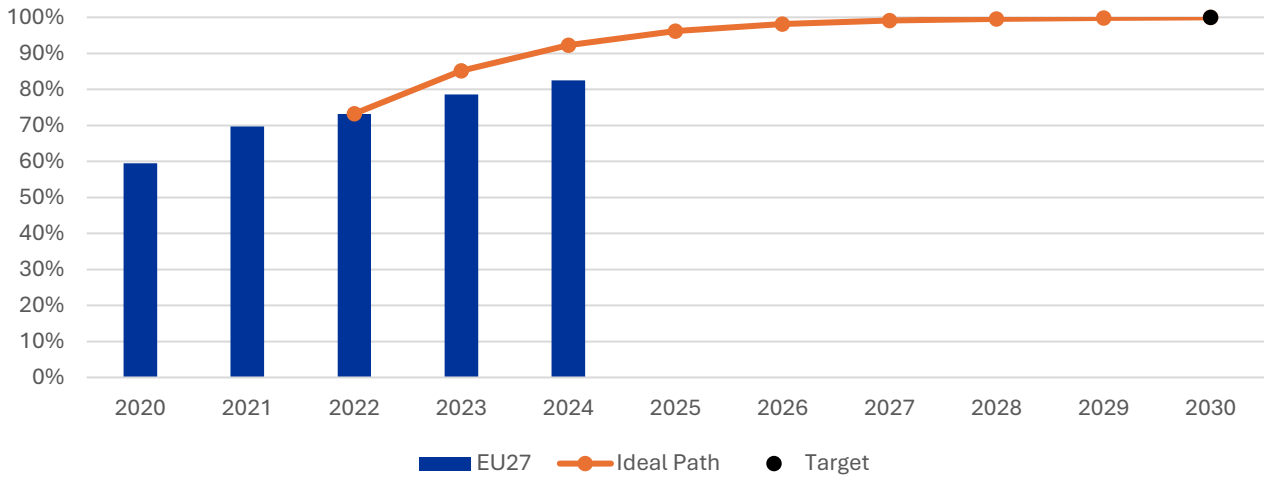
Source: Eurostat (isoc_cbt). VHCN as proxy for gigabit connection



This unsatisfactory progress is holding the Union back regarding the timetable to reach the target (namely the *ideal path*), which required the coverage of 92% of households as of 2024, a goal reached by only eight countries. Moreover, the 2024 European average (82.5%) is still below the 2023 target (85%).

Fig. 1.5: Historical gigabit coverage and *ideal path*

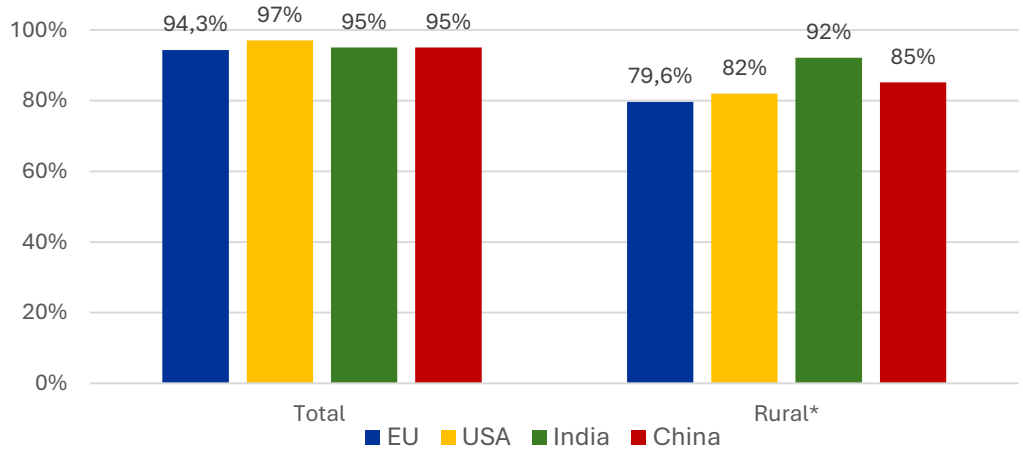
Source: Eurostat (isoc_cbt). Ideal path from Digital Decade - EU-level trajectories (2025). VHCN as proxy for gigabit connection. % households



A similar reasoning applies to 5G coverage. Despite an overall coverage level in 2024 of 94.3%, which is comparable with the US (97%), China (95%) and India (95%), the EU is mainly struggling with rural coverage, with a coverage of only 79.6% against the 82% in the US, 85% in China (estimated) and a staggering 92% in India (Fig. 3). Furthermore, differences between Member States persist. While some countries have already achieved full coverage, others are struggling to reach satisfactory levels of 5G coverage overall, and in rural areas. Romania is a particular case, with 46.8% overall and 14.5% rural coverage in 2024 and, as well, Latvia (71.1% overall and 15% rural) and Bulgaria (81.3% overall and 38.3% rural) are experiencing similar difficulties.

Fig. 1.6: 5G coverage, 2024

Source: State of the Digital Decade 2025, Annex I. European Commission. *Rural coverage for China is estimated.



Moreover, the EU clearly lags behind its competitors in terms of deployment of high-quality 5G, with a 5G mid-band coverage of 50%, significantly lower than China (95%), India (95%) and the US (90%). Additionally, EU 5G Standalone (SA) coverage is at around 40%, compared with 45% in Asia Pacific and 91% in North America[6]. The Commission's evaluation of the current framework concluded that regulatory fragmentation and inconsistent national approaches are major factors behind these shortfalls. Such perspectives emerge also when examining the allocation of installed base stations by frequency band. Data from the European Commission's 5G Observatory show that 5G stations operating in 4G bands through dynamic spectrum sharing (DSS) account for 35.2% of the total. Overall, more than 351,000 5G radio base stations are active across the 27 Member States: 168,669 in the 700 MHz band; 184,265 in the 3.4–3.8 GHz band; 319 in the 26 GHz band; and 123,950 in spectrum bands shared with 4G (Table 1).

Table 1.1: Number of radio base stations by Member State and frequency band.

Source: 5G Observatory, European Commission, June 2025 (data updated to Q4 2024).
Note: The total number of 5G radio base stations may not correspond to the sum of the base stations reported for each frequency band, as a single 5G radio base station may operate on multiple bands simultaneously. The use of Dynamic Spectrum Sharing (DSS) further complicates the distinction between bands. Consequently, the sum of the figures for each band does not accurately reflect the total number of 5G radio base stations.

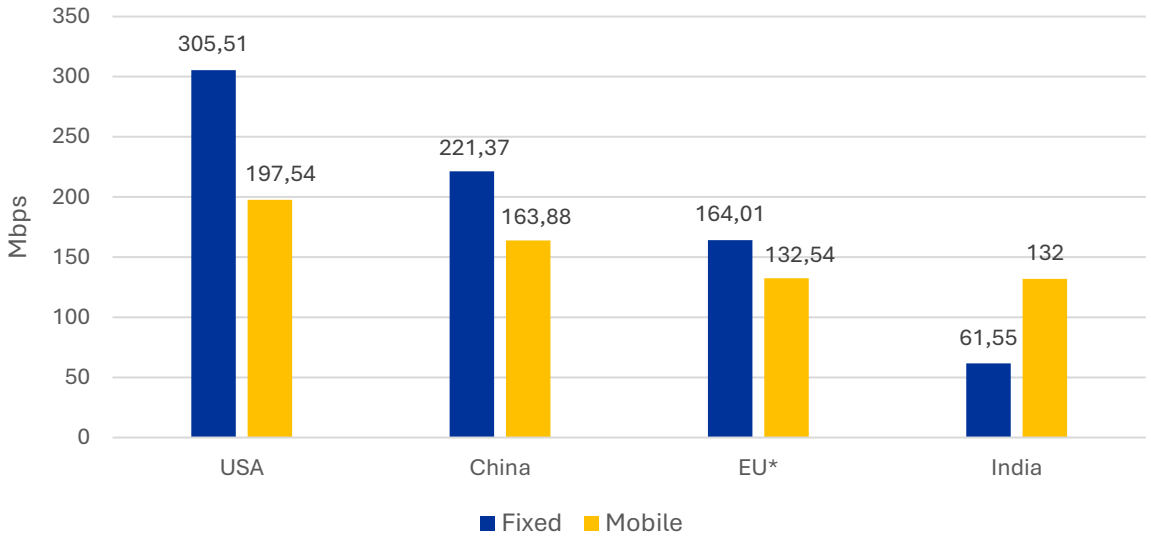
Member States	Operational 5G radio base stations	700 MHz	3.4–3.8 GHz	26 GHz	In 4G spectrum bands (using DSS)
Austria	12,400	5,300	5,800	–	508
Belgium	5,400	2,679	2,863	–	–
Bulgaria	4,912	2,419	2,585	8	516
Cyprus	696	343	366	–	22
Czechia	12,483	6,147	6,569	–	2,085
Germany	56,558	27,850	29,762	98	52,033
Denmark	9,900	4,875	5,210	17	–
Estonia	850	419	447	1	–
Greece	9,882	–	–	–	8,271
Spain	53,742	26,464	28,280	93	6,288
Finland	16,060	7,908	8,451	28	–
France	60,000	21,000	38,000	–	33,300
Croatia	3,241	2,820	1,211	1	133
Hungary	5,291	2,605	2,784	–	709
Ireland	3,289	1,620	1,731	–	1,937
Italy	30,546	14,042	16,074	53	611
Lithuania	2,782	1,600	1,000	–	309
Luxembourg	950	468	500	–	950
Latvia	1,450	714	763	–	133
Malta	1,200	–	330	–	1,200
Netherlands	14,253	7,019	7,500	–	4,133
Poland	12,600	6,205	6,630	–	2,470
Portugal	13,089	6,445	6,888	–	2,749
Romania	4,961	2,443	2,611	–	367
Sweden	9,143	4,502	4,811	16	2,807
Slovenia	2,398	1,181	1,262	4	1,679
Slovakia	3,490	1,719	1,837	–	740

[6] From the Impact Assessment of the Digital Networks Act.

Additionally, the European Union is lagging behind the US and China in terms of network performance, with a significantly lower median download speed for both fixed and mobile connectivity (Fig. 4). Even in this context, performances between Member States vary considerably, with staggering differences between best and worst performers, as evidenced by a median download speed of 349 Mbps in France against 89 Mbps in Czechia.

Fig. 1.7: Comparison of median download speed (Mbps), fixed and mobile, 2025.

Source: Ookla Speedtest Global Index, December 2025. *EU values are computed as median of medians. EU mobile value does not include Malta (n/a)



A study commissioned by the European Commission in 2023 estimated an overall investment gap of at least €174 billion to reach the Digital Decade targets. While the issue of fostering the deployment of fixed and mobile connectivity is also tackled by the Gigabit Infrastructure Act (Regulation 2024/1309), the need for an additional intervention to raise investments and cross-border operations is evident. The DNA focuses more on the regulatory incentives while the GIA addresses civil works, resulting in two mutually reinforcing initiatives.

Furthermore, the Act places the transition from legacy copper networks to fibre optics at the centre of its connectivity strategy. It seeks to impose a “structured and orderly” copper switch-off, combining a firm long-stop date with an area-based approach, national planning obligations, consumer safeguards, and new symmetric tools to ensure continuity of service and to facilitate migration.

The proposal introduces a binding end-date for copper in areas where it remains in use. Member States are required to ensure that copper networks are retired no later than 31 December 2035, with the expectation that switch-off occurs earlier wherever predefined “sustainability conditions” are met. Article 54 establishes that, by 2035, each identified copper service area must either have completed switch-off or be formally exempted on narrowly defined grounds. The logic of the exemption is strictly residual: it is limited to areas where fibre deployment is not economically

viable and where there is no adequate alternative connectivity solution, such as effective wireless broadband. Even then, the framework is designed to minimise any extension of copper usage. To operationalise this timeline, Member States must adopt binding legal acts that compel operators to initiate switch-off by a specified start date (no later than one year after the act is adopted) and to complete it within three years.

To manage the phase-out in a granular and evidence-based manner, the Act relies on geographically defined Copper Switch-Off Areas (CSO areas). National regulatory authorities (NRAs) must identify and map all areas still served by copper by mid-2028, publish a list of CSO areas, and update it as necessary. Within each CSO area, regulators must determine whether the sustainability conditions for switch-off have been satisfied. Article 57 defines these conditions as, first, at least 95% of premises in the area being passed by a fibre-to-the-home network, and second, the availability to users of affordable connectivity services of comparable quality to those delivered over copper. The 95% threshold is framed as a safeguard to avoid premature switch-off in rural or otherwise hard-to-serve zones. Article 58 then requires NRAs to assess and publish which CSO areas meet these conditions. Once an area is formally assessed as meeting the criteria, Article 54(1) requires that a switch-off mandate be issued ahead of 2035, and at the latest within six months of the area being listed as ready. Areas that do not meet the conditions may continue temporarily, but they cannot retain copper beyond 2035 unless they qualify for the strict exemption based on the lack of any viable alternative.

The proposal also establishes a national planning framework, coupled with Commission oversight, to ensure coherence and sustained momentum. Under Article 56, each Member State must adopt a “national transition to fibre plan” by 31 October 2029. The plan must set out the national strategy for migration, including data on copper and fibre coverage, measures to support fibre deployment, and a CSO-area-based roadmap setting timelines or milestones for switch-off.

An updated plan must be delivered by mid-2034, documenting progress and identifying any remaining areas where copper persists or where fibre deployment is not expected even after 2035. These plans must be notified to the Commission, which may issue comments within one month. Although the mechanism is not framed as a formal approval, Member States are required to take account of the Commission’s comments before finalising their plans.

The Act places significant weight on consumer protection and operational continuity during the transition, reflecting the risk that copper retirement can disrupt services if not tightly managed. Article 59 obliges Member States to adopt safeguards ensuring continuity of service for end-users when copper is switched off. These safeguards are intended to cover practical measures such as advance notice, affordable migration pathways to fibre or fixed wireless alternatives, and specific provisions for vulnerable users and for services that may depend on copper-based connectivity. In the context of preparedness and resilience that the DNA is pursuing, the proposal also explicitly emphasises that essential functions, such as emergency calling and comparable service continuity

obligations, must remain available during and after migration, requiring alternative infrastructures to support these functionalities.

1.2.3 Spectrum Allocation

The Digital Networks Act introduces substantial reforms to radio spectrum management, aimed at increasing consistency across Member States, reducing delays in spectrum assignment, and improving predictability for investment in wireless networks. The package combines structural changes to licence duration, new mechanisms to ensure efficient use of assigned frequencies, and a stronger EU-level procedure to oversee key national spectrum assignment decisions, alongside a distinct EU-wide authorisation regime for satellite spectrum.

A first core reform concerns the duration of spectrum rights. The proposal establishes indefinite spectrum licences as the default model, replacing fixed-term authorisations in order to enhance legal certainty and support long-term investment planning, particularly for 5G and future 6G deployment. Indefinite rights are nonetheless coupled with periodic review and the possibility of revocation where licence conditions are not respected. National authorities retain the ability to set a fixed term only in exceptional circumstances, such as where this is considered necessary to safeguard competition. Even in such cases, the framework is designed to ensure a very long effective duration, with a minimum usage period of forty years. Compliance with coverage, quality, and other obligations will be assessed through regular reviews that may not occur more frequently than every twenty years, seeking to balance stability for operators with the capacity to intervene where performance conditions are not met.

A second set of measures is intended to improve spectrum efficiency through sharing mechanisms and stronger incentives against underuse. The Act formalises a “use-it-or-share-it” approach, under which national authorities must ensure that assigned spectrum resources are effectively used and may require holders to make unused portions available to other providers on a geographic or temporal basis, provided this does not cause harmful interference to the primary licence holder. More broadly, the proposal treats spectrum sharing as the default, whether between similar services or across different service types, and reserves exclusivity for situations where it is justified on technical or public-interest grounds, such as preventing harmful interference or protecting public safety communications

To address divergent national auction designs and inconsistent assignment practices, the DNA establishes a strengthened EU-level “single market” procedure for spectrum assignments. When a national authority plans to award wireless broadband spectrum rights – typically via auction – or intends to substantially modify, renew, or extend existing rights, it must notify the Commission, the new Radio Spectrum Policy Body, BEREC, and other Member States of its draft measure. The notification must explain how the draft promotes competition, ensures efficient spectrum use, and contributes to the Union’s connectivity objectives. The Commission is empowered to require

amendments or withdrawal of the draft where it considers the measure non-compliant with EU law or inconsistent with single market principles.

In addition, recognising the rise of satellite broadband and IoT, the DNA establishes a single European authorisation for satellite networks. Instead of seeking separate licenses per country, a satellite operator will obtain an EU-wide spectrum authorisation granted by the Commission. The Commission, with RSPB's input, will adopt a European Table of Allocation of Satellite Frequencies via implementing act, designating which bands are available for satellite services across the Union. Harmonised technical conditions for each satellite band will also be set at EU level, including rules on interference prevention, coordination, and fees. An operator applies to the Commission for a "Union authorisation" to use satellite spectrum, the Commission (assisted by the RSPB and the new Office for Digital Networks) then evaluates the application and can grant or refuse it via an implementing decision. If spectrum scarcity demands limiting the number of satellite operators in a band, the Commission may run a pan-EU selection procedure to choose licensees. The Commission will replace existing national satellite licenses with Union authorisations within 36 months of the DNA's entry into force.

Finally, the DNA strengthens the Commission's position in strategic spectrum planning. A new Union-level Radio Spectrum Policy is foreseen with the Commission, consulting the RSPB, developing multiannual strategic roadmaps for spectrum use to meet future demand across sectors (e.g., 6G, connected cars, space, etc.). Moreover, if divergent national approaches persist in areas like spectrum fees or assignment procedures, the Commission can use existing powers (now in Article 186 DNA) to adopt binding implementing acts or recommendations to harmonise implementation.

1.2.4 The Fragmentated Market for Connectivity

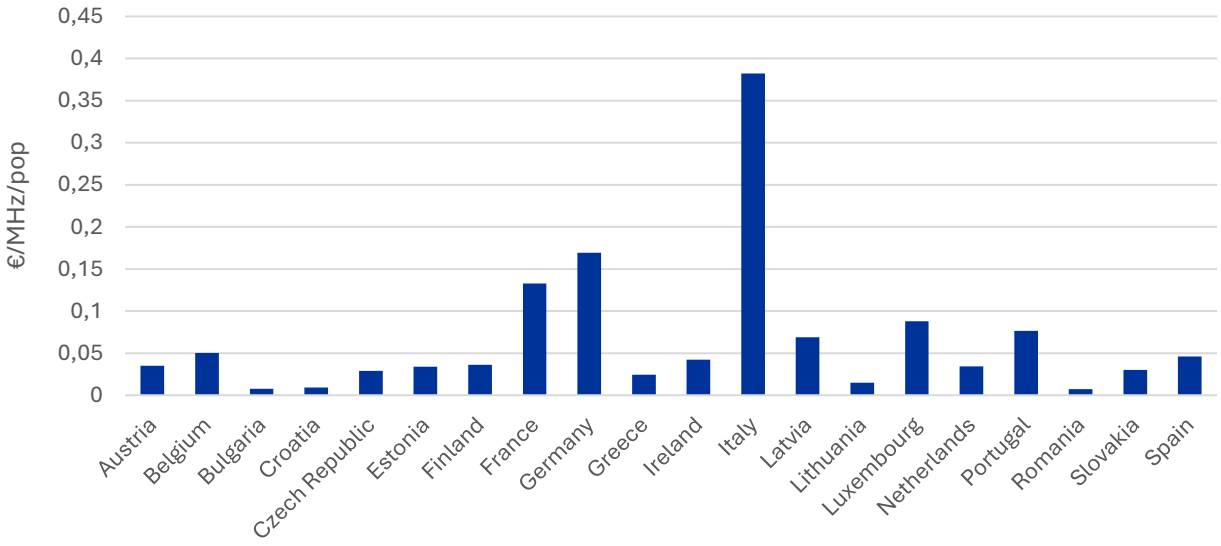
In developing the DNA, the Commission undertook extensive consultations (including a 2024 White Paper and Calls for Evidence) to frame views from industries, consumers and Member States. There was broad consensus on the importance of modern, secure and resilient digital infrastructure for Europe's economy. Several stakeholders – spanning from telecom operators, business users and consumers – endorsed the goal of a more integrated Single Market for connectivity, supporting measures to enable cross-border operations and reduce national divergences. Many contributors, especially large telecom groups and EU-wide business associations, called for stronger coordination among regulators to avoid conflicting national decisions. At the same time, views diverged on specific approaches. For example, alternative operators and some Member States voiced concerns about overly centralising spectrum allocation at EU level, favouring harmonisation, but not full EU auctions. Consumer organisations stressed that any new framework must maintain robust end-user protection (e.g., contract transparency, fair pricing, number portability), even as rules are simplified.

Currently, around three to five fixed network operators are active in each Member State, totalling over 100 across the EU, confirming high levels of fragmentation in the telco market. This issue is also raised in the Letta Report (2024), which suggests moving away from the current pro-entrant regulation.

Moreover, fragmented spectrum management, lengthy allocation procedures, and divergent auction conditions across Member States have slowed down 5G roll-out and increased costs for operators. For example, as illustrated in the DNA impact assessment, some countries delayed assigning key 5G bands (700 MHz, 3.6 GHz, 26 GHz), and where auctions did occur, they often imposed inconsistent obligations or spectrum caps. This fragmentation is evident in outcomes – mid-band 5G coverage in EU countries ranges from under 30% to near 100%, and auction prices for the same bands vary significantly (e.g., 3.6 GHz license prices ranged from <€0.01 per MHz/pop in some countries such as Romania and Bulgaria, and up to €0.38 in Italy). Higher spectrum costs and uncertainty in license renewals reduce the capital operators can spend on network deployment.

Fig. 1.8: Average 3.3 - 3.8 GHz band auction prices

Source: Impact Assessment 3 for the Digital Network Act, European Commission. Countries with available data.



The current fragmentation clearly affects the satellite sector as well. The DNA impact assessment calculates that removing multi-state licensing will save operators substantial administrative costs (application fees, legal work, repeated testing). More significantly, it prevents revenue loss due to launch delays. For example, a major low-earth-orbit (LEO) constellation with around 300,000 global subscribers could lose about €18.3 million in revenue for every 4-month delay in delivering services to a large EU country caused by slow national authorisation.

Finally, the current governance framework has not delivered a consistent single-market approach in several areas. For example, when implementing the EECC, some regulatory decisions remained

fragmented since each NRA conducted market analyses and imposed remedies with only minimal coordination, leading to variations in how rules such as access obligations were applied. On spectrum, the lack of an EU-level coordinating mechanism (beyond non-binding RSPG opinions) meant there was no effective way to enforce timely spectrum assignments or common license conditions, as evidenced by the divergent national auction strategies.

To reduce fragmentation and administrative burdens, Article 10 of the Digital Networks Act establishes a Single EU-wide notification procedure, referred to as the Single Passport. Under this mechanism, a provider intending to offer electronic communications networks or services in more than one Member State submits a single notification to the national regulatory authority of one chosen Member State, designated as the Member State of notification. That notification must specify the other Member States in which the provider intends to operate. The NRA receiving the notification acts as the lead authority, and, crucially, the submission of the notification itself confers the authorisation to operate. No separate administrative decision is required for market entry. Once the confirmation is issued, the provider may lawfully operate across all the notified countries without additional national filings.

The Single Passport is supported by a high degree of harmonisation and mutual recognition of general authorisation conditions. Article 9 indeed sets out an exhaustive list of conditions that may be attached to the general authorisation, including obligations relating to consumer protection, interoperability, network security, and must-carry requirements. Member States are required to apply these conditions in a uniform manner, thereby limiting national divergence. BEREC, with the support of the Office for Digital Networks, is tasked with promoting consistent interpretation and application of these conditions and with reducing national specificities.

While the Single Passport applies to all other public electronic communications networks and services, satellite services are excluded from this mechanism, as they are subject to a distinct EU-level authorisation regime. Indeed, under the DNA, a satellite communications provider will be able to obtain one Union-wide authorisation to provide services and access spectrum across all Member States. This EU authorisation, including rights of use for the necessary radio frequencies, will be issued through a centralised procedure (possibly involving the Commission and the new Radio Spectrum Policy Board). The Commission will have responsibility for monitoring and enforcing compliance with these authorisations

Enforcement under the Single Passport follows a home-country supervision model combined with structured cooperation among regulators. The NRA of the Member State of notification bears primary responsibility for ensuring that the provider complies with the general authorisation conditions across all Member States covered by the notification. Article 11 empowers the lead NRA to adopt enforcement measures, including penalties and remedies, with effect throughout the geographical scope of the Single Passport. Where an infringement occurs in a host Member

State, the host NRA may bring the matter to the attention of the home NRA, which is expected to act in coordination with the host authority.

The Commission's impact assessment highlights that divergent national notification regimes and fee structures have historically discouraged cross-border expansion, particularly for smaller operators and innovative entrants. The Single Passport is expected to reduce compliance costs and facilitate EU-wide scaling. In addition, the Act also foresees the establishment of a Union-wide IT tool, in the form of a publicly available database for managing notifications, which is expected to be operated by the ODN and to streamline information sharing among regulators.

The Digital Networks Act nonetheless preserves limited national discretion in areas linked to public security and other essential interests. The Single Passport does not eliminate Member States' ability to intervene on a case-by-case basis where justified. Specifically, Article 10(8) clarifies that host Member States may restrict or prevent the provision of services in their territory, or the use of specific numbering resources, where this is necessary for reasons such as national security or the prevention of fraud. As a general rule, however, ongoing regulatory oversight, including consumer protection and quality-of-service obligations, will be exercised through the home NRA within the cooperative framework established by the Act.

1.2.5 Union's Preparedness and Resilience

Against the backdrop of heightened geopolitical tensions and the growing strategic importance of electronic communications, the Digital Networks Act introduces a specific set of measures aimed at strengthening the resilience and crisis preparedness of Europe's connectivity infrastructure. The objective is to ensure that communication networks can withstand, absorb, and rapidly recover from major disruptions, including cyberattacks, natural disasters, physical sabotage, or supply-chain shocks. These provisions are designed to complement horizontal cybersecurity legislation, in particular the NIS2 Directive[7], by adding sector-specific planning requirements and stronger EU-level coordination mechanisms tailored to the telecommunications sector.

A central element of the framework is the establishment of a Union-wide preparedness plan for digital infrastructures. Article 6 of the proposal requires BEREC, with the support of the Office for Digital Networks, to adopt within twelve months of the Act's entry into force a report entitled "Union Preparedness Plan for Digital Infrastructures." This plan is conceived as a comprehensive reference document setting out a common understanding of risks and response strategies across the Union. It is expected to include an assessment of the main threats to communication networks, such as single points of failure, dependencies on specific suppliers, energy vulnerabilities, or concentration risks in core network components. It will also set out common operational recommendations for preventing, mitigating, and managing large-scale outages,

[7] Directive (EU) 2022/2555

together with a collection of best practices for crisis management already applied in Member States. The explanatory material accompanying the proposal explicitly refers to the "Nevers Call" of March 2022 and subsequent national risk assessments conducted in response to deteriorating geopolitical conditions, which highlighted structural vulnerabilities in European networks[8]. Building on these exercises, the Union preparedness plan is intended to translate high-level risk awareness into concrete guidance, such as diversification of supply chains, deployment of backup connectivity solutions for critical nodes, arrangements for cross-border assistance during outages, and protocols for public communication in the event of widespread service disruption. Once adopted, the Commission is required to take the content of the plan into account when implementing EU funding instruments, thereby linking resilience priorities to investment decisions. The plan may be updated over time to reflect evolving risks and technologies.

The DNA explicitly places these measures alongside the cybersecurity obligations established under NIS2. While NIS2 focuses primarily on cybersecurity risk management and incident reporting at the level of individual essential entities, the Act adds a broader operational resilience dimension, covering both cyber and non-cyber threats and emphasising continuity of service under extreme conditions. In this context, the Act requires providers and public safety answering points to take the necessary measures, informed by the Union preparedness plan, to ensure the uninterrupted availability of critical communications. This may include technical redundancy, backup power supplies, prioritisation of emergency traffic, and clear communication channels between operators, authorities, and the public during crises. Providers and emergency services are expected to integrate the plan's recommendations into their own continuity and contingency planning, thereby aligning national and operator-level measures with a common EU framework.

The proposal further reinforces EU-level crisis coordination mechanisms. Drawing on experience from cross-border outages and large-scale cyber incidents, it assigns BEREC a more explicit role in supporting EU crisis response structures. In the event of a major cybersecurity incident reaching the highest alert level under NIS2, BEREC is expected to assist the EU Cyber Crisis Liaison Organisation Network (EU-CyCLONe) by providing sector-specific expertise and facilitating coordination among telecommunications regulators and operators. The Office for Digital Networks may act as an operational hub in such situations, collecting real-time information from providers across the Union and sharing it through secure channels. The Act also encourages mutual assistance among national regulatory authorities during crises, for example by facilitating traffic rerouting or emergency connectivity support when infrastructures in one Member State is severely disrupted.

[8] *Nevers Call* refers to the joint call to reinforce the EU's cybersecurity capabilities expressed by the informal Council meeting of Telecom Ministers organised in Nevers on 9 March 2022. In response to that call, Member States conducted further analysis, available at https://digital-strategy.ec.europa.eu/en/library/report-cybersecurity-and-resiliency-eu-communications-infrastructures-and-networks

Reducing structural dependencies and strengthening supply-chain security form another pillar of the resilience approach. The Act explicitly recognises the risks associated with over-reliance on single vendors or technologies in critical network components and integrates supply-chain considerations into the regulatory framework. This factor has been previously highlighted by multiple sources, with the State of the Digital Decade 2025 (Annex I) stating that "With 80% of the services bought by governments and the private sector originating mostly from the US, a substantial share of the EUR 2 trillion that public authorities spend annually on the purchase of services, works and supplies is not being spent on services originating in the EU". General authorisation conditions may now include requirements related to cybersecurity and supply-chain integrity, thereby providing a clear legal basis for measures addressing high-risk suppliers in line with coordinated EU risk assessments. Article 20 explicitly refers to compliance with cybersecurity rules and supply-chain requirements as part of providers' obligations. The broader policy narrative also aligns with objectives of strategic autonomy, influencing funding priorities and research and innovation initiatives in the telecommunications sector.

Resilience under the Act also encompasses the reliability and quality of networks in normal operations. Providers remain subject to obligations to ensure network availability and to report significant outages, with the intention of streamlining reporting so as to avoid duplication between telecom-specific rules and NIS2 requirements. Transparency towards end-users is also emphasised, particularly in relation to major outages or risks affecting essential services such as emergency calling. In addition, the proposal opens the possibility for more proactive preparedness measures at EU level, including coordinated testing or stress-testing of communication networks, reflecting a shift from reactive incident management to anticipatory resilience planning.

Finally, the Act strengthens the resilience of emergency communications themselves. Building on the universal service framework, it seeks to ensure that emergency services remain accessible across technologies and borders, including through the reliable transmission of location information and the effective functioning of public warning systems. Existing requirements for emergency alerts are reinforced with an emphasis on interoperability and cross-border effectiveness, so that users continue to receive warnings when travelling within the Union. Where necessary, the Commission may adopt implementing acts to refine technical requirements and ensure consistent application.

1.2.6 The Tech Sovereignty Package

The Digital Omnibus and the Digital Networks Act operate primarily as regulatory instruments, updating market rules and infrastructure obligations across the digital economy. The European Tech Sovereignty Package, presented by the Commission on 3 June 2026, expands the agenda by pursuing Europe's capacity to develop, control and scale the technologies that underpin digital markets. This industrial-policy dimension responds to the structural diagnosis that the EU remains

heavily dependent on non-EU providers in critical segments of the digital economy, and that regulatory tools alone are insufficient to address it.

The Commission frames this objective through the concept of technological sovereignty, understood as the capacity to remain open to global markets while reducing excessive strategic dependencies in areas such as semiconductors, cloud infrastructure, AI, data, open source software and energy-system digitalisation. To pursue this objective, the package is built around four initiatives: two legislative proposals, namely the Chips Act 2.0 and the Cloud and AI Development Act (CADA), alongside the EU Open Source Strategy and the Strategic Roadmap for Digitalisation and AI in Energy. Together they are intended to create a "European Stack", covering the chain from semiconductor design and production to cloud services, AI infrastructure, software and digital public infrastructure. The package introduces new sector-specific instruments, including sovereignty risk assessments, procurement criteria, strategic project designations, state-aid flexibilities, data-centre acceleration mechanisms and open source stewardship tools.

The Chips Act 2.0 constitutes the semiconductor pillar of the package. It builds on the original Chips Act[9], which mobilised over €52 billion in public and private investment and supported tens of thousands of jobs across the sector, while acknowledging that persistent dependencies remain in advanced chip manufacturing and semiconductor design. The updated legislation combines supply-side reinforcement with demand creation. On the supply side, it accelerates permitting, supports research and skills, and expands strategic project designations to attract co-investment. On the demand side, it introduces "Grand Challenges" for strategically important chips (notably AI chips) and creates demand accelerators linking chip manufacturers more directly with user industries. The act is also explicitly designed to work in tandem with CADA, particularly in relation to data centres and AI Gigafactories.

The Cloud and AI Development Act embodies the infrastructure pillar, with the objective of strengthening the Union’s cloud and AI ecosystem, investment capacity and technological infrastructure. Its rationale is closely linked to the deployment of AI Factories and AI Gigafactories, which are intended to provide European businesses and researchers with access to high-capacity computing resources. To ensure that these initiatives translate into broader AI diffusion across the economy, the EU must expand its cloud and data centre capacity, while ensuring that such infrastructure is energy-efficient, sustainable and aligned with public-sector needs. CADA therefore focuses on three complementary objectives: supporting research, development and innovation in next-generation cloud and AI technologies; accelerating the deployment of data centres across the EU, particularly where they reinforce essential public-sector functions; introducing a single EU-wide framework to assess cloud and AI sovereignty, accompanied by a mechanism to support public-sector adoption.

[9] Regulation (EU) 2023/1781

The EU Open Source Strategy constitutes the software and digital-ecosystem pillar. Its rationale is that open source can increase interoperability, transparency and portability across digital systems while reducing vendor lock-in and lowering barriers to innovation for businesses, developers and public administrations. The strategy takes a full lifecycle approach covering development, deployment, maintenance, security and governance, and targets several structural weaknesses: limited long-term funding, fragmented visibility of European solutions, and barriers to public procurement. Its priority areas include the EU Digital Identity Wallet, cloud and edge infrastructure, AI, cybersecurity and operating systems. The strategy also proposes an Open Source Maintenance Instrument and a critical dependency mapping capability. Public administrations are expected to serve as anchor users and contributors, with procurement guidance and reusable public digital assets designed to enable open source alternatives to compete fairly with proprietary solutions.

Finally, the Strategic Roadmap for Digitalisation and AI in Energy constitutes the fourth pillar, recognising that ambitions in AI and cloud infrastructure cannot be decoupled from the energy system. The roadmap has two complementary dimensions. The first concerns the use of AI across the energy value chain: the AI.grids initiative aims to develop and deploy a pan-European AI model for power grid optimisation, improving efficiency and reliability. The second addresses the energy-system implications of expanding data centre infrastructure. Data centres already account for a significant share of EU electricity consumption, currently estimated at around 2.5%[10], and their integration into the broader energy system raises questions of sustainability and system flexibility. The roadmap promotes tripartite cooperation agreements between data centre operators, energy actors and public authorities, covering clean energy supply, demand flexibility, energy efficiency and waste-heat recovery.

The package's investment requirements are substantial, and the credibility of its ambitions will depend significantly on the adequacy of its financing. The Commission identifies the European Competitiveness Fund's Digital Leadership window, InvestAI, and national and regional partnership plans as the principal instruments, alongside private capital mobilisation. Lastly, in addition to financing, resolving the tension between openness and strategic dependency reduction will ultimately depend on institutional coordination across initiatives, private sector alignment, effective skills development, and the speed of execution relative to fast-moving technology cycles.

[10] This figure is increasing rapidly and that already accounts for more than 20% of electricity demand in Ireland (S. Fearon, 2026, "The cost of data centre growth in Ireland").

Policy Recommendations

Digital Omnibus

1. **Ensure that simplification reduces regulatory friction while preserving fundamental rights and legal certainty.**

The Digital Omnibus should be subject to a precise "burden-reduction test", ensuring that each amendment genuinely reduces duplication, clarifies obligations or improves implementation, rather than adding new exceptions, procedures, discretionary clauses or reporting layers. This is particularly relevant in areas such as the definition of personal data, data access rights and AI compliance obligations, where broad discretion may create uncertainty instead of simplification. For instance, the attempt to redefine personal data by reference to the controller's knowledge risks creating an asymmetric and practically unenforceable standard: business partners, data subjects and supervisory authorities may not have access to the information needed to determine whether data is sufficiently linked to an individual, producing what has been described as "Schrödinger's data". Such uncertainty could significantly delay enforcement if supervisory authorities were required to carry out extensive fact-finding in each case, while the objective is to make the GDPR application more predictable. Similarly, proposals to restrict data access on the basis of allegedly abusive or improper motives seems redundant, as Article 12(5) GDPR already provides tools to address manifestly unfounded or excessive requests. Additional motive-based limitations would indeed possibly generate further disputes, complaints and litigation around the intention behind each data subject request.

2. **Build an integrated European data framework that supports AI, research and industrial innovation.**

The proposed consolidation of the Data Act, Data Governance Act and Open Data Directive should be used to create a clearer system for access to and reuse of high-quality data. This is particularly relevant for AI development, where access to reliable datasets is a precondition for model training, testing and deployment. The framework should include common standards, clear access conditions, safeguards for sensitive information and practical tools for SMEs, so that data access does not remain limited to large firms with extensive legal and technical capacity.

3. **Make AI regulatory sandboxes an operational and rights-preserving component of AI Act implementation.**

Regulatory sandboxes should be embedded as ordinary governance instruments for implementing the AI Act in practice, rather than treated as symbolic innovation pilots. The EU and Member States should ensure that national and EU-level sandboxes are adequately resourced, coordinated and accessible to SMEs, start-ups and small mid-caps, while avoiding fragmentation across jurisdictions. Sandboxes should be used to test how AI Act obligations apply in complex sectors before market deployment, integrate real-world testing where appropriate, and generate

structured lessons for guidance, conformity assessment and supervisory practice. Where AI systems involve personal data or fundamental-rights risks, competent data protection and fundamental-rights authorities should be directly involved, ensuring that regulatory learning and innovation support do not come at the expense of accountability, transparency or rights protection.

Digital Networks Act and Tech Sovereignty Package

1. **Clarify the scope of the general authorisation regime and the public/private network distinction.**

Legislators should introduce clear and operational criteria to distinguish public electronic communications networks from private, internal or B2B digital infrastructure, including data-centre interconnection, cloud, CDN, edge, enterprise and campus networks. Article 9 should clarify that the general authorisation regime applies where a provider offers electronic communications networks or services to the public, or where the network is functionally equivalent to a public communications network. Simultaneously, the mere fact that a private or B2B network supports, hosts, routes, caches or delivers a publicly available information society service should not trigger authorisation obligations by itself.

2. **Preserve targeted ex-ante regulation as a competition safeguard.**

The DNA should preserve ex-ante regulation as a targeted safeguard against persistent competition problems, while simplifying its procedures and improving predictability. Symmetric access measures and harmonised wholesale products may support investment and reduce fragmentation, but they should not weaken the ability of national regulators to impose asymmetric SMP (Single Market Power)-based remedies where market conditions, vertical integration or bottlenecks continue to justify intervention.

3. **Protect regulatory independence.**

The DNA should include explicit safeguards to ensure that the restructuring of the BEREC Office into an Office for Digital Networks does not weaken the independence, confidentiality or technical autonomy of telecom regulation. The future institutional framework should clearly separate technical regulatory analysis from political direction, particularly in areas such as net neutrality, interconnection, optimised services and dispute resolution.

4. **A strategic approach to tech sovereignty**

A medium- to long-term strategy should be complemented by a short-term one that is consistent with the large-scale adoption of technology, which is at least as important as the development of home-grown, Made-in-Europe technologies. In this context, carefully targeted substitutions of non-EU providers with European alternatives may be appropriate in selected sensitive sectors and for specific use cases. The risk to avoid, however, is forcing European businesses to rely on

technology bundles that are inferior in terms of quality or cost at a critical stage of their digital transformation. Accordingly, revising public procurement rules and using procurement more strategically as an industrial policy instrument is a welcome step. The same applies to placing greater emphasis on open-source solutions by implementing the European Commission's strategy, and to strengthening data protection according to the strategic value and sensitivity of different categories of data. These measures, however, should be pursued in a balanced and strategic manner, with the objective of fostering Made-in-Europe innovation – including by leveraging collaboration with those who are currently ahead of us technologically – rather than through a predominantly protectionist approach.

5. **Complete the Single Market**

The fragmentation across the Union is undermining the EU's global position and relevance. Large foreign companies put excessive pressure on European companies, which struggle to compete and gain relevance. European champions can only emerge if companies are granted the conditions necessary for scaling up. This includes finalizing the Single Market with a favorable and streamlined regulatory framework.

2. Industrial Policy and Decarbonization

2.1 Energy and EU Competitiveness: Powering Europe's Future

2.1.1 The evolution of the European energy system

Over the past decade, European energy policy has been profoundly shaped by a series of overlapping crises that have exposed structural vulnerabilities while simultaneously accelerating the transformation of its energy system. From the price volatility triggered by the post-pandemic recovery to the supply disruptions following the Russian-Ukrainian crisis in 2022, the European Union (EU) has been forced to confront the geopolitical and economic risks associated with external energy dependence – particularly on fossil fuels. These shocks not only drove unprecedented increases in energy prices, impacting households and industrial competitiveness, but also prompted a strategic reassessment of energy security, diversification, and resilience across the Union.

The Russian gas crisis and the disruption of supplies from what had been the EU's most important import partner for natural gas marked a turning point for Europe's energy landscape. The EU replaced one of its most stable energy sources and quickly adapted to a radical shift in its energy mix: diversification was crucial, expanding the spectrum of suppliers, supply routes, and energy sources themselves.

The EU had previously undertaken a structural evolution of its energy structure, advancing policies aimed at reducing dependency on imported hydrocarbons, scaling up renewable energy deployment, and investing in infrastructure and innovation: it was the architecture of the Green Deal, presented in 2019. When the crises unfolded–particularly after the Russian gas crisis–this pre-existing framework allowed the EU to pivot rapidly. The REPowerEU plan, for instance, did not emerge in a vacuum; it essentially accelerated and repurposed Green Deal objectives toward energy security, scaling up renewables, diversifying gas supplies, and reducing demand. Such initiatives came to reflect a dual imperative: to ensure security of supply in the short term while accelerating decarbonisation in the long term.

However, its early-stage implementation meant that many of its regulatory ambitions had not yet translated into tangible changes in energy infrastructure or a substantial reduction in fossil fuel dependence. As a result, the European Union entered the crisis period still structurally exposed to external gas markets, a vulnerability that was starkly revealed in the aftermath of the Russian gas crisis and still has repercussions to this day. At the same time, evolving market conditions brought renewed attention to the interplay between decarbonisation objectives, energy affordability, and industrial competitiveness.

This mismatch between long-term policy objectives (decarbonization) and short-term systemic constraints (energy security and affordability) underscores a key tension in EU energy governance: that transition has not been linear, as tensions between affordability, sustainability, and competitiveness continue to shape policy choices.

Once again, the European Union finds itself at geopolitical and energy crossroads, where the pressures stemming from the latest crisis - the closure of the Hormuz strait - are affecting the entire European infrastructure, repeatedly calling into question its resilience to external shocks and putting its energy structure to the test.

Yet some things have changed–while others have remained exactly the same. Compared to four years ago, the European system is structurally more robust. Gas supplies are more diversified, coordination among member States has improved, and renewables account for a larger share of the energy mix. This reduces the risk of physical shortages, but it does not eliminate exposure to global prices: it is the duration factor that transforms a distant crisis into a concrete economic problem. Europe's true vulnerability is not cyclical: it is structural.

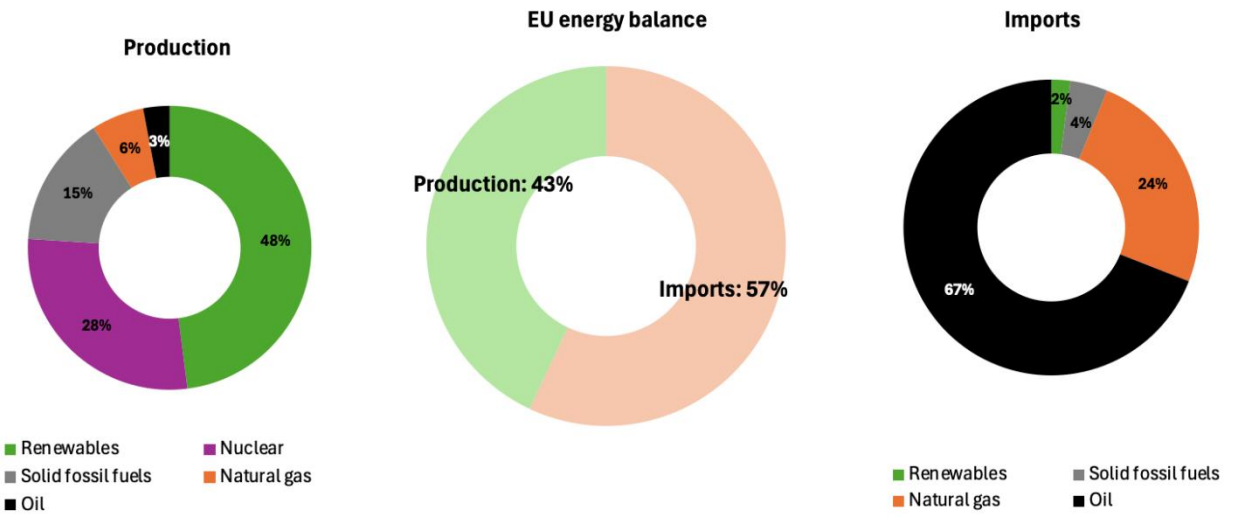
In this scenario, the energy transition represents one of the central pillars of the European Union's decarbonization process, emerging as the primary vehicle for the gradual replacement of fossil fuels.

The resilience of an energy system to shocks and supply chain disruptions depends on its strategic autonomy, the share of domestically produced energy, and its ability to meet domestic demand; it is thus directly influenced by the level of dependence on energy imports.

In 2024, primary energy production in the EU stood at 23,001 petajoules (PJ), a continuous and significant decline since 2019 (-11%). The persistent decline in energy production prevents the EU from meeting domestic demand with its own resources, which cover only 43% of total needs. Consequently, there has been an increase in energy imports, which now account for the largest share of the energy mix, at 57%.

Fig. 2.1: European Union energy mix (center); breakdown of production by energy source, by share (left); breakdown of imports by energy source, by share (right) [2024]

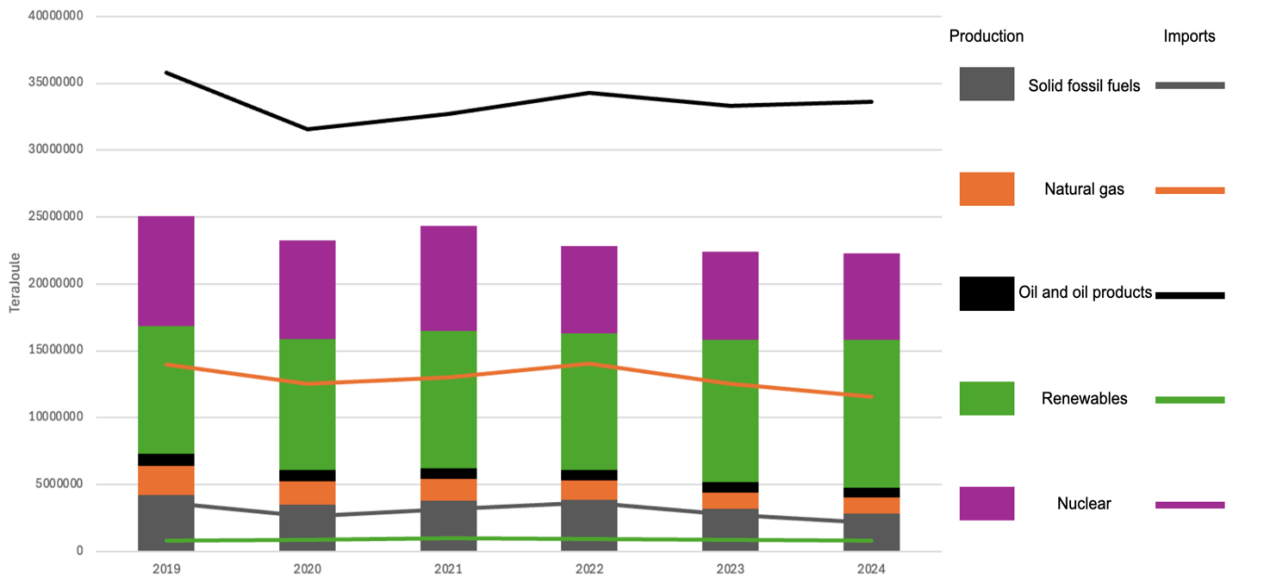
Source: European Commission and Eurostat (2026)



In 2024, oil accounted for the largest share of the EU's energy imports (67%), followed by natural gas at 24%. Although the rate of dependence on imports varies greatly by Member State, the European average rate of dependence was 96% for oil and petroleum products and 85% for natural gas.

Fig. 2.2: Absolute values of production and imports in EU, by energy source (2024)

Source: Eurostat (2026)



Given this dichotomy between domestically produced energy (primarily renewables and nuclear) and imported energy (primarily fossil fuels), the breakdown of final energy consumption paints another interesting picture. In the EU in 2024, petroleum products (such as heating oil, petrol, and

diesel fuel) accounted for 37% of final energy consumption, followed by electricity (23%), natural and manufactured gas (20%), direct use of renewables (not converted into electricity, 12%), derived heat (such as district heating; 5%), and solid fuels (mostly coal; 2%)

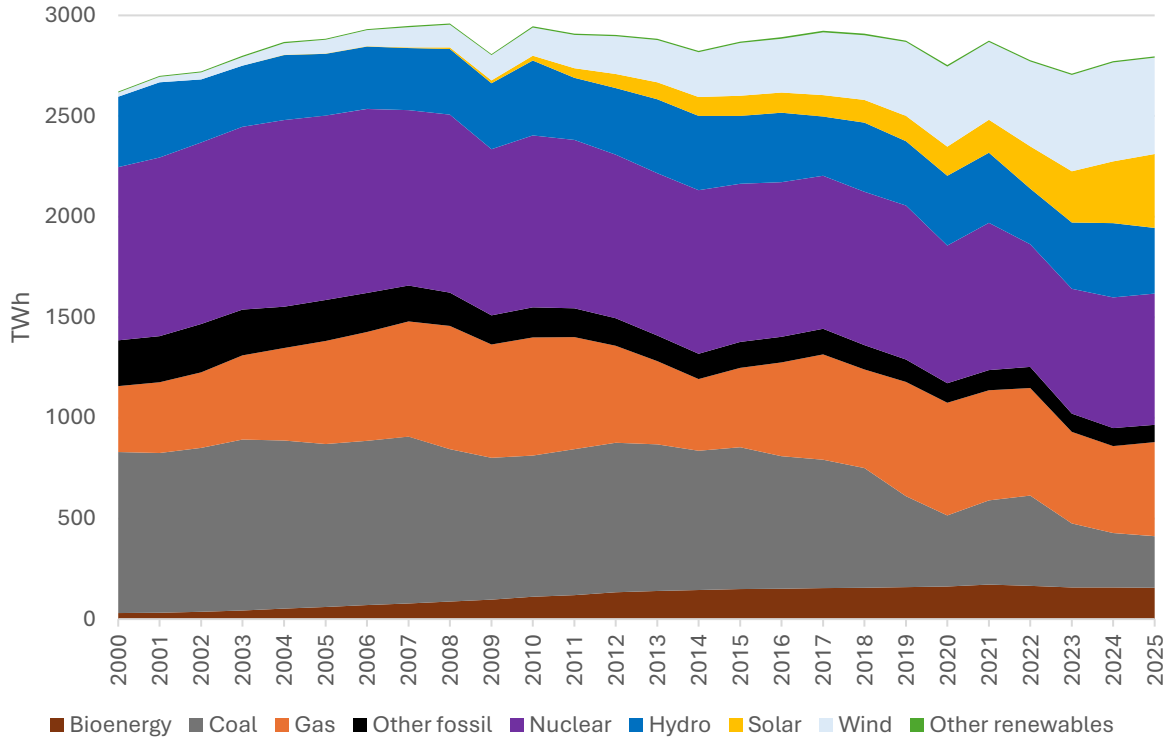
The actual consumption of renewable energy (25%) was higher than direct use (12%) because other renewable sources, such as hydropower, wind power, and solar photovoltaics, are included in electricity consumption. The acceleration of the energy transition is indeed most visible within the electricity sector, where wind and solar have expanded rapidly: as a result, the transformation of the power sector is progressing faster than changes in the broader energy mix, highlighting electricity's role as the central vector of decarbonization.

Over the past twenty-five years, the European electricity generation sector has undergone a structural transformation, which is reflected in three main trends: the decline of traditional fossil fuels, the growth of variable renewables, and the gradual reconfiguration of the role of baseload sources.

First, there is the net and structural decline of coal, which has fallen from approximately 800 TWh in the early 2000s to less than 300 TWh in 2025, as a result of stricter climate policies and the gradual phase-out of coal in several Member States. Other fossil fuels also follow a downward trend, confirming an overall reduction in the most carbon-intensive generation. Natural gas, on the other hand, has followed a more volatile trajectory, declining from over 600 TWh in the late 2000s before stabilizing around 450–550 TWh. This reflects its role as a transition and balancing source, used to offset the variability of renewables and system fluctuations. On the low-carbon side, nuclear power shows a gradual but non-linear decline, falling from about 900 TWh to about 650 TWh. Despite this reduction, it remains a significant component of the mix, particularly as a stable source. The most significant trend, however, concerns wind and solar power. Wind power has grown steadily to nearly 500 TWh, while solar power accelerates, particularly after 2021, exceeding 350 TWh in 2025.

Fig. 2.3: Electricity generation by energy source

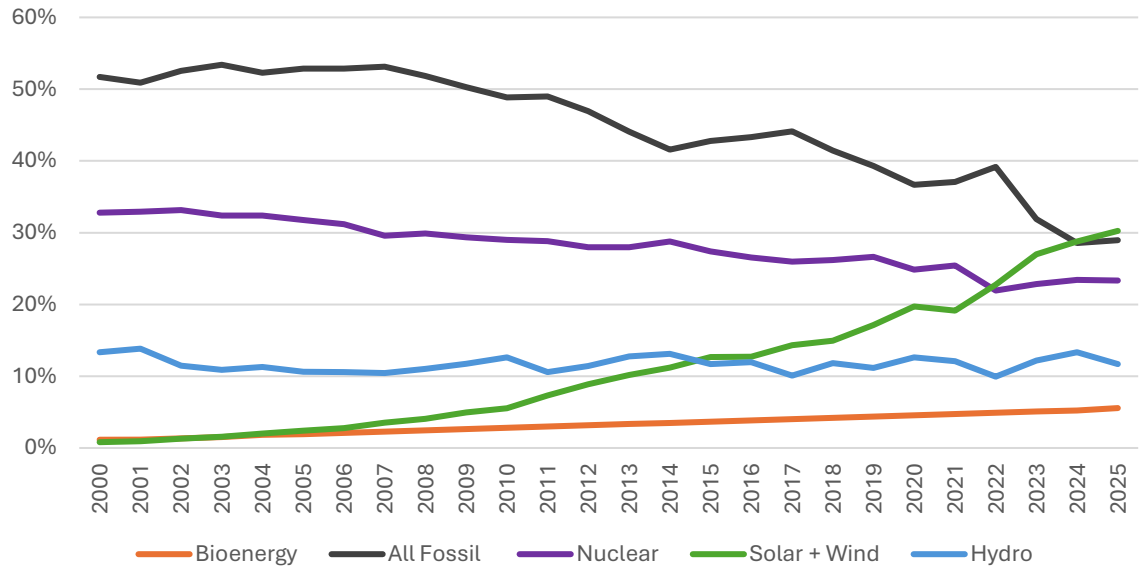
Source: EMBER (2026)



Specifically, in the past five years, the share of solar and wind power in the EU's energy mix has increased by more than 10 percentage points (from 19.7% in 2020 to 30.1% in 2025). At the same time, fossil fuels experienced a sharp decline during the same period, falling by nearly 8 percentage points from 36.7% of the EU's energy mix in 2020 to 29.0% in 2025. This trajectory led to a major milestone for EU's energy transition: for the first time, in 2025, wind and solar photovoltaic energy generated 30.1% of the EU's electricity (841 TWh), surpassing fossil fuels in electricity generation (29%, 809 TWh).

Fig. 2.4: Electricity generation by source (share on total)

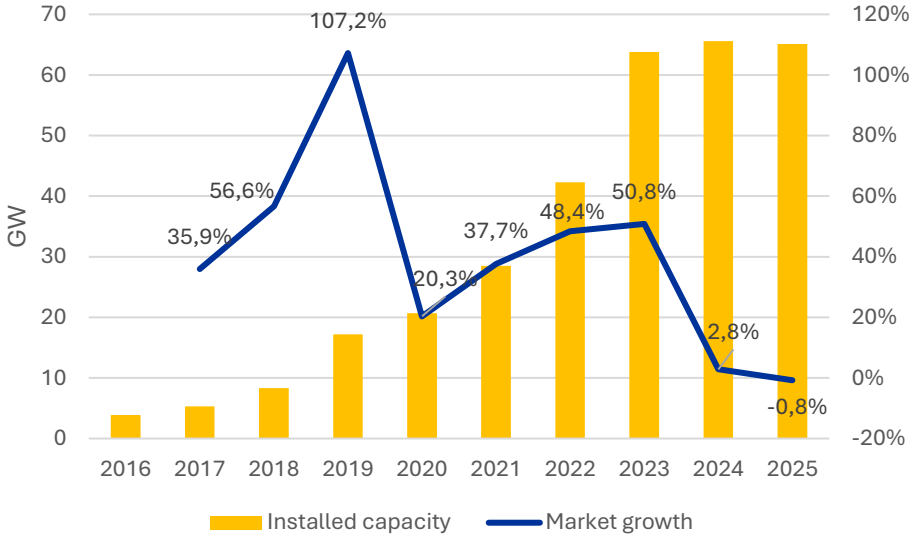
Source: EMBER (2026)



The increase in installed capacity, particularly in the photovoltaic sector, has sustained the rapid growth of solar power in 2025, with an average annual increase in production of 21% over the past five years–far exceeding that of any other energy source. In total, solar power generated a record 369 TWh in 2025, more than double the 2020 output (145 TWh).

Fig. 2.5: Annual installed capacity of solar photovoltaic power in the EU, in absolute GW (left axis) and year-over-year market growth (right axis)

Source: SolarPowerEurope (2026)



However, although the EU has met its 2025 photovoltaic installation capacity targets, with approximately 406 GW installed, a decline in rooftop installations risks compromising the

achievement of the 750 GW target for 2030: at the current pace, installed solar capacity would reach only 718 GW.

Cumulatively, in fact, solar capacity remains predominantly rooftop, accounting for 61%, while large-scale solar accounts for the remaining 39%. The rooftop photovoltaic sector, however, has experienced a sharp contraction due to the gradual phase-out of support programs. Large-scale installations, on the other hand, have continued to grow strongly, establishing themselves as the main driver of growth in the EU solar sector, exceeding 50% of total installations for the first time in 2025. However, this was not enough to offset the weakening of the residential market, and the overall adoption of solar power in the EU declined by 0.8%.

In 2025, the EU-27 installed 15.1 GW of new wind capacity, with onshore projects accounting for 94% of additions and 2 GW coming from offshore wind. Total installed wind capacity reached 246 GW, including 224.5 GW onshore (91%) and 21.5 GW offshore (9%).

While wind turbine technology continues to advance and installed capacity continued to grow in 2025, wind farms generated 465 TWh of electricity in 2025, slightly down from 475 TWh in 2024. Despite this decline, due to less favorable weather conditions, wind maintained a stable 19% share of EU electricity demand, which remained just under 2,500 TWh. Onshore wind covered 16% of demand, while offshore contributed 3%.

Investment in new wind farms reached €45 billion in 2025, signaling continued financial commitment to the sector. However, deployment remains constrained by grid bottlenecks, permitting delays, and slower-than-expected growth in electricity demand.

Fig. 2.6: Annual onshore and offshore wind power capacity installed in the EU (left axis) and investments in new wind farms (right axis)

Source: WindEurope (2026)

Looking ahead, EU annual installations are projected at 22 GW, leading to a total of 343 GW by 2030 (303 GW onshore and 40 GW offshore). This trajectory remains significantly below the EU's target of 425 GW, highlighting the need to address structural barriers to accelerate deployment.

2.1.2 Behind the green curtain: supply chains and affordability

As the European Union transitions away from the production of fossil fuels, the focus has shifted from simple decarbonization to the creation of a "homegrown" energy system. While the EU is still navigating its dependency on imports of fossil fuels, ensuring affordable and secure supply chains for clean technologies is the bedrock for industrial resilience and strategic autonomy.

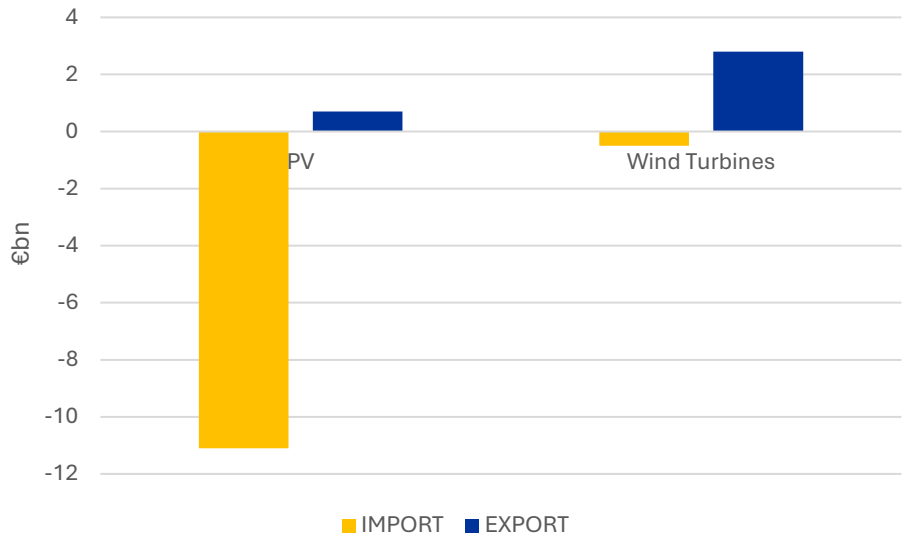
The pivotal importance of the wind sector in the EU, both from a manufacturing and installed capacity perspective, greatly influences the trade in this technology, as the EU has been a net exporter of wind technology since 2010. Wind turbines, in fact, represent a competitive export sector: the EU generated €2.8 billion in exports with strong growth from 2024 in both value (+41%) and volume (+28%), against only €0.5 billion in imports, despite an annual growth of 102% in import value. Regarding import partners for wind turbines, India (48%) and China (43%) account for 91% of all extra-EU imports for this specific technology.

For other key clean technologies, however, the figures point to a structurally asymmetric trade position for the EU. In solar panels, the EU is clearly import-dependent, with €11.1 billion in imports versus just €0.7 billion in exports in 2024–despite a 43% drop in import value, driven by falling prices rather than reduced demand (volumes still rose by 2%).

Overall, this suggests the EU maintains a surplus in higher-value, capital-intensive segments such as wind–highlighting a retained strength in advanced engineering, but runs a trade deficit in standardized, manufacturing-intensive clean technologies like solar.

Fig. 2.7: EU trade balance in selected green energy products (2024)

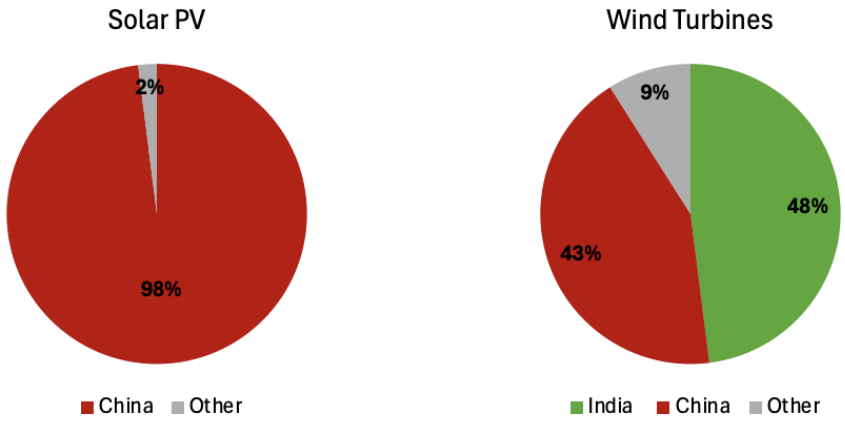
Source: Eurostat (2025)



In fact, the dependency risk is most acute in the solar photovoltaic (PV) and battery sectors. While the EU has set ambitious targets for expanding solar capacity, it remains heavily reliant on Chinese manufacturing, which in 2024 supplied 98% of solar panels used in the region.

Fig. 2.8: EU imports of selected green energy products, by import partner (2024)

Source: Eurostat (2025)



This critical dependency for just one main supplier creates a chokepoint where the pace of the energy transition is dictated by external trade policies and the availability of foreign-made components, rather than domestic deployment capacity.

But for the European Union to create a domestically sourced manufacturing environment, it would require a coordinated industrial strategy, access to critical resources and scaling capacity. Yet, this ambition is fundamentally constrained upstream: at the core of this challenge lie critical raw

materials (CRMs), which constitute the primary bottleneck across clean technology value chains. From extraction to processing, market concentration and processing chokepoints in CRM supply limit the ability to expand manufacturing capacity, meaning that industrial reshoring efforts remain structurally dependent on access to externally sourced inputs. As a result, the key vulnerability is not only downstream production, but upstream material bottlenecks that shape the entire system.

The EU's current industrial strategy recognizes that critical raw materials are the linchpins of the modern energy system and the inevitable backbone for many clean technologies. EU demand for CRMs is expected to increase twelve-fold by 2030 and twenty-one-fold by 2050. Today, Europe relies heavily on imports, often from a single third country, and recent crises have underlined EU strategic dependencies.

For this reason, the EU Commission recognized the vital importance of securing an affordable and sustainable supply chain through the Critical Raw Materials Act.

By 2030, benchmarks for the diversification of EU supplies are set at least 10% of the EU's annual consumption for extraction, 40% for processing, 25% for recycling, and not more than 65% of the Union's annual consumption of each strategic raw material coming from a single third country.

The Act identifies a list of strategic raw materials, their importance being based on their role in achieving the EU's green and digital goal: these are deemed by the IEA as the key energy transition materials, such as copper, cobalt, lithium, nickel, manganese, rare earth elements and graphite.

Among clean technologies, copper is primarily used in electricity networks, but also in solar PV and wind turbines. Nearly all the demand for cobalt in clean technologies comes from lithium-ion battery cathodes in the electric vehicles (EV) sector (96%), as does the demand for lithium (90%). For nickel, the majority of its clean technology demand comes from wind turbines and electric vehicles. Rare earths are essential for permanent magnets and wind turbines. Finally, 89% of graphite demand related to clean technologies comes from electric vehicles.

The global supply of key elements is distributed among different countries. However, China remains the dominant refined supplier for almost all minerals and controls a great share of supply and value chains. In 2035, China is set to supply over 60% of refined lithium and cobalt, and around 80% of battery-grade graphite and rare earth elements.

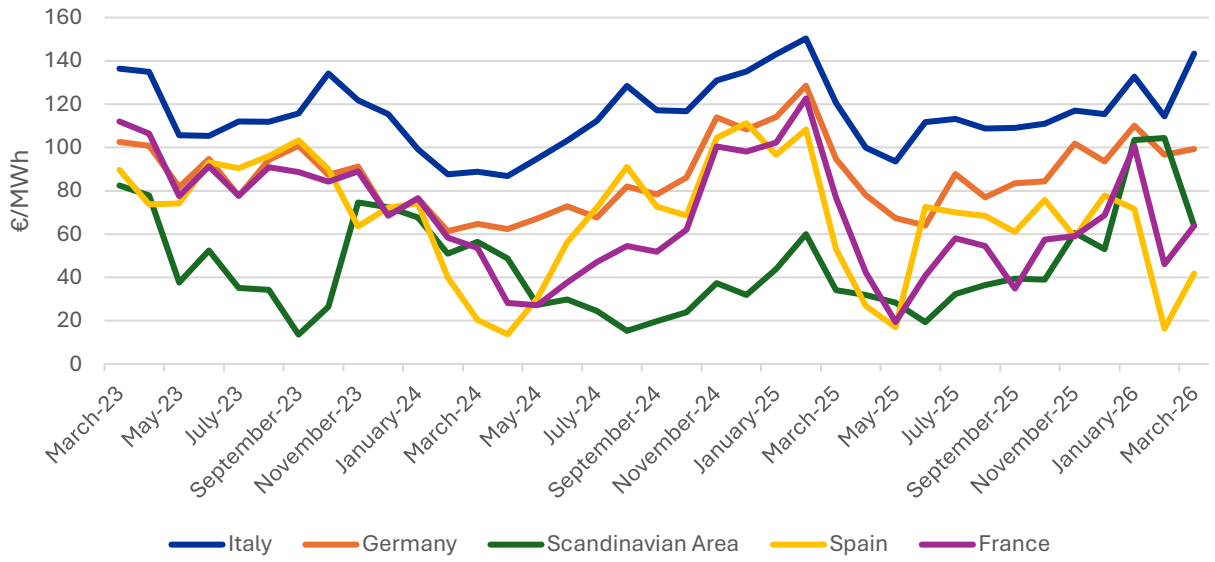
Europe currently sources a great share of many essential CRMs–such as lithium for batteries and rare earths for wind turbine magnets–from a small number of geopolitically sensitive suppliers: the dependency rate is from 79% for lithium, imported from Chile, while China still provides 85-100% of the EU's supply of rare earth elements.

While these dependencies primarily raise concerns around supply security and strategic autonomy, they also point to a broader structural vulnerability in Europe's economic model. This

becomes particularly evident when looking at energy markets, where underlying cost pressures and external exposures continue to shape competitiveness outcomes.

Fig. 2.9: Wholesale monthly electricity price, selected economies (March 2023-March 2026)

Source: LSEG Data & Analytics via GME (2026)

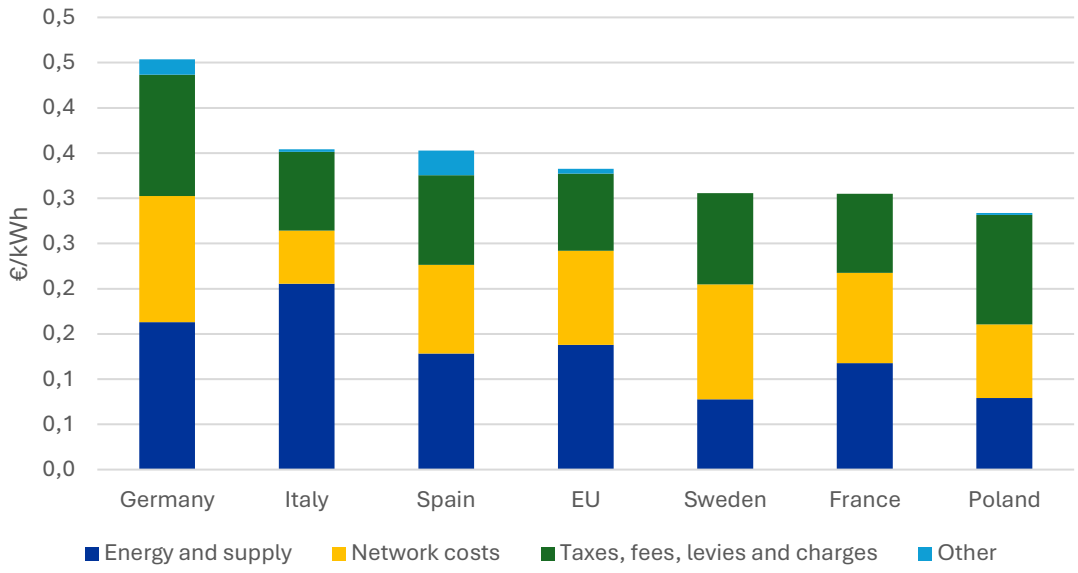


Wholesale electricity prices across major economies reveal a structural competitiveness gap that the energy transition must address. Between March 2023 and March 2026, EU wholesale prices remained consistently higher than those in the US, reflecting the EU's continued exposure to gas price volatility and its heavier dependence on natural gas for electricity balancing. The convergence visible in late 2023 and early 2024 – driven by renewable deployment and mild weather – provides an early signal that expanding wind and solar capacity structurally compresses wholesale prices. However, price spikes illustrate that price decoupling from fossil fuels remains incomplete: fluctuations of the price of the underlying baseload sources still matter, especially in countries where natural gas plays a prominent role in electricity generation.

Household electricity prices in the EU are shaped by a mix of energy costs, network charges, and taxes/levies – a decomposition that reveals important distributional and policy dynamics. On average, in 2025, the energy and supply component represented about 41% of the energy bill. The associated network costs embodied 31% of the total cost, with the remaining portions being taxes, levies and charges – weighting 26% - and other expenses – with a weight of 2%. While the pure energy component declines with falling wholesale prices, network charges and levies (often designed to finance the renewable transition) may grow, partially offsetting consumer savings. This internal breakdown matters for the affordability debate: high energy bills are not solely a market phenomenon but partly a policy design issue.

Fig. 2.10: Households electricity price components, selected economies (2025)

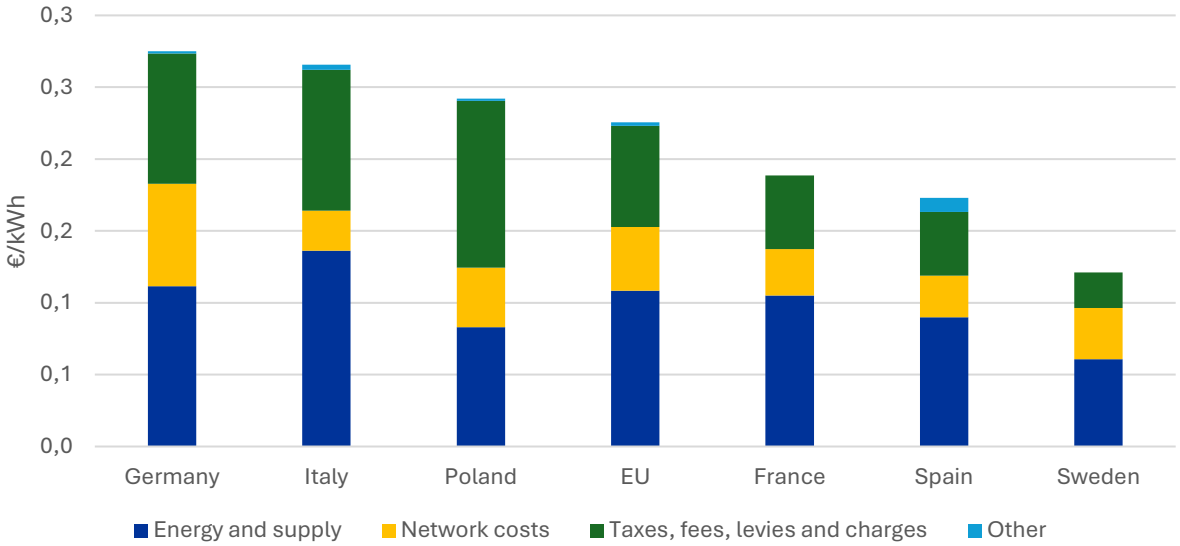
Source: Eurostat (2026)



The decomposition of non-household electricity prices is particularly critical for the EU's industrial competitiveness agenda. Energy costs represent a significantly higher share of total costs for energy-intensive industries (steel, chemicals, aluminium, cement) than for households, making the price gap with the US and China – where industrial electricity prices are 2–3 times lower – an existential competitive issue. The base energy cost remains elevated relative to global competitors. Some Member States have introduced compensation mechanisms or reduced levies for energy-intensive users, but these remain fragmented. The Clean Industrial Deal's focus on reducing non-household energy costs – through faster renewable deployment, Power Purchase Agreements (PPAs), and direct connection options – directly targets these dynamics.

Fig. 2.11: Non-household electricity price components, selected economies (2025)

Source: Eurostat (2026)



2.1.3 Decarbonization as a driver of industrial resilience, innovation and global competitiveness

Beyond its environmental rationale, the energy transition carries substantial economic weight. According to the European Commission, clean energy technologies and their manufacturing generated 1.8 million jobs in the EU in 2023 alone[11], underscoring that decarbonization is not only reshaping the energy system but actively restructuring the European labour market. The green transition is expected to create between 1 and 2.5 million additional jobs by 2030 in the EU[12].

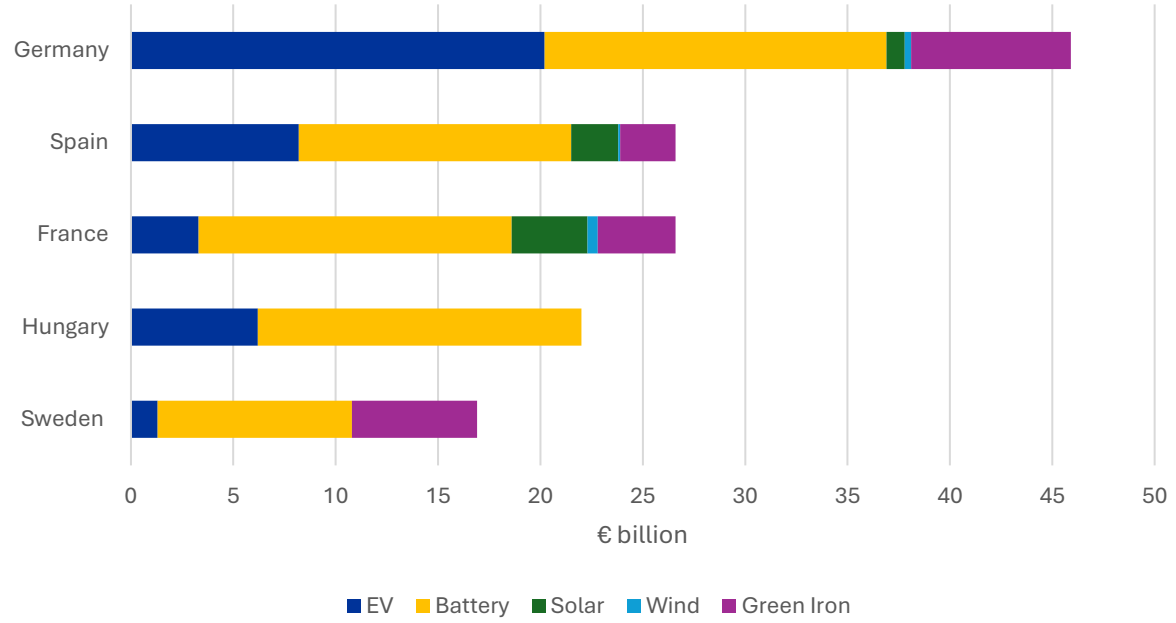
Besides human capital, the decarbonization efforts must be supported by substantial monetary investments. With a deep dependence on China regarding the critical raw materials needed for most clean technologies, the EU has begun equipping itself with domestic production capacity of key transition technologies.

[11] https://energy.ec.europa.eu/document/download/0ebb48f6-887f-41ea-8d38-a2d52b247be3_en?filename=CPR_horisontal-brief_accessible_pdf_26-02-2025.pdf

[12] Employment and Social Developments in Europe 2023 (ESDE 2023)

Fig. 2.12: Clean tech investments by technology, top 5 EU destinations (2017-2026)

Source: Bruegel (2026)



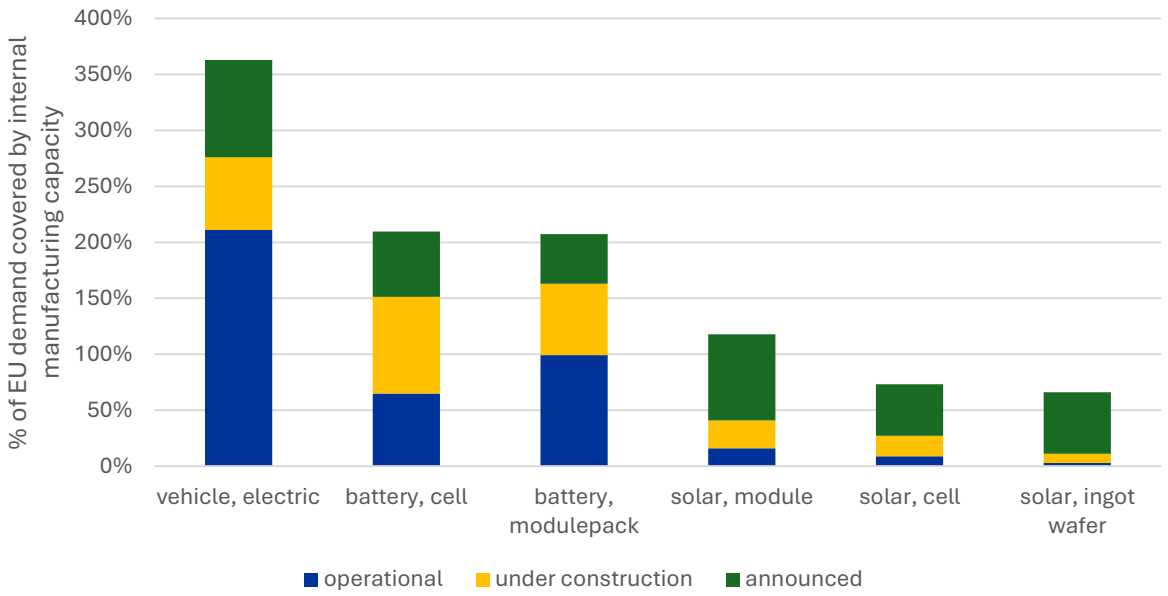
Among the technologies chosen by EU-based (as well as a portion of foreign) investors, energy storage was the most attractive, followed by electric vehicles. Green iron gained momentum in the fourth quarter of 2025 and thus emerged as the third manufacturing investment destination by technology. Realized and announced investments in solar and wind are marginal compared to the first three technologies. The main geographic destination for investments in clean technologies is Germany, which, from 2017 to 2026, has attracted approximately €46 billion in clean tech investments (Fig. 3.1). The predominant technological field in Germany was electric vehicles, followed by battery technologies and green iron. Spain and France stand as second and third destinations for investments in the EU, trailing Germany by nearly €20 billion. Investments in these two countries were centered around batteries and EVs, with some resources also destined for green iron and solar. A notable absentee from the top five chart is Italy, the third-largest EU economy, which had €5.3 billion worth of clean tech investments cancelled (Bruegel, 2026) out of a total of €7.9 billion – an amount already far smaller than that of the leading Member States.

The resulting manufacturing capacity of clean technologies due to investments varies by technological field and investment status. Until Q3 of 2025, the EU had the operational capacity to produce electric vehicles at double its internal demand. The same could not be said for EVs' main components, batteries, even though there is significant capacity under construction and announced. In particular, the EU fell short in the production of battery cells but not in the production capacity of battery module packs. This gap should be filled in the years to come, giving the EU the potential to become more than self-sufficient in battery assembly. A technology whose production capacity will be developed in the future but not in enough measure to fulfil EU's

internal demand is solar. In particular, between announced and under-construction capacity, domestic production of solar modules will be able to eventually meet domestic demand. However, the EU production of solar module components, namely cells and ingot wafers, will not be able to cover EU's demand, even accounting for announced production capacity.

Fig. 2.13: EU clean tech manufacturing capacity (Q3 2025) as a share of internal demand (2024)

Source: Bruegel (2026)

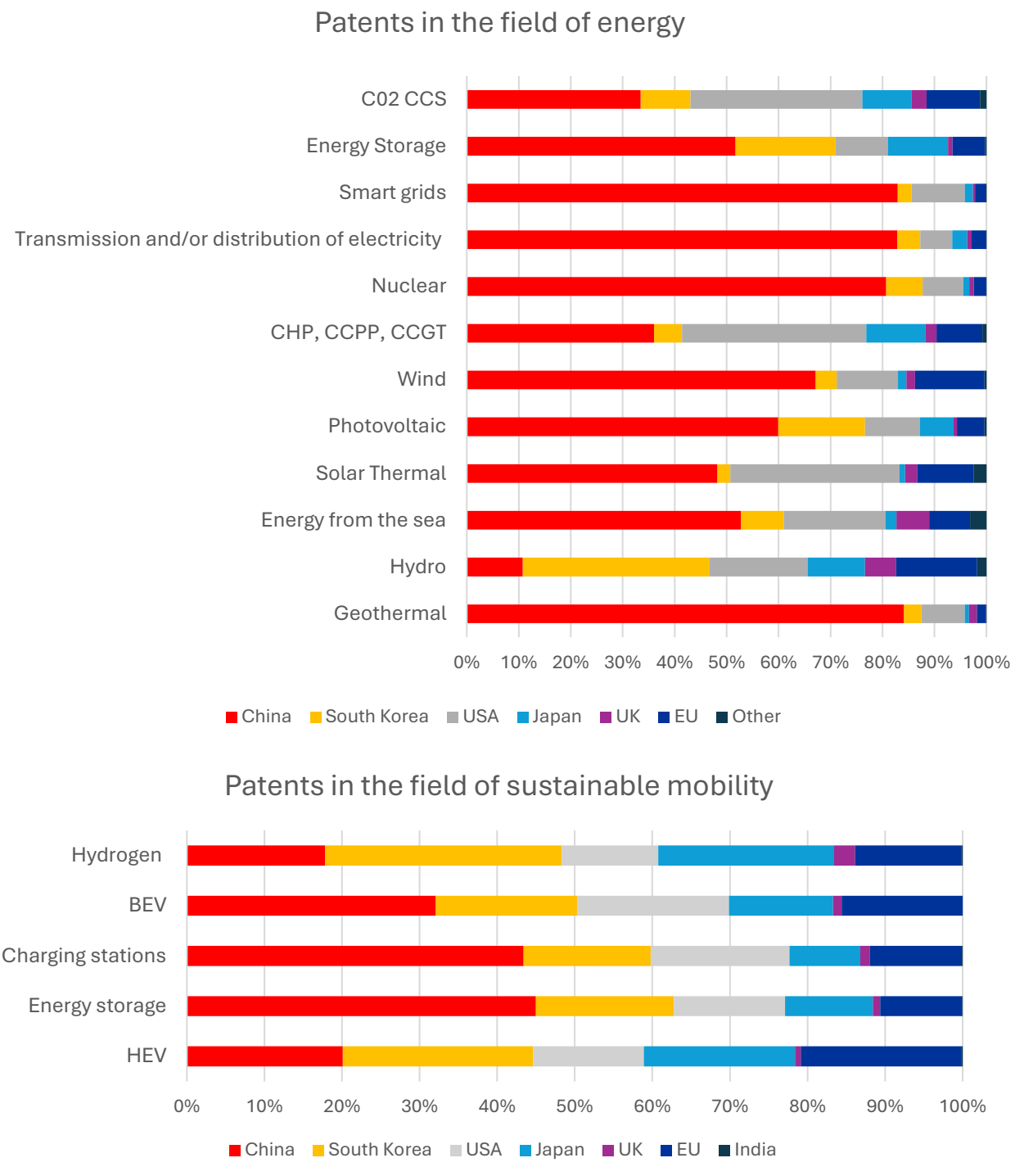


Central to the development of an adequate and competitive production capacity of clean technologies is an industrial fabric capable of innovating. Unfortunately, the EU now plays a marginal role in the global landscape of energy innovation.

In the energy field, in 2023, China dominated patent issuance. Among the total number of energy-related patents, 58% were issued by Chinese entities. In almost all technological fields, the dominance is overwhelming: in the fields of geothermal, energy from the sea, photovoltaic, wind, nuclear, transmission and/or distribution of electricity, smart grids and energy storage, more than 50% of patents issued are Chinese-owned. China does not figure as the leading country in terms of number of patents only in hydroelectric energy, where leadership is taken by South Korea. The EU often lags behind the US, South Korea and even Japan. The EU bloc shows a relative specialization in hydroelectric energy, solar thermal, wind and $C0_2$ carbon capture and storage, fields where EU Member States hold at least 10% of the total patents issued in 2023.

Fig. 2.14: Country share of patents for clean technology, by technological field (2023)

Source: I-Com elaboration on PatStat data (2025)



Regarding patents in the field of mobility, China still exerts its dominance, but at a lower level. Stiff competition arises from South Korea, which is the greatest patent emitter in the fields of HEVs and hydrogen. Energy storage solutions for mobility, charging stations and BEVs are still a Chinese prerogative, although patents in the field of BEVs are more uniformly distributed across countries. Innovation-wise, the EU is competitive on HEVs and partially on BEVs.

2.2 EU Transport Decarbonization: Balancing Climate Goals with Industrial Strength

2.2.1 The pillar of the EU industrial competitiveness: the automotive sector and its modern challenges

The automotive sector represents a fundamental pillar of the manufacturing industry of the European Union, contributing significantly to its GDP, workforce and exports, notably transforming a production sector into a projection of European competitiveness and status across the world. In fact, the EU automotive sector is far more than a mere manufacturing supply chain; it represents a complex industrial ecosystem that encompasses several spheres of activity, from components to chemistry, and from electronics to energy. The sector has thus established itself as a cornerstone of European industry. The sector employs 13.6 million people directly and indirectly – equivalent to 6.9% of all EU jobs – with 2.5 million of those positions, or 8.1% of total EU manufacturing employment, tied directly to the sector. Motor vehicles contribute €414.7 billion in tax revenues to governments across key European markets, while the industry generates a trade surplus of €93.9 billion and accounts for more than 8% of the EU's entire GDP. Beyond its economic footprint, the automotive sector is also Europe's single largest private driver of innovation, channeling €84.6 billion into R&D annually – a figure that represents 34% of the EU's total private investment in research and development.

However, recently, the sector has entered a phase of unprecedented structural transformation, driven by the convergence of regulatory, technological, and economic factors. The decision by the European Commission to commit to decarbonization, setting a fast pace for the radical transformation of the sector through challenging targets and demanding regulations, has the aim of transitioning to low-carbon mobility. The European Green Deal and the “Fit for 55” package are the legal cornerstones of this metamorphosis, redefining production models, value chains, and employment structures, but also putting heavy pressure on the sector to keep balancing productivity and green transition.

Battery electric vehicles (BEVs) are currently the primary technology identified for achieving European climate goals. However, their widespread adoption raises significant questions regarding industrial sustainability, affordability, and strategic dependence. Batteries are the technological and economic heart of electric vehicles, accounting for up to 40% of the vehicle’s total cost. Battery production requires access to critical raw materials such as lithium, cobalt, nickel, and graphite. The European Union is heavily dependent on imports of these materials, with a high geographical concentration of supply. This creates strategic vulnerabilities that directly impact industrial security and the competitiveness of the automotive sector.

According to ACEA data, the EU represents only 7% of global battery production. 15% of EU battery production capacity is managed by companies headquartered in Europe. Imports of EV batteries – predominantly from China – covered more than a fifth of the continent's total demand. In 2023 alone, the EU spent approximately €27 billion on battery imports, roughly 90% of which originated from just three Asian countries, with China accounting for an overwhelming 87% of the total. This dominance is unsurprising given that China is the world's leading EV battery exporter, directing around 12% of its entire battery output to foreign markets.

As reported by ACEA, in battery cell manufacturing, cathode and anode active materials represent around 50% and 10% of production costs, respectively. Nearly 90% of global installed cathode active material manufacturing capacity is owned by China, while the same happens for anode active material, which is held by Chinese companies for over 97% of its manufacturing capacity. China accounts for the production of 76 – 85% of the world's battery cells. The US and the EU stand at about 5% each13.

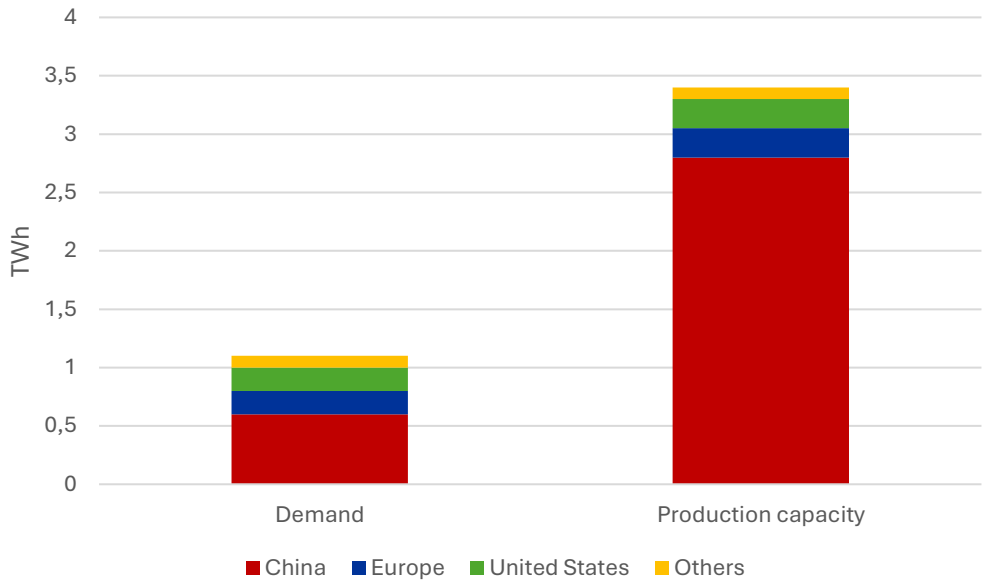
China retained its dominance over the midstream and downstream EV and storage battery supply chain in 2024, processing 70-95% of global lithium, cobalt, phosphate and graphite; producing 98% of lithium-iron phosphate (LFP) cathode material, two-thirds of nickel-based cathode material, over 90% of anode material and 80% of global battery cells.

As a stark reminder of the challenges of scaling up high-quality battery cell production and of the difficulties of creating a self-sufficient and autonomous supply chain, stands the Swedish company Northvolt, the leading homegrown battery producer that filed for bankruptcy in 2025. Northvolt faced serious challenges, in particular an inability to sufficiently reduce the defect rate while trying to simultaneously scale production of several stages of the supply chain.

[13] ACEA, https://www.acea.auto/files/ACEA_Fact_sheet-EU_battery_supply_chain_and_import_reliance.pdf

Fig. 2.15: Battery demand and production capacity, 2024

Source: IEA (2025)

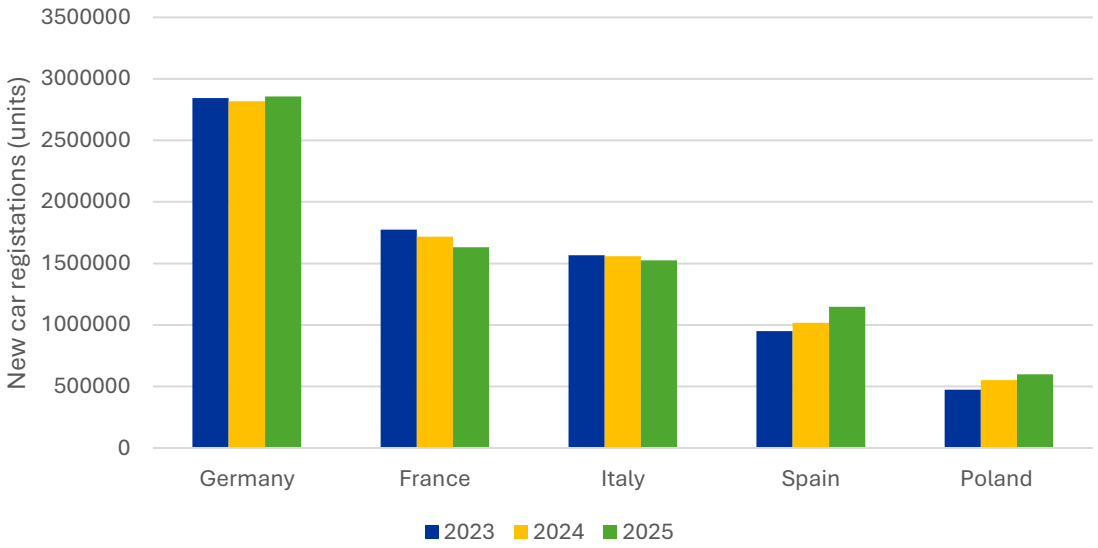


In 2025, globally, new passenger cars registrations rose by 3.5%. China was the primary engine of this growth, with sales climbing 5.5% to reach 24.2 million units, buoyed by a combination of scrappage and replacement schemes, tax incentives on new energy vehicle purchases, and a more positive economic outlook – all of which helped offset the headwinds stemming from the ongoing trade dispute with the United States.

Despite not reaching pre-pandemic levels by 2.2 million units, new car registrations rose in the EU in 2025, for a total of 10.8 million. The percentage increase with respect to 2024 was modest: +1.8%, driven primarily by a sharp growth in one of the top five markets, Spain, that registered a growth of +12.9%. Positive changes were observed also in Germany, the largest EU market, with +1.4%, and Poland, +8.3%, with the latter increase favored by a programme launched in February 2025 to incentivize electric vehicle purchases. On the other hand, the French and Italian markets continue to decline, recording -5.0% and -2.1% respectively.

Fig. 2.16: New car registrations in the top EU five markets (2023-2025)

Source: ACEA (2025)



By the end of 2025, EU's new passenger car trade saw, in value terms, both imports and exports retreating – down 3.2% and 6.2% year-on-year respectively – settling at €71.9 billion and €147.9 billion. This occurrence pushed the trade surplus to €76 billion, its weakest reading since 2021. In terms of volume, imports edged up 3.4% to nearly 3.6 million units, while exports fell 4.3% to just under 4.5 million units. Taken together, these figures point to a softening in global appetite for EU-manufactured vehicles alongside a steady influx of foreign cars – driven in particular by growing inflows from China and Türkiye.

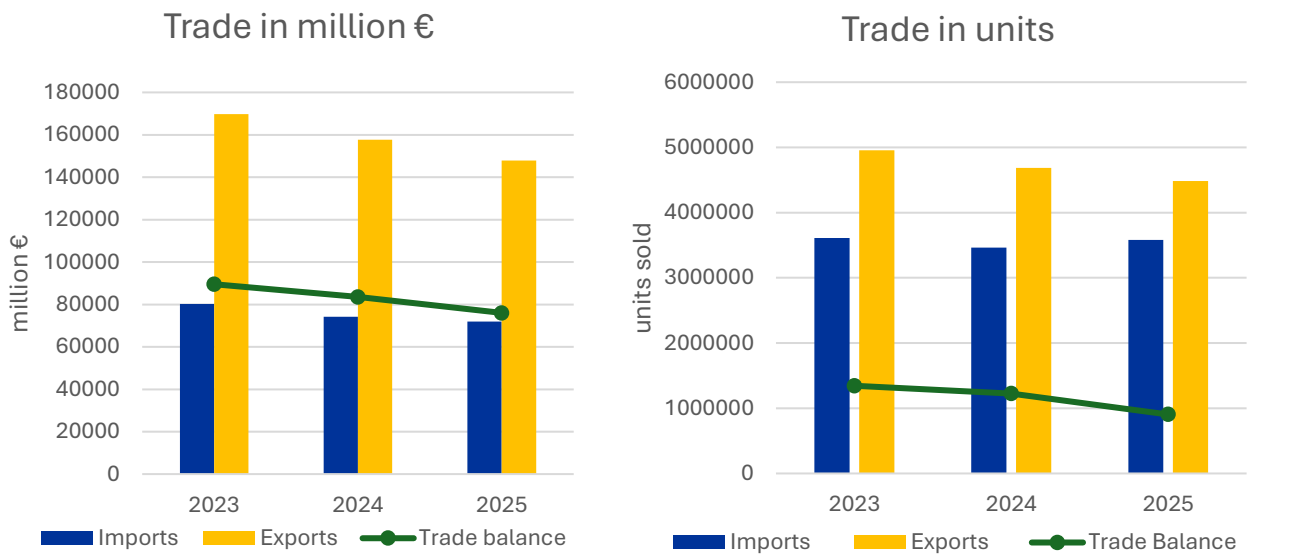
As a matter of fact, the dynamics of EU imports were heavily shaped by Chinese vehicles, which recorded a striking 30.7% surge in the number of new passenger cars imported into Member States in 2025 compared to 2024, even as the corresponding value of those imports rose only modestly, by 4.0%. In total, one million Chinese-made cars entered the EU market, far outpacing the second largest supplier in terms of volumes, Türkiye, from which 566 thousand new passenger cars were imported. Concerning trade value, the main five partners were, as anticipated, China (+4.0%), Japan (-11.4% w.r.t 2024), Türkiye (-8.9%), United Kingdom (-11.2%) and South Korea (+10.1%).

In 2025, EU car exports shifted markedly across markets. The United Kingdom emerged as the top destination at €35.8 billion (+5%), while the United States dropped 21.4% to €30.9 billion under the weight of rising tariffs. Türkiye staged a strong recovery, surging 27.9% to €15.6 billion, whereas China collapsed by 43% to €8.3 billion, squeezed by domestic competition and the shift toward new energy vehicles. Despite this volatility, the US and UK alone accounted for over 45% of total EU export value. In volume terms, the UK led with 1.29 million units (+1.2%), followed by

Türkiye at 717,000 (+19.9%) and the US at 668,000 (-13.5%). China's steep decline pushed it out of the top five entirely, with Japan – up 12.9% to 163,000 units – stepping in to take its place.

Fig. 2.17: EU new car trade (2023-2025), in million € and units

Source: ACEA (2026)



2.2.2 *Decarbonization strategy: targets for the transition of the sector*

Addressing greenhouse gas emissions from the transportation sector is essential for effectively implementing the EU's decarbonization policies: currently, the transportation sector–which is the largest source of emissions in the European Union–accounts for approximately one-quarter of total emissions. By 2030, this share could rise to 44%. Within the sector, road transport is responsible for the biggest share of emissions, generating about 75% of them and accounting for up to 20% of total EU emissions.

The Renewable Energy Directive (RED) III, a key regulation governing the integration of renewable energy sources into the EU's energy system, replaced the previous directives from 2009 and 2018. The Directive raises the European Union's binding target for renewable energy to 42.5% by 2030 and introduces new binding sectoral targets.

To ensure a certain degree of flexibility for Member States in developing domestic policies for the decarbonization of transport, the RED requires Member States to set obligations for suppliers, choosing between a target to reduce greenhouse gas intensity (by at least 14.5% by 2030) or to achieve a share of renewable energy consumption of at least 29% by 2030.

On the other hand, the European regulatory framework designed to decarbonize the EU's vehicle fleet is extensive, and numerous other regulations aim to shape the sector's evolution; however, the bulk of the strategy developed by the European Commission and Parliament is primarily based on replacing cars already on the road–the vast majority of which are equipped with internal combustion engines (ICE)–with vehicles that emit zero tailpipe emissions, particularly battery-electric vehicles (BEV).

As part of the "Fit for 55" legislative package, emissions standards are set forth in Regulation (EU) 2023/851, which established a 100% emissions reduction target for new passenger cars and vans starting in 2035, thereby banning the sale of internal combustion engine vehicles from that date onward. Starting January 1 of that year, the average emissions of vehicles sold must be zero grams of CO_2 per kilometre: this would not prevent automakers from continuing to sell internal combustion engine vehicles (gasoline or diesel) even after that deadline, but they would face prohibitive fines: 95 euros for every gram of CO_2 exceeding the limit (0 g/km) and for every non-compliant vehicle sold. Penalties for the sector would amount to 15 billion euros. In May, a specific measure was approved to mitigate the impact of the penalty regime, introducing greater flexibility for achieving the targets by calculating the average performance over the three-year period 2025–2027 rather than in individual years.

The 2035 deadline does not stand in isolation: Regulation (EU) 2023/851 also establishes binding interim reduction targets for the average CO_2 emissions of new passenger cars – a 15% reduction by 2025 compared to 2021 levels, rising to 55% by 2030. These intermediate milestones are already generating significant pressure on manufacturers, as several European OEMs have struggled to meet the 2025 targets amid sluggish BEV demand and continued consumer preference for hybrid and petrol vehicles. Non-compliance exposes automakers to substantial financial penalties, compounding the investment burden associated with electrification and further straining the sector's profitability.

Following intense political negotiations – led notably by Germany – the European Commission introduced a targeted exemption to the 2035 ICE ban. Under this carve-out, vehicles powered exclusively by carbon-neutral synthetic fuels (e-fuels) will remain eligible for sale beyond 2035, provided a dedicated regulatory framework is established to ensure their climate neutrality. While the practical impact of this exemption is expected to be limited given the current production costs and scalability constraints of e-fuels, it represents a meaningful political signal in favour of a more technology-neutral approach – one that acknowledges that zero tailpipe emissions is not the only viable pathway to decarbonization.

Regulation (EU) 2023/851 includes a mandatory review clause, requiring the European Commission to assess by 2026 the progress made toward the 2030 and 2035 targets, taking into account technological developments, market uptake of zero-emission vehicles, and socioeconomic impacts on consumers and the industry. This provision has become one of the most politically

contested elements of the EU's automotive policy, as it represents a potential mechanism for revising – or reinforcing – the 2035 ICE phase-out target. The outcome of this review will be decisive in shaping the medium-term strategic direction of the sector.

The credibility of the 2035 target is intrinsically linked to the availability of the infrastructure necessary to support mass EV adoption. The Alternative Fuels Infrastructure Regulation (AFIR), which entered into force in 2023, addresses this dimension by setting mandatory deployment targets for publicly accessible charging and refuelling infrastructure across the EU's road network. Specifically, AFIR requires fast-charging pools of at least 400 kW to be installed every 60 km along the TEN-T core network by 2026, scaling up to 600 kW by 2028. Hydrogen refuelling stations are also mandated at regular intervals on the core network by 2030. The pace of infrastructure rollout remains uneven across Member States, and the gap between regulatory ambition and on-the-ground deployment represents one of the most tangible barriers to consumer confidence in electric mobility.

Complementing the fleet emissions framework, the EU Battery Regulation (Regulation (EU) 2023/1542) establishes comprehensive sustainability, traceability and performance requirements for batteries placed on the EU market, with particular relevance for EV traction batteries. The regulation introduces mandatory minimum thresholds for recycled content – applicable from 2031 for lithium and cobalt, and from 2036 for nickel and lead – as well as carbon footprint declaration requirements and digital battery passport obligations. While these provisions aim to reduce the environmental impact of battery production and strengthen the circularity of the supply chain, they also pose significant compliance challenges, particularly given Europe's current dependence on Asian suppliers for both raw materials and battery cells. In this sense, the Battery Regulation functions both as an environmental instrument and as an indirect industrial policy tool, creating incentives for the localization of battery manufacturing within the EU.

From 2027, road transport will be brought within the scope of a new, dedicated emissions trading system – ETS2 – established under the revised EU ETS Directive. Unlike the existing ETS, which targets stationary industrial installations and aviation, ETS2 operates on the fuel supply side: distributors of petrol and diesel will be required to purchase allowances for the CO_2 emissions associated with the fuels they sell, with the carbon cost expected to be passed through to end consumers at the pump. This mechanism introduces a market-based demand-side lever that complements the supply-side fleet standards of Regulation 2023/851, making conventional fuels progressively more expensive relative to electricity and thereby accelerating the economic case for EV adoption. A dedicated Social Climate Fund has been established in parallel to mitigate the distributional impact on lower-income households, acknowledging that carbon pricing on transport fuels carries significant equity implications.

On 16 December 2025, the European Commission presented the Automotive Package, a set of interlinked legislative and policy initiatives aimed at supporting the sector's transition to clean

mobility while addressing growing competitiveness concerns. The Package sets an ambitious yet pragmatic policy framework to ensure 2050 climate neutrality and strategic independence, while providing greater flexibility to manufacturers and responding to industry calls to simplify rules. The Package is structured around four pillars: revised CO_2 emission standards for cars and vans, battery supply chain policy, corporate fleet decarbonization, and regulatory simplification through an "Automotive Omnibus."

On CO_2 standards, the Package introduces a notable softening of the 2035 target: the emissions reduction requirement for new passenger cars and light commercial vehicles would be revised from 100% down to 90% compared to 2021 levels, with the remaining 10% to be offset through capped credits for alternative drivetrains, sustainable renewable fuels, and the use of low-carbon steel made in Europe. On the demand side, starting in 2030, Member States would be required to ensure that a specific share of new corporate cars and vans registered by large companies in their territories are zero- or low-emission vehicles, with national authorities retaining full flexibility to choose the measures to achieve their targets. To strengthen industrial resilience, the Package also includes a Battery Booster Strategy, explicitly aimed at strengthening EU manufacturing capacity and reducing reliance on non-EU suppliers, and establishes a Battery Booster Facility to mobilise €1.5 billion from the Innovation Fund in the form of performance-based, interest-free loans to support European battery cell producers during the ramp-up phase. The Package is currently moving through the ordinary legislative procedure, with negotiations expected to continue throughout 2026.

In this context, the Industrial Accelerator Act introduces an explicitly industrial-policy dimension to the EU's transport decarbonization strategy. The proposal establishes a framework of measures to accelerate industrial capacity and decarbonization across a range of strategic sectors, including automotive, by supporting EU-based production, strengthening supply chains and reducing strategic dependencies on third countries. Unlike instruments focused primarily on vehicle emissions standards, renewable energy targets or infrastructure deployment, the Act intervenes on the manufacturing side of the transition. Its tools include public support schemes, public procurement criteria, super-credits and EU-origin requirements linked to low- and zero-emission mobility technologies. For the automotive sector, its relevance accordingly extends beyond final vehicle assembly to the broader value chain, encompassing batteries, electric powertrain components, electronics, advanced materials, efficiency technologies and the specialised suppliers that underpin them. Counties such as Italy illustrate the importance of this dimension: its automotive competitiveness is strongly rooted in component manufacturing, SMEs and industrial districts, which are directly exposed to the shift from traditional powertrain-related production to new low-carbon mobility value chains. The Act consequently positions industrial conversion, supply-chain resilience and technological upgrading as central conditions for ensuring that the decarbonization of road transport is accompanied by the preservation of European manufacturing capacity, employment and competitiveness.

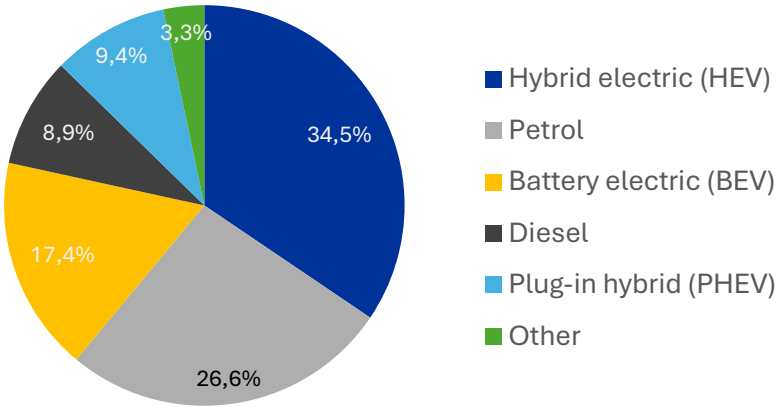
2.2.3 The EU automotive sector: key trends

To fully grasp the situation of the automotive sector in the European Union, its evolution and internal changes, two factors should be considered: the stock fleet (vehicles circulating on roads) and the new car registrations (cars entering the fleet).

The bulk of European legislation about decarbonizing the sector focused on the replacement of ICE vehicles with new low-carbon emission cars through their introduction in the fleet, thus targeting the segment of new car registrations.

Fig. 2.18: New EU car registrations by power source, as market share (2025)

Source: ACEA (2026)



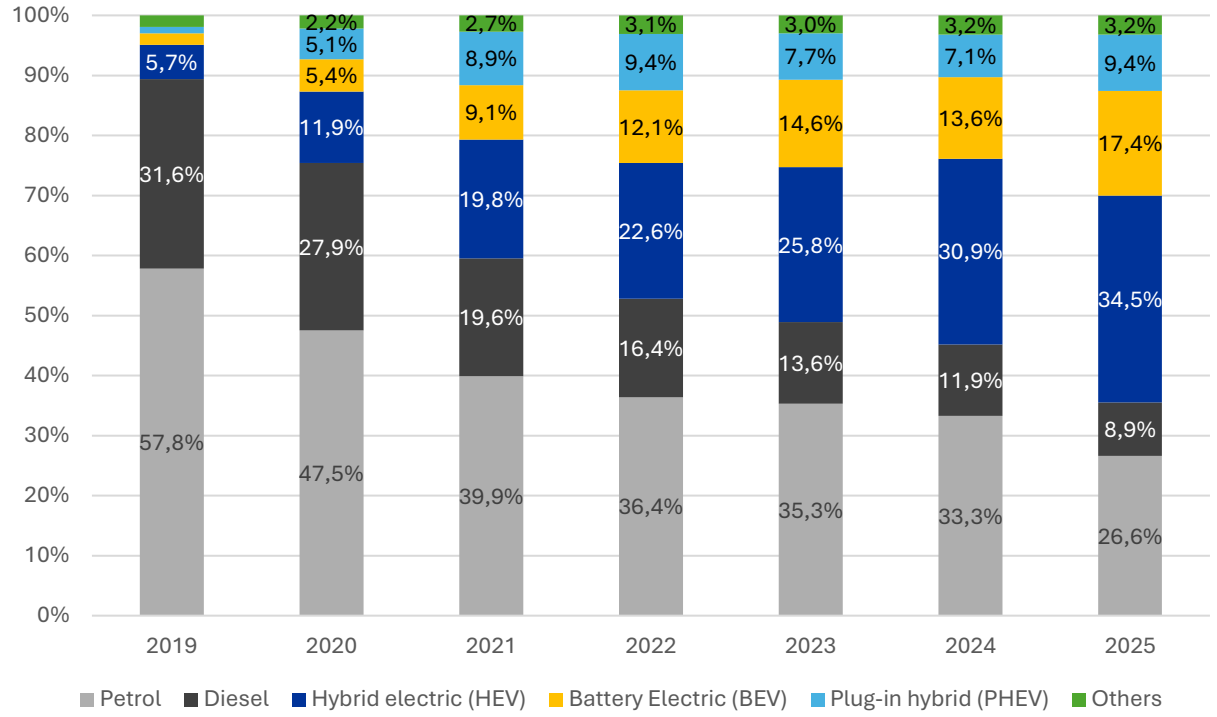
Looking at car registrations by power source, in 2025, battery-electric cars accounted for 17.4% of the EU market share, an increase from 13.6% in the previous year. Hybrid-electric cars remained the preferred choice among EU consumers and their market share continued to rise, standing at 34.5% of the market. Plug-in hybrid sales also surged by 33.4%, reaching 9.4% of the market and surpassing diesel car registrations. Meanwhile, the combined market share of petrol and diesel cars fell to 35.5%, down from 45.2% in 2024.

By following the evolution of the EU car registration market, two trends are evident: the substitution of ICE-powered vehicles by alternative-powered vehicles, and the rise in sales of HEVs and BEVs.

Traditional ICE vehicles (petrol and diesel) had the biggest market share in 2019, seizing almost 90% of all car registrations in 2019. Their combined market share in car registrations declined sharply (-60%), standing at 35,5% in 2025. Conversely, HEVs and BEVs registered the greatest growth: the former started at 5,7% in 2019 and now holds the biggest market share for car registrations among all power sources (34,5%). The BEV registrations followed a similar path, starting with 1,9% of market share and standing at 17,4% in 2025.

Fig. 2.19: New EU car registrations by power source, as market share (2019 - 2025)

Source: ACEA (2026)



Both in registrations and the stock fleet, the four main markets follow similar trends and stay mainly close to the EU average, albeit with modest differences. In Germany, France, Italy and Spain, the most popular power source in new vehicles registered was the hybrid electric, ranging from 28% of the national market in Germany to 44% in Italy. Petrol-powered vehicles were around 26% for all examined countries, while registrations for diesel-powered vehicles were around or above 10% only in Italy and Germany. Germany and France had the highest share of BEVs registration among the four national markets (around 20%).

To provide a broader picture of the actual impact of new registrations on the sector as a whole, it is necessary to consider the stock fleet and the vehicles still actually circulating on European roads.

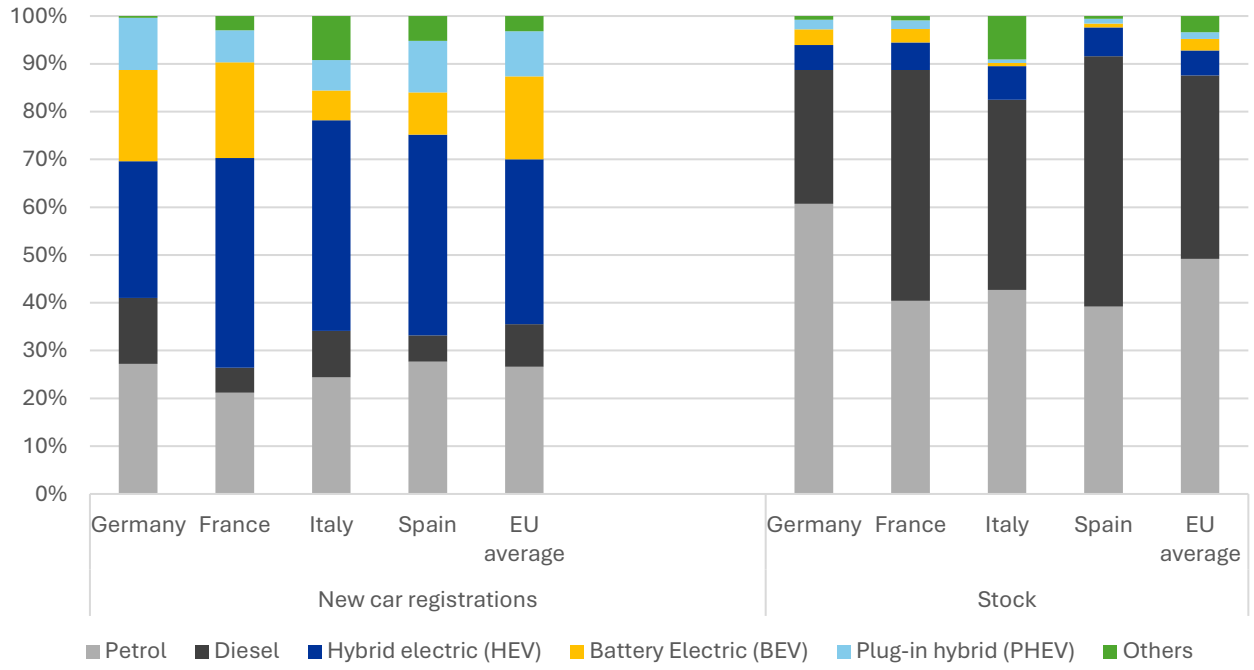
All four countries have vehicle fleets that still rely predominantly on conventional internal combustion engines. On average, petrol-powered vehicles account for about 50% of those on European roads, rising to around 60% in Germany. When diesel vehicles are included, the share of internal combustion engine (ICE) vehicles approaches 90% of the total EU fleet. Overall, the combined petrol and diesel share ranges from 82.5% in Italy (below the European average due to the relatively high penetration of LPG vehicles) to 91.6% in Spain.

Despite the fact that the majority of newly registered vehicles had alternative fuel systems, their actual impact on the fleet is modest compared to the total number of vehicles on roads. Hybrid electric vehicles account for only about 5% of the EU total fleet (7% in Italy, in line with the high volumes the high volumes of registrations in the national market), while BEVs stand at an EU

average of 2,4%. Among the four biggest markets, Germany registers the highest BEV share in the national fleet (3,3%), while Italy has the most marginal incidence (0,7% of BEVs out of the total vehicle stock).

Fig. 2.20: New car registrations and vehicle stock fleet, by selected country and power source (2025)

Source: ACEA (2026)

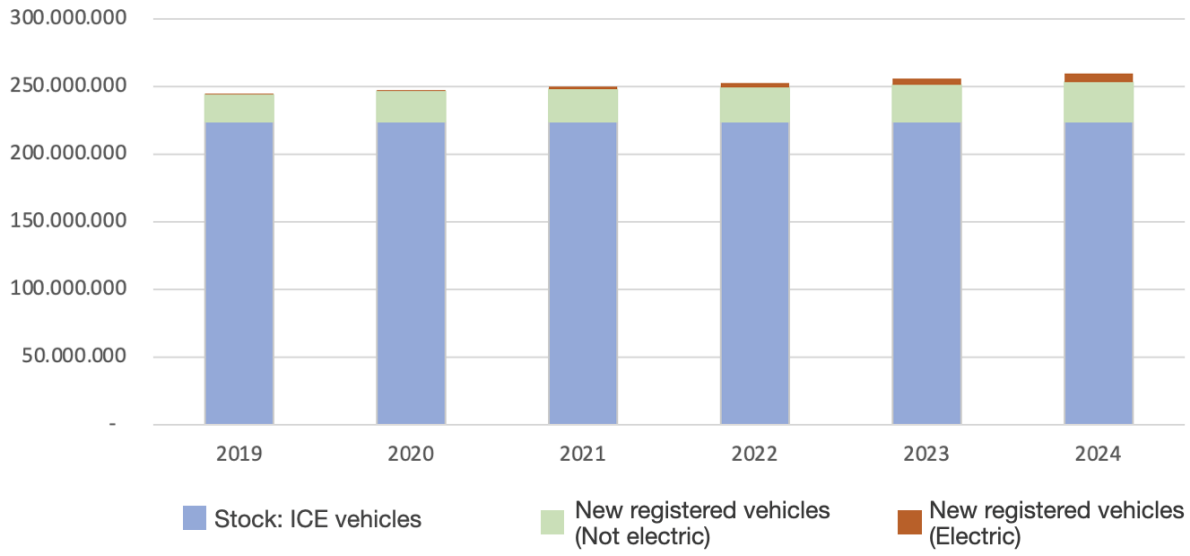


In 2024, the number of cars on EU roads reached 256 million, marking a 1.4% increase compared to the previous year and further expanding an already substantial vehicle fleet.

For the EU's decarbonization policies to be effective, it is crucial that, across the EU, electric vehicles replace ICE vehicles. But the new passenger cars entering the fleet–of which electric vehicles represent in any case a minority, after the more popular HEVs–are simply being added to the (enormous) total already on the roads, without actually replacing internal combustion engine vehicles.

Fig. 2.21: EU fleet, breakdown of annual growth of electric and non-electric vehicles entering the fleet

Source: Eurostat (2025)



2.2.4 The road to emissions reduction

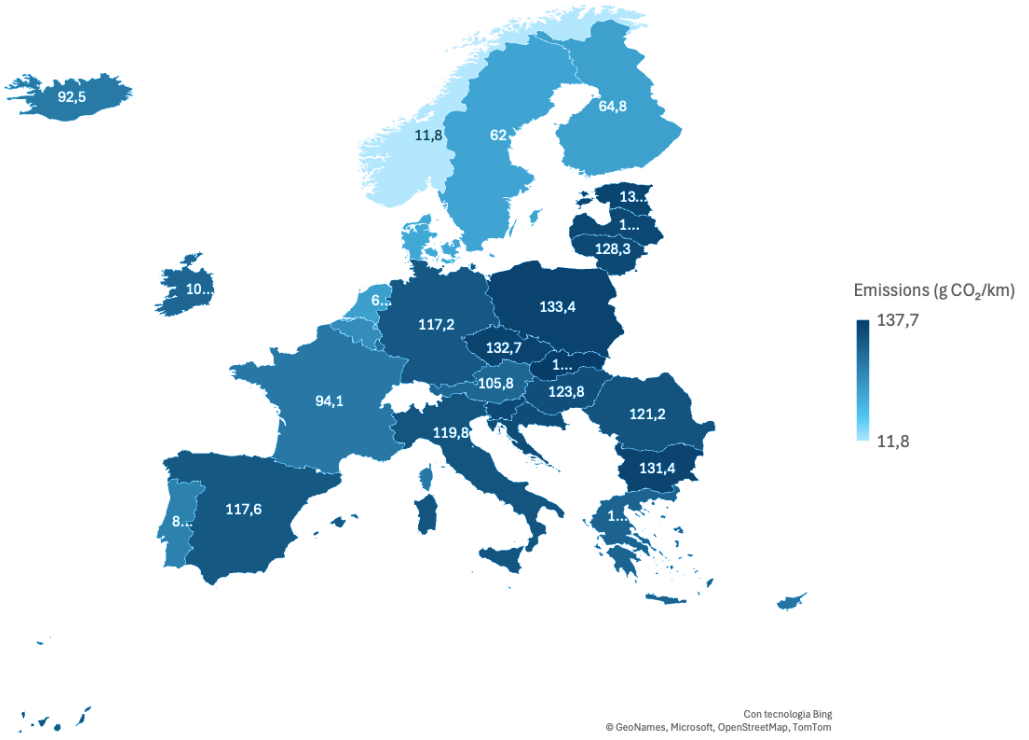
As anticipated, emissions from the transport sector account for one quarter of total EU emissions; within the sector, road transportation alone constitutes the highest proportion of overall transport emissions, emitting 73% of all EU's transport GHG emissions. Passenger cars and light commercial vehicles (vans) are respectively responsible for around 16% and 3% of the EU's total carbon dioxide (CO_2) emissions.

CO_2 emissions from new cars have fluctuated over the years: in 2015, the average value was below 120 g CO_2/km, but reached an all-time-high in 2019, when it peaked at 122 g CO_2/km. After 2020, when average emissions dropped by 11,3%, the rebound of the manufacturing industry in 2021 did not bring CO_2 emissions at pre-pandemic levels: it jumped only by 7%, standing at 116 g CO_2/km. From 2021 onwards, the emission trend has been steadily decreasing.

In 2024, average EU emissions from new cars stood at 108 g CO_2/km. In almost two-thirds of European countries, cars have emitted less CO_2 in 2024 than in 2023, with the most virtuous examples being Cyprus (-24,1%), Malta (-17,8%) and Denmark (-17,4%,). Regarding the average car emissions per EU country, the lowest values can be found in Denmark (60,3 g CO_2/km), Sweden (62 g CO_2/km) and Finland (64,8 g CO_2/km); however, in the European area, Norway stands out by far, scoring only 11,8 g CO_2/km, a figure that is continuing to decline (-20.1% year-over-year).

Fig. 2.22: Average CO_2 emissions from new cars by country (2024)

Source: ACEA (2026)

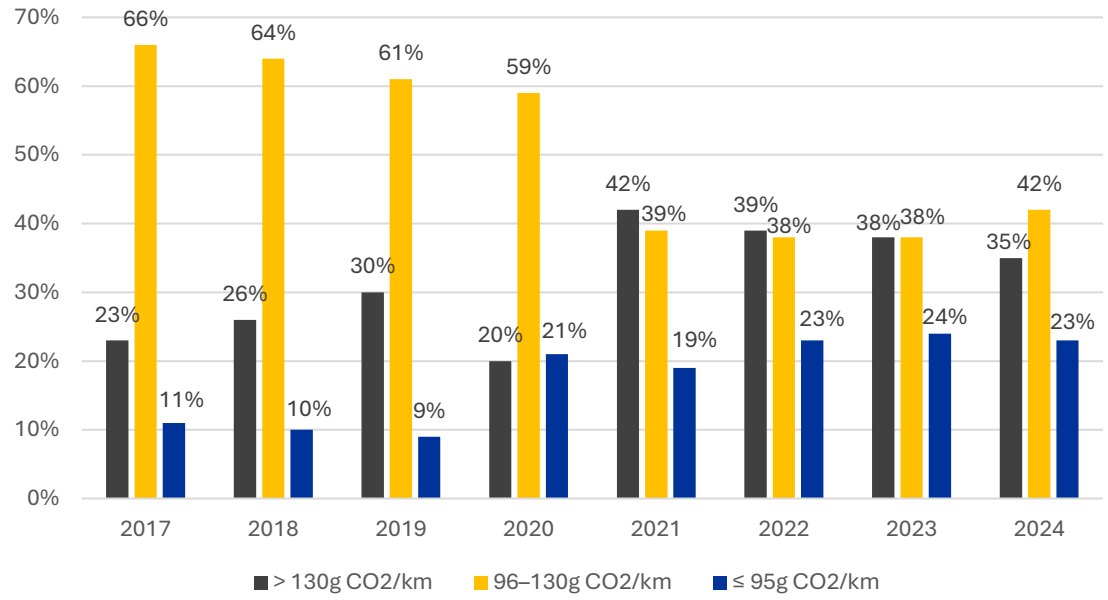


However, despite the gradual and complex nature of the sector's decarbonization, signs of an ongoing structural shift are also evident in the distribution of new passenger cars across emission classes.

The mid-range segment (96–130 g CO_2/km) has experienced the sharpest decline, falling from a dominant 66% share in 2017 to 42% in 2024, as vehicles have shifted toward both ends of the emissions spectrum. At one end, the low-emission segment (≤95 g CO_2/km) nearly doubled its share, rising from 12% to 22%, reflecting the steady growth of BEVs and other low-emission powertrains across Europe. HEVs play a key transitional role: given their wide variability by model and engine type, they span both the mid- and low-emission bands. While their electric assistance significantly reduces CO_2 emissions compared to pure ICE vehicles, contributing to the contraction of the mid-range segment, it is generally insufficient to place them in the lowest emission category. At the other end of the spectrum, the high-emission segment (>130 g CO_2/km) also expanded, increasing from 23% to 35%, likely driven by the growing popularity of larger SUVs and performance vehicles. Overall, the market is gradually fragmenting into three roughly equal segments by 2024: cleaner powertrains are gaining ground, but so too are heavier, more emission-intensive vehicles.

Fig. 2.23: New cars by emission classes in the EU (% share, 2017 - 2024)

Source: ACEA (2026)



The central tension running through the EU's transport decarbonization agenda is not whether to decarbonize, but how. The European automotive sector has unambiguously committed to the transition, having spent several hundred billion euros into electrification and brought more than 300 electric car models to market. Since January 2017, Bruegel estimates that the automotive industry has invested €38 billion in European battery manufacturing facilities and an additional €34 billion in EV facilities. As of September 2025, EU manufacturing sites had the capacity to produce 4.6 million EVs (including pure battery and plug-in hybrid) and 251 gigawatt hours (GWh) of battery cells per year. This compares to 2024 annual demand of 2.3 million electric vehicles and 410 GWh of batteries. Factories in Europe thus have the capacity to produce twice as many EVs as domestic demand, and to meet approximately two-thirds of domestic battery cell demand (Bruegel, 2025).

However, the decarbonization efforts of the EU should be redirected to a comprehensive strategy that does not only focus on new car registrations but also address the bulk of road transport climate-altering emissions: ICE vehicle stock. A genuinely technology-neutral approach does not mean abandoning climate targets or offering the industry an escape route from decarbonization. It means defining the destination – net-zero transport emissions by 2050 – while remaining agnostic about the precise mix of technologies used to get there. The relevant policy objective is reducing and stopping fossil combustion emissions, not stopping all combustion technology – a distinction that opens space for e-fuels, hydrogen, advanced biofuels and hybrid powertrains to complement electrification, rather than be excluded by regulatory design.

2.3 Pharmaceutical Competitiveness and Most Favoured Nation impacts

Alongside the many expected developments that may lead to the definition and closure of some of the most relevant health policy dossiers of the second von der Leyen mandate, 2026 is set to be a decisive year for the sector also from a trade and industrial perspective. After a 2025 marked not only by a further hardening of the global trade order, but also by the emergence of tensions between the two sides of the Atlantic, the year ahead will require efforts either to restore common playing fields or, more realistically, to open new trade routes for the European life sciences sector and, consequently, for Italy as well.

The search for new trade relationships and trade strategies responds to two key needs for the European life science sector:

- The need to accelerate the strengthening of strategic autonomy across all stages of research, production and distribution, including the diversification of sources of raw materials and active pharmaceutical ingredients (APIs), the reduction of critical dependencies on non-EU countries, the continuity of supply, and autonomous preparedness for potential future health crises.
- The need to define new commercial routes in response to restrictions affecting historical trade partners, while further strengthening the export orientation of the European and Italian life sciences industry.

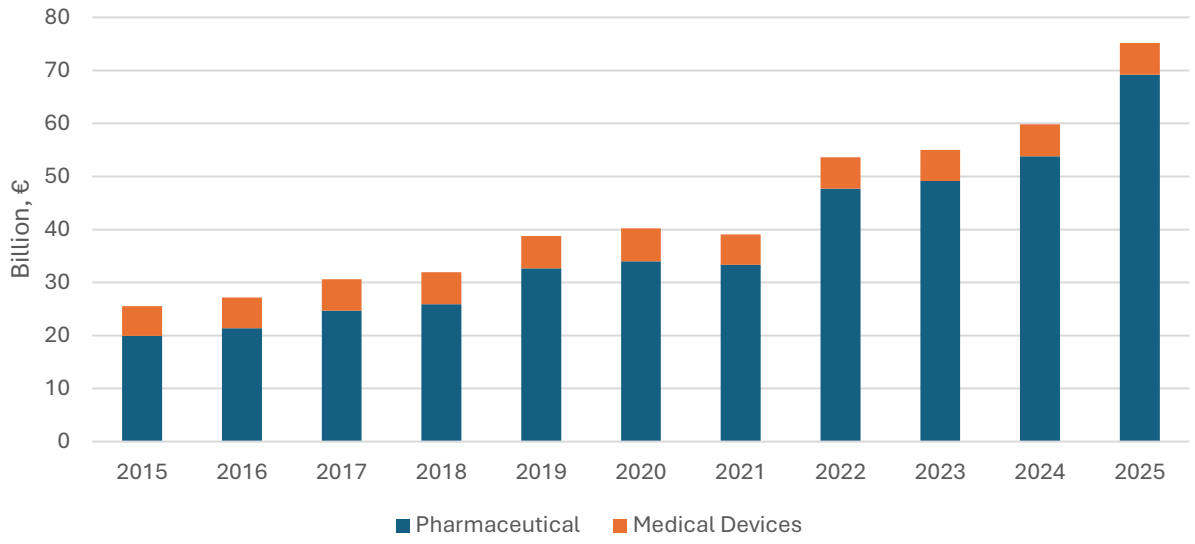
This outlook is clearly highly relevant for countries such as Italy, one of the sector's main global engines, which will be analysed as a surrogate for European potential. The global recognition of the quality of the Italian life sciences industry is confirmed first and foremost by export data and trends: in 2024, exports exceeded €60 billion, while growth rates and preliminary figures suggest that they may have reached €75 billion in 2025.

As shown in the graph below, the strongest component is pharmaceutical exports. Italy is the sixth-largest pharmaceutical exporter worldwide, with a 6.3% global market share, up 16% over ten years, and pharmaceutical exports amounting to €53.8 billion in 2024, up 9.5% compared with 2023. Preliminary analyses for 2025 point to a further sharp increase of 28.5% compared with 2024, bringing export value to €69.2 billion. This leap places the sector second among Italian manufacturing industries by export value, after mechanical engineering.

Over the last decade, national pharmaceutical exports have recorded exceptional growth, more than doubling by 157%. This performance exceeds both the already strong growth of EU pharmaceutical exports, which increased by 137%, and the growth of Italy's manufacturing exports overall, which rose by 65%. These dynamics have led to a growing weight of pharmaceuticals in Italy's foreign trade: while in 2015 the sector accounted for less than 5% of total export value, by 2024 it had reached 8.7%, rising further to 11.3% in 2025.

Fig. 2.24: Life sciences exports from Italy

Source: I-Com elaboration based on Istat and Eurostat data



The sector's strong export orientation makes geopolitical and trade developments an absolute priority. New tensions and rapid shifts in global balances risk generating significant disruption. Before the introduction of tariff barriers by the Trump administration, the United States was one of the main partners for all life sciences segments. These developments are taking place in a broader context which, from a European perspective, had already signalled for several years the need - long underestimated - for a step change in the definition of international trade strategies.

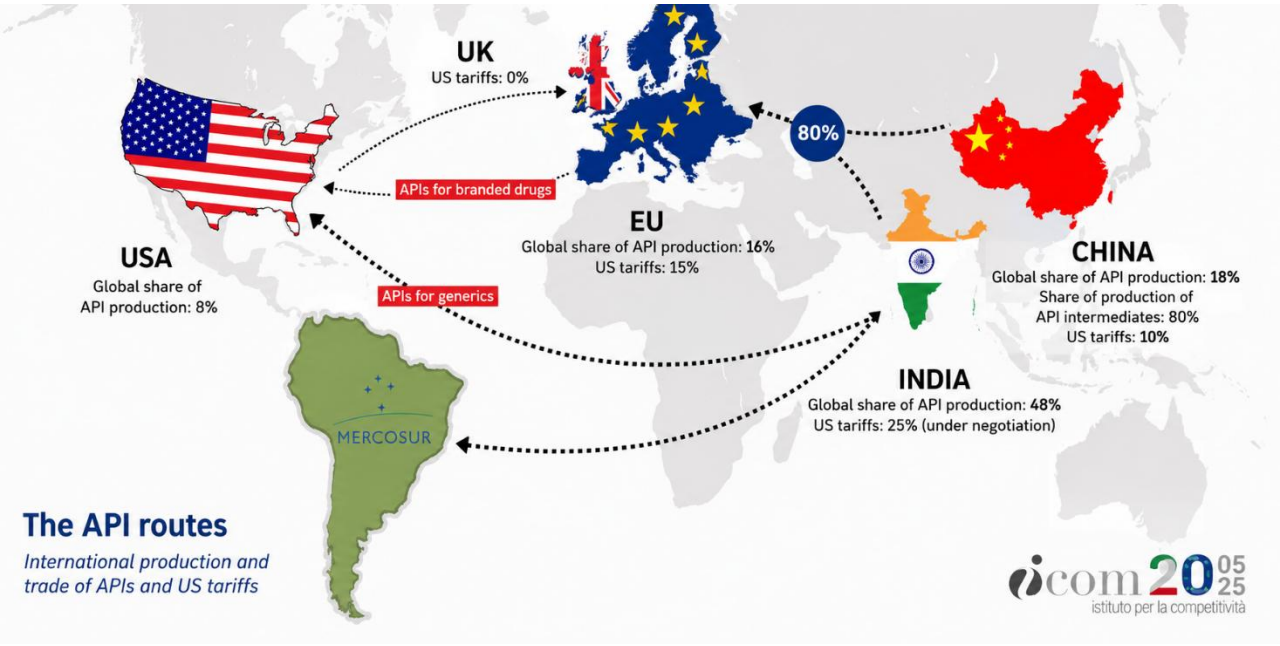
Some early signs had already emerged with Brexit. Literature suggests that the United Kingdom's exit from the single market led to a contraction of around 32% in EU life sciences exports to the UK between 2021 and 2023. This decline was approximately ten percentage points more severe than the reduction in overall bilateral trade, which fell by 20-24%. It is important, however, to underline that Brexit represents a very different scenario from US tariff barriers: in the Brexit case, the decline reflected obstacles generated by new bureaucratic burdens, including regulatory fragmentation and duplication and higher transaction costs, rather than the introduction of tariffs subject to rapid and unpredictable variation.

At the same time, as also highlighted by the Critical Medicines Act, the need to establish new trade relationships also stems from the well-known issue of strategic dependencies, particularly on certain non-EU countries. In the life sciences sector this issue concerns especially the supply of raw materials and, above all, APIs as India alone produces 48% of global APIs and China accounts for 18%. These shares are far higher than those held by Europe and the United States, which account for 16% and 8% of global production respectively. As a result, it is estimated that a very large share of APIs consumed in the EU - up to 80% or more - comes from Asian countries, especially China and India. A similar pattern of dependence on Asian suppliers can be observed in Mercosur

countries, although with lower domestic industrial capacity, while for the United States the EU is also an important supplier.

Fig. 2.25: APIs global production and trade

Source: I-Com, based on data from DCAT Value Chain Insights (2022) and the Trade Compliance Resource Hub – Reed Smith (2025)

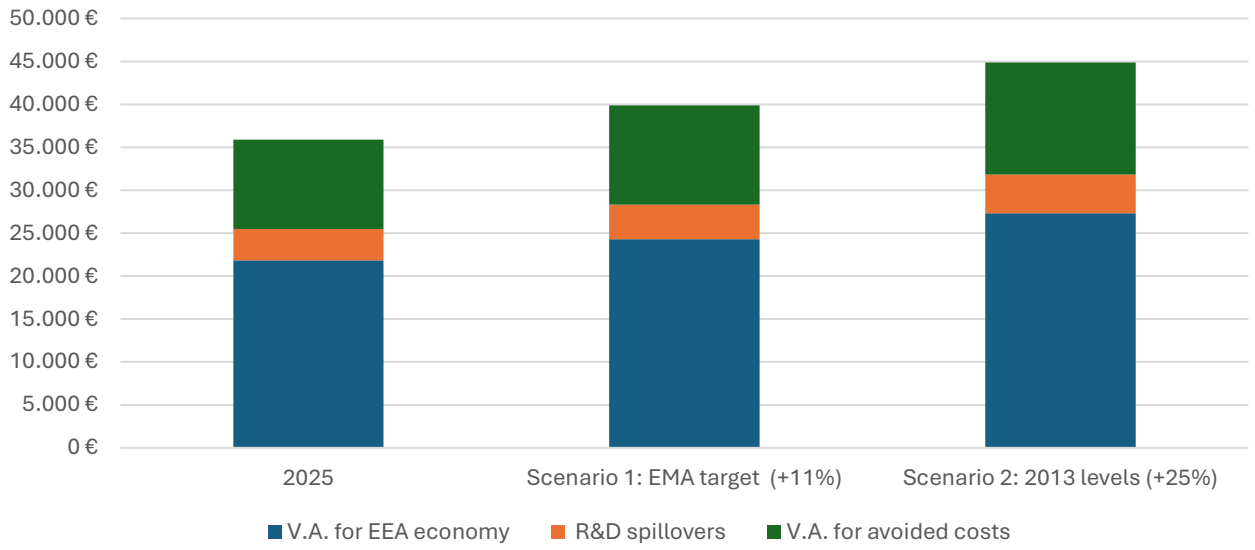


Closely linked to these issues are the scenarios concerning research and development (R&D) activities and clinical trials, as highlighted both in the Draghi Report (Draghi, 2025) and in the first documents regarding the European Life Sciences Strategy launched in 2025. In fact, data on research investment and clinical trials point to a significant slowdown in Europe compared with other global players: between 2013 and 2023, the share of clinical trials conducted in Europe fell from 22% to 12%, resulting in an estimated loss of 60,000 jobs across the continent. This decline reflects a combination of factors, including regulatory complexity, longer activation timelines and fragmentation across national systems.

Beyond reducing opportunities for early access to innovative therapies and weakening the EU's competitive position vis-à-vis the United States and China, this trend also limits the generation of added value. Today, clinical trial activity accounts for €21 billion in net added value in Europe, including €1.9 billion in Italy, and €36 billion in total added value across the wider supply chain, including €2.6 billion in Italy. A recent EFPIA study shows that a gradual increase in the number of clinical trials back to 2013 levels could raise total European added value to €45 billion, an increase of €8.9 billion, of which €651 million would be generated in Italy.

Fig. 2.26: Increase in the number of clinical trials scenarios: economic impact for Europe (€, million)

Source: I-Com, EFPIA (2026)
Note: Scenario 1 based on the EMA target (2025) (+11.1%); Scenario 2: increase in the number of clinical trials to 2013 levels (+25%)



2.3.1 Tariffs and MFN: the relationship with the United States

The recent growth signals from Italy's national life sciences ecosystem indicate that such products have considerable potential to gain further space in international markets. However, new geopolitical and tariff-related risks are generating significant concern, especially given the strong connection with the United States. In the pharmaceutical sector, exports to the US have gradually increased over the last decade, with a sharp acceleration after the Covid-19 pandemic.

With exports to the US amounting to around $11.3 billion in 2024, Italy is currently the fourth-largest EU exporter of medicines to the United States and the seventh largest globally. Strong growth has also been recorded in medical devices: in the first two post-pandemic years, exports to the US increased by 24.4%, making the United States Italy's leading export destination in this segment, a position it still holds today, with annual exports of €860 million, followed by Germany and France.

Given the strong commercial ties between the EU and the United States, the introduction of sectoral tariffs by the Trump administration should not be underestimated, as it is expected to have significant effects on the European and Italian life sciences industries. In pharmaceuticals, 15% tariffs are worth around $18.6 billion per year overall, of which $1.7 billion derives from tariffs on imports from Italy. The real impact, however, may be even greater. Farmindustria estimates a negative effect of around €2.5 billion, as companies face not only the specific additional cost but also regulatory unpredictability and numerous hidden and indirect costs that may hinder investment and long-term strategic planning. Taking exchange rate dynamics alone into account, Farmindustria estimates that the impact could rise to €4 billion.

Alongside tariffs, Italy and Europe also face the effects of the US decision to implement *"Most Favored Nation"* (MFN) pricing for certain medicines reimbursed by Medicare, with the aim of reducing federal pharmaceutical expenditure. This system essentially links the price recognised in the United States to the lowest price applied in a basket of advanced countries, mainly European ones. The underlying economic logic is that of external reference pricing: shifting part of the bargaining asymmetry that currently favours the US market onto producers, thereby compressing margins on high-cost medicines.

The key point is that MFN disrupts the economic equilibrium on which the global pharmaceutical market currently rests. At present, there is an implicit form of price discrimination: companies sell the same medicine at much higher prices in the United States and at lower prices in Europe, where public health systems negotiate prices more aggressively. This model allows firms to recover a large share of their research and development costs in the US market, which accounts for around 40-50% of global sector revenues despite covering a much smaller share of the world's population.

In European countries such as Italy, medicine prices are often significantly lower than in the United States due to centralised negotiations or public regulatory mechanisms. This makes Italy a natural candidate for setting a "lower reference price" in the calculation of MFN benchmarks.

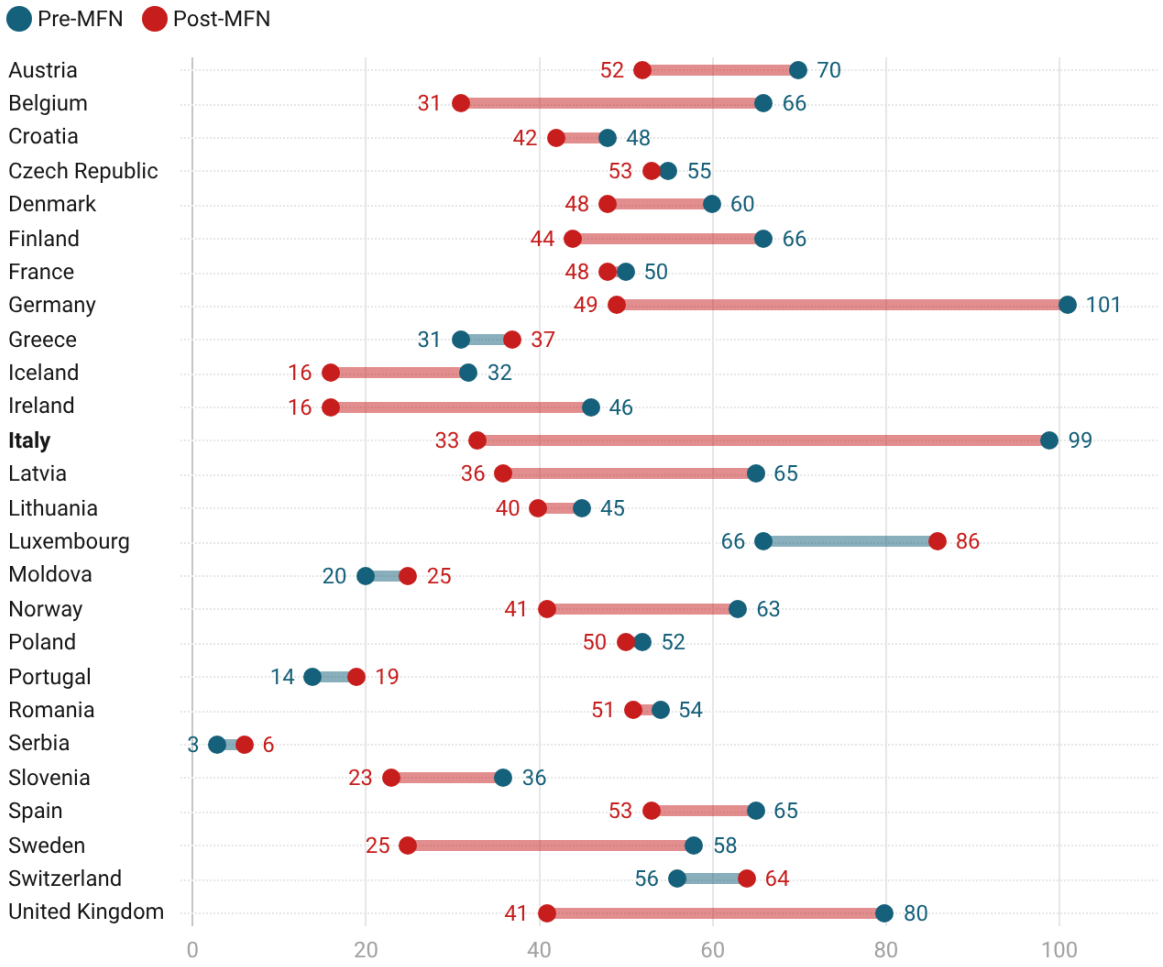
For Italy, the potential effect is twofold. On the one hand, the Italian system risks becoming a downward benchmark for the US market. This may increase the incentive for multinational companies to delay launches or negotiate higher initial prices in lower-price countries in order to avoid international spillover effects. In practical terms, this could translate into upward pressure on ex ante prices or slower access to new therapies. On the other hand, a structural compression of revenues in the US market - the most profitable market for many innovative companies - could reduce global investment capacity in R&D and, over time, also affect the location of production and clinical trials in Europe, including Italy.

Indeed, in the first ten months of MFN implementation, the number of drug launches in EU markets fell by around 35% compared with the previous ten months. Within this overall contraction, Italy appears to be the most severely affected country: the number of new market launches dropped from 99 to 33, a decline of 66.7%, raising urgent concerns over patients' access to innovative therapies.

Similar, although less pronounced, trends are also affecting other countries included in the US reference basket - historically among the leading markets by launch volume. Declines have been recorded in Sweden, down 57%, Belgium, down 53%, and Germany, down 52%, while the impact is much lower in Spain, down 19%, and especially in France, down 4%.

Fig. 2.27: New drug launches in Europe: the Impact of the first 10 months of MFN

Source: I-Com, based GlobalData data. Note: Launches are based on the first pricing dates; each drug dosage is counted separately.



These figures confirm that the alignment of US prices has reduced expected margins, discouraging rollout in markets based on centralised price negotiation. For a company, accepting a negotiated price in one of these countries now entails the risk of triggering an automatic price reduction on a very large scale in the United States.

Overall, rather than generating immediate direct costs for the Italian National Health Service, MFN risks producing indirect effects in terms of access, industrial attractiveness and potential competitive disadvantage for Italy, which is both an exporter and a pharmaceutical producer deeply integrated into global value chains. A structural compression of revenues in the US market - the most profitable market for many innovative companies - would reduce global R&D investment capacity and could also affect, in the longer term, the location of manufacturing and clinical trials in Europe, including Italy.

The consequences, however, are likely to fall primarily on citizens, who may be denied access to the most recent and innovative therapies. The most emblematic case concerns medicines for bronchiectasis, a severe chronic lung disease, for which the launch has been frozen in Italy and

Europe. Commercialisation has also been halted for a new class of painkillers developed to address addiction, as well as for medicines for rare diseases and genetic therapies, which are typically characterised by high costs.

2.3.2 The EU-Mercosur Agreement: what effects on the Life Science industry?

A further geopolitical and international trade development concerns the EU-Mercosur Agreement[14], which is still awaiting final approval. The agreement would have significant implications for the life sciences industry, particularly in terms of trade, competitiveness and supply chains, as it provides for the gradual elimination of tariffs on industrial products, including medicines, APIs and intermediate chemical products, as well as the reduction of non-tariff barriers currently affecting the markets of Brazil, Argentina, Paraguay and Uruguay.

These countries are not central players in the global production of medicines or APIs, but they do play an important role as expanding pharmaceutical consumption markets and as producers of finished medicines, while remaining strongly dependent on API imports. According to European Commission estimates, by 2040 the agreement could generate an increase of more than €2.6 billion in EU exports in the life sciences sector alone. The elimination of tariffs currently ranging between 10% and 18% could, according to EFPIA, improve the competitiveness of high value-added products, including innovative medicines, biologics and vaccines, while regulatory cooperation could reduce the time and costs required for market access[15].

Focusing on Italy, the country already exports €1.2 billion per year in life sciences products to Central and South America, more than half of which goes to the four countries covered by the agreement. This represents 9% of Italy's total exports to the area. It is therefore reasonable to estimate that the value of Italian pharmaceutical exports could increase by several hundred million euros, potentially reaching €1.6-1.7 billion per year once the agreement is fully operational.

Although limited in relation to the total value of Italian life sciences exports, this increase is strategically relevant because it concerns markets experiencing strong demographic and healthcare growth, and because it would strengthen the geographical diversification of foreign sales in a high value-added sector. Current data already show significant pharmaceutical export activity towards Brazil and Uruguay, while also pointing to substantial growth opportunities in Argentina, where Italian life sciences activity has declined markedly since 2022. A second relevant factor is that these are markets where Italy records a clearly positive trade balance, which broadly

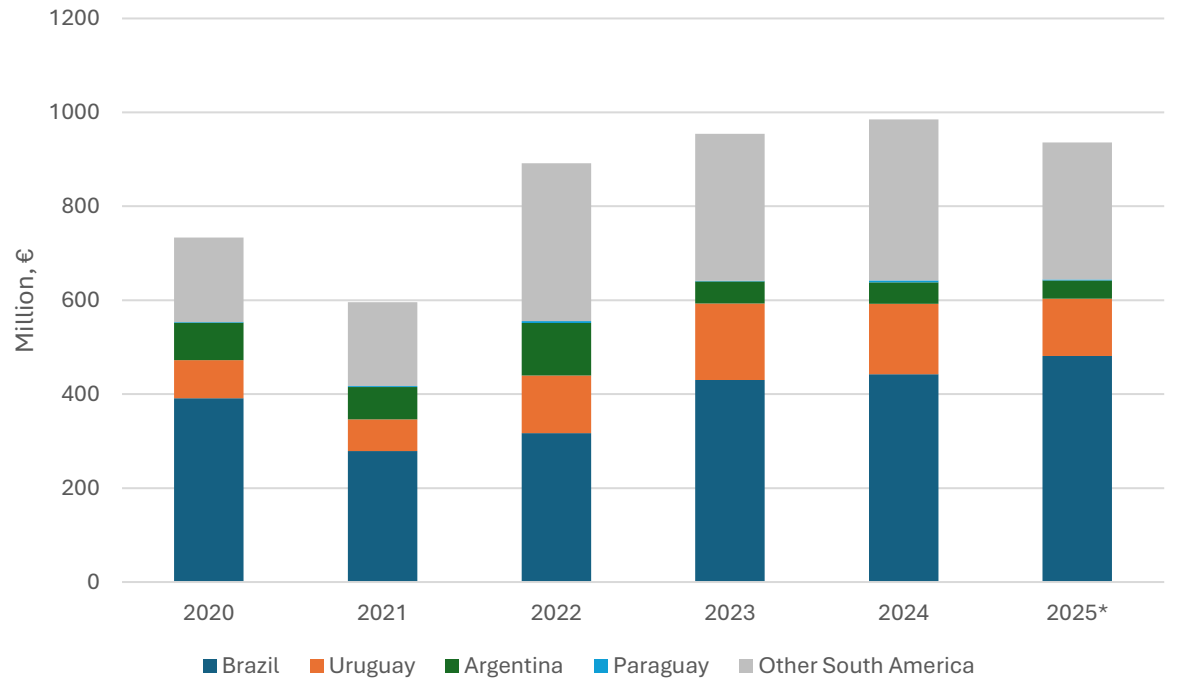
[14] https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/mercosur/eu-mercosur-agreement/factsheet-eu-mercosur-partnership-agreement-italy_en
[15] https://www.efpia.eu/news-events/the-efpia-view/statements-press-releases/efpia-statement-on-the-eu-mercosur-free-trade-agreement/

corresponds to export value. This indicates that, at least in the short and medium term, export potential is considerably greater than the possible risks linked to imports and competition with Italian products.

At the same time, some critical issues must continue to be monitored, particularly the risk that trade opening may affect the regulatory, quality and intellectual property protection standards that characterise the European and Italian model. However, considering the limited industrial activity of Mercosur countries in this sector - unlike in agriculture, where concerns over imports are more pronounced - it appears clear that for European and Italian life sciences the agreement may represent an opportunity in the broader redefinition of trade routes. South American countries offer relevant market opportunities and could become diversification partners over the medium term.

Fig. 2.28: Pharmaceutical trade between Italy and MERCOSUR countries

Source: I-Com, based on Istat data (2026). *Through October 2025



2.3.3 The EU-India Agreement and the Strategic Role of APIs

After negotiations lasting almost twenty years, on 27 January the EU and India formally announced the signing of a Free Trade Agreement establishing a commercial partnership between Europe and this major Asian country[16]. This represents a strategic step of considerable importance for international trade and for the positioning of European and Italian companies. With a population of around 1.4 billion people, an economy already ranking as the fourth largest in the world, and strong demand for technology, infrastructure, industrial goods and advanced services, India represents a major future market for EU and Italian exports.

Together with the EU-Mercosur agreement, this agreement provides a new instrument to mitigate the impact of US tariff policies by redirecting trade flows, diversifying supply chains and opening new markets for European products and services. For Italian companies, it opens a new phase. In the past, many sectors were constrained in their expansion into India by high tariff barriers and regulatory complexity. The new agreement now offers a more accessible and structured framework, which could help Italian firms reassess such strategic decisions. The EU and India already trade goods and services worth more than €180 billion per year, supporting almost 800,000 jobs in the EU. The agreement is expected to double EU goods exports to India by 2032 by eliminating or reducing tariffs on 96.6% of the value of EU goods exports to India, generating estimated savings of around €4 billion per year in duties on European products.

Focusing specifically on life sciences, the trade agreement provides for the elimination or substantial reduction of tariffs on pharmaceutical products and medical devices. Until now, duties on EU exports could reach 11% for medicines and APIs and up to 27.5% for medical devices. The agreement also creates more favourable conditions for access to the Indian market through regulatory cooperation and customs facilitation. For the EU, this market represents a combined value of around €570 billion in medicines and medical technologies but has so far been characterised by tariff and procedural barriers that have limited European and Italian penetration despite significant estimated demand.

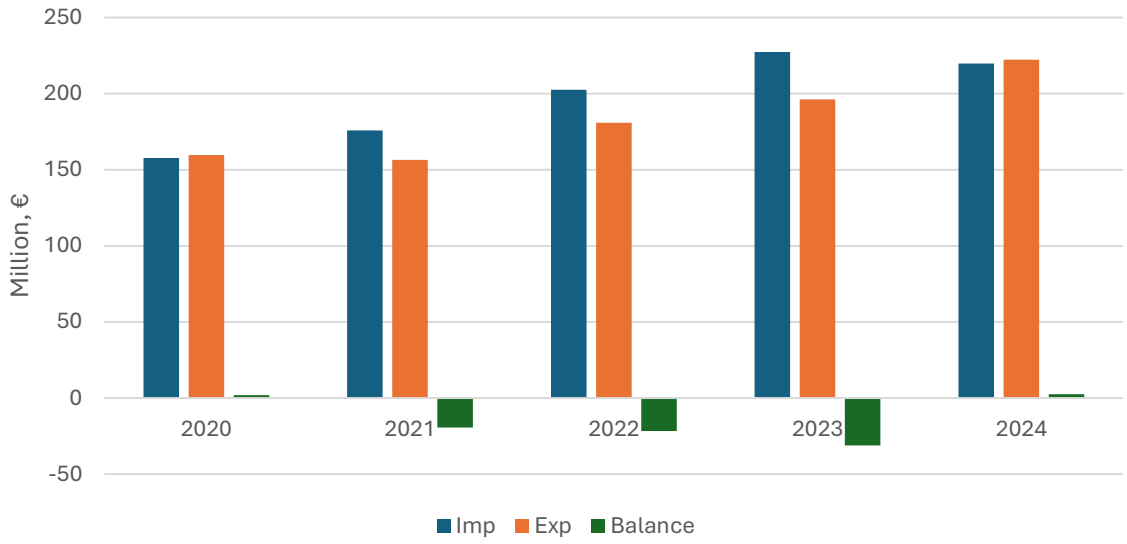
As shown by trade flow data, which indicate an almost balanced trade position, the agreement with India has a different purpose from the Mercosur agreement, where Italian and EU industry can primarily aim to expand market presence. The strategic value of the agreement with India lies in its capacity to support the diversification of raw material supply chains, strengthen the resilience of the European health sector, and reduce dependence on individual external suppliers in a context of geopolitical tensions and fluctuating global trade policies. This is particularly important for APIs, for which India, as noted above, is the leading global producer. While India - already a world leader in generic medicines and APIs - will further consolidate its role as a global hub, Italian and EU companies will also be better positioned to compete in the Asian market,

[16] https://ec.europa.eu/commission/presscorner/detail/it/ip_26_184

supporting higher value-added exports, finished products, and potential industrial and R&D partnerships.

Fig. 2.29: The pharmaceutical trade between Italy and India

Source: I-Com analysis based on Istat (2026) data



Policy Recommendations

Energy and Competitiveness

1. **Fast-Track Strategic Energy Infrastructure**.

The EU should accelerate permitting procedures and significally expand investment in electricity grids, energy storage assets and facilities, and cross-border interconnections through a European fast-track mechanism for strategic energy infrastructure projects. Lengthy authorization processes, insufficient network capacity, and deployment bottlenecks now represent the main constraint to competitiveness and have become major obstacles to renewable deployment, electrification, and industrial competitiveness. A streamlined regulatory framework, combined with targeted financing from EU instruments, national governments, and private assets, would reduce project delays, enhance energy system flexibility, strengthen market integration, and ensure that infrastructure development keeps pace with the Union's decarbonization and industrial objectives.

2. **Reduce Electricity Costs**.

Industrial competitiveness requires a structural reduction of electricity costs through deeper electricity market reform, enhanced long-term contracting mechanisms, and stronger support for energy-intensive industries exposed to global competition. The EU should prioritize measures that improve access to stable and affordable electricity for industrial consumers, including the expansion of long-term contracting instruments and targeted support mechanisms for energy-

intensive sectors. Lower and more predictable electricity costs would improve investment planning, encourage industrial electrification, support decarbonization efforts, and reduce the risk of carbon leakage and industrial relocation.

3. **Reduce Clean-Tech Dependencies.**

Europe must reduce strategic dependencies in clean-tech value chains, and, at the same time, it should strengthen domestic capabilities across critical clean-technology supply chains by operationalizing the Critical Raw Materials Act through the accelerated development of extraction, refining, processing, and recycling capacities for strategic raw materials. At the same time, the EU should establish targeted "Made with Europe" partnerships with resource-rich countries to secure diversified and resilient supply chains for critical minerals of strategic interest, reducing vulnerability to geopolitical disruptions, supply shortages, and price volatility. Strengthening domestic production and recycling capacity while expanding international cooperation would reduce geopolitical vulnerabilities and improve Europe's ability to compete in emerging clean technology markets.

4. **Close the Innovation Gap**.

The EU should focus on bridging the gap between technological development and commercial deployment by increasing public and private investment in research, development and industrial innovation. Beyond funding early-stage technologies, Europe should strengthen commercialization mechanisms for European technologies by expanding venture capital availability, supporting industrial demonstration projects, and simplifying access to financing for scale-ups. A coordinated EU-wide framework is needed to retain industrial production, prevent technology leakage, and accelerate the deployment of next-generation clean technologies such as advanced batteries, hydrogen, carbon capture, and digital energy solutions. Innovation policy must increasingly focus on strengthening commercialization pathways in order to allow successful technologies to scale within Europe rather than merely supporting their development, increase productivity growth, and create new industrial ecosystems in strategic sectors. This would help transform scientific leadership into industrial leadership and generate long-term economic value from European innovation.

5. **Link Decarbonization and Strategic Autonomy**.

Without a coordinated approach that links decarbonization, industrial policy and strategic autonomy, Europe risks becoming dependent not only on imported fossil fuels, but also on imported technologies that will define the next global industrial cycle. The EU should integrate climate, industrial, trade, and security objectives into a single strategic framework for the energy transition. Policy decisions should be assessed not only according to their emissions reduction potential but also according to their implications for supply-chain resilience, technological leadership, and economic competitiveness. Such an approach would encourage the development of domestic industrial capacities in strategic sectors while reducing exposure to external

dependencies. Aligning decarbonization with broader economic and geopolitical objectives would help ensure that the energy transition strengthens, rather than weakens, Europe's long-term strategic position.

Transport Decarbonization

1. **Target the Existing Fleet**.

The EU should complement its focus on new vehicle registrations with stronger measures targeting the existing fleet: coordinated scrappage schemes, incentives for low-emission retrofitting and support for sustainable fuels can deliver near-term emissions reductions while avoiding the slow turnover associated with fleet renewal alone. Targeting vehicles already in circulation would also ease the social and economic burden of the transition by providing more affordable decarbonization options for households and businesses unable to immediately replace their vehicles.

2. **Accelerate Infrastructure Deployment**.

The EU should prioritize the rapid expansion of charging and refuelling infrastructure, particularly in rural areas and along key transport corridors, by reducing administrative barriers, harmonizing permitting procedures, and improving coordination between national and local authorities. Uneven infrastructure availability continues to be a major barrier for consumers and businesses, discouraging them from adopting low-emission vehicles. Expanding infrastructure coverage would reduce range anxiety, improve consumer confidence, and support the development of a genuinely integrated European market for zero- and low-emission mobility. Greater infrastructure availability would also increase competition among service providers, helping reduce costs for end users.

3. **Strengthen the Battery Value Chain.**

Industrial competitiveness requires a comprehensive battery and critical raw materials strategy that goes beyond assembly capacity to strengthen Europe’s position across the entire value chain. Greater investment in mining, refining, processing, recycling, and next-generation battery technologies would strengthen supply security and capture more value within Europe. Developing a fully integrated battery ecosystem would reduce exposure to external supply disruptions, enhance technological leadership, and support the growth of strategic industries linked to electrification. It would also create economies of scale that improve the long-term competitiveness of European battery producers in global markets.

4. **Allow Multiple Technological Pathways**.

The EU should adopt a more flexible regulatory framework that preserves the 2050 decarbonization objective while allowing multiple technological pathways, including hybrids, e-fuels, hydrogen and advanced biofuels, to contribute to emissions reduction where economically and industrially viable. A technology-neutral approach that prioritizes emissions reductions while

allowing different solutions to compete according to their environmental performance, cost-effectiveness, and industrial feasibility, would be a strategic pathway to enable sectors facing specific technical or economic constraints to pursue the most suitable decarbonization pathways while preserving industrial competitiveness. A broader technological portfolio would also reduce the risks associated with relying too heavily on a single solution and encourage innovation across multiple sectors. Such an approach would increase resilience, facilitate a smoother transition, and better accommodate the diverse characteristics of European transport markets.

5. **Align Climate and Industrial Policy.**

The EU should ensure that climate objectives are systematically assessed alongside their implications for industrial competitiveness, employment, and technological leadership. Regulatory frameworks that fail to account for industrial realities risk creating investment uncertainty, reducing production within Europe, and increasing dependence on imported technologies and manufactured goods. A more integrated approach would provide clearer long-term signals to investors, support industrial transformation, and help retain strategic manufacturing capacity within the Union. Aligning climate and industrial policy would make the transition more economically sustainable while reinforcing Europe's position in increasingly competitive global markets.

6. **Support Automotive Supply Chain Conversion.**

The EU should use the Industrial Accelerator Act to support the transformation of the entire automotive value chain, with particular attention to component manufacturers, SMEs and industrial districts exposed to the transition from traditional powertrains to low- and zero-emission mobility. The Act should ensure that industrial acceleration measures do not focus only on final vehicle assembly, batteries or electric powertrains, but also enable suppliers to invest in R&D, adapt production processes, improve energy efficiency, access finance, reskill workers and integrate into new European value chains. Supporting supply chain conversion would help preserve industrial capacity, employment and technical know-how within Europe while ensuring that the transition to cleaner mobility strengthens, rather than weakens, the EU’s manufacturing base.

Pharma Industry

1. **Levelling up on the health programmes**

The EU should use the entry into force of key health dossiers, including the Biotech Act and the Critical Medicines Act, as well as the IA Act and the more specific Safe Hearts Plan, as an opportunity to upgrade both the ambition and the speed of its health industrial policy. After years of negotiations, these initiatives can mark a turning point for Europe’s life sciences sector, but they also expose a structural weakness: EU action in strategic health areas remains too slow compared with other global players. The work underpinning the EU Life Sciences Strategy moves in the right

direction, but it must now be followed by more incisive action, both at EU level and within individual Member States, recognising their specific industrial strengths while supporting them in closing long-standing gaps. The Union should therefore move beyond cautious and fragmented interventions, adopting more decisive tools to address supply-chain dependencies, shortages, R&D gaps and unequal access to prevention and innovation. Health must be treated as a strategic asset for Europe, with stronger political ownership, faster implementation mechanisms and more radical policy instruments capable of matching the scale of global competition and public health challenges.

2. **Adequate financing to meet the ambitions.**

The EU should ensure that its strategic health ambitions are matched by adequate and dedicated financial instruments. While public health competences remain limited and the EU budget accounts for only slightly more than 1% of Member States' GDP, major initiatives in this field cannot rely solely on political commitments without stable funding. The next Multiannual Financial Framework should therefore include specific investment lines for health, ensuring continuity for successful initiatives such as Europe's Beating Cancer Plan beyond the end of EU4Health funding and providing dedicated resources for the Strategic Health Plan. A clearer financial architecture would strengthen implementation capacity, avoid fragmentation across programmes and give Member States and stakeholders greater predictability in planning long-term health investments.

3. **A Union strategy to face the MFN**

The EU should address the implications of US *Most Favored Nation* pricing through a single, coordinated European strategy rather than leaving Member States to negotiate fragmented bilateral arrangements with Washington. While several EU countries are already exploring individual responses to protect their national markets, the scale of the challenge requires action at EU level: MFN would affect all Member States by increasing pressure on negotiated prices, weakening Europe's attractiveness for pharmaceutical launches and creating new barriers to timely patient access. A common European position would strengthen negotiating leverage, prevent internal competition between national health systems and ensure that the burden of transatlantic pricing tensions does not fall unevenly on patients. The objective should be to safeguard both the sustainability of public health systems and Europe's capacity to remain an attractive market for innovation, avoiding a scenario in which access to new therapies becomes increasingly dependent on geopolitical and trade dynamics.

4. **New trade partnerships**

The EU should pursue new trade partnerships in life sciences as a strategic complement to efforts aimed at strengthening domestic production and making Europe more attractive for research, development and manufacturing. While rebuilding internal capacity remains essential, Europe also needs a medium- to long-term strategy to diversify trade routes, reduce exposure to geopolitical disruptions and limit critical dependencies on single external suppliers. In this perspective, the

agreement with India can play a key role in securing and diversifying the supply of APIs and raw materials, given India's central position in global production. At the same time, the EU-Mercosur agreement should be seen as an opportunity to open new export markets for European pharmaceutical products, particularly at a time when traditional trade relationships are becoming more uncertain. A balanced health trade strategy should therefore combine strategic autonomy with openness, using external partnerships to strengthen resilience, competitiveness and the global positioning of Europe's life sciences industry.

5. **R&D and clinical trials at the centre of the EU's strategy**

As highlighted by Draghi (2025) it is urgent for the EU to make the recovery of its R&D and advanced manufacturing capacity as a central objective of its life sciences industrial policy, reversing the gap accumulated over the past decade and realigning Europe with the trajectories of its main global competitors. This requires an innovation-friendly ecosystem built on stronger public and private investment, greater political attention for health, and closer synergies between Europe's high-quality universities, research centres and industrial production capabilities. At the same time, Europe must reduce bureaucratic burdens, ensure regulatory predictability and avoid introducing new obligations that could further discourage R&D, clinical development and manufacturing activities on the continent. Strengthening innovation capacity means making Europe a place where research can more easily become production, value added and patient access.

3. Long-Term Budget and Resilience

3.1 The Multiannual Financial Framework and Cohesion Policy

3.1.1 The 2021-2027 Multiannual Financial Framework

The Multiannual Financial Framework (MFF) 2021-2027 established the European Union's present long-term budget, with an expenditure ceiling of approximately €1,074.3 billion in 2018 prices, slightly above 1% of EU GNI and broadly in line with historical levels since 1988 (European Union, n.d.; Busse et al., 2025). Negotiated in the context of Brexit, intensifying climate and digital priorities, migratory pressures, and, crucially, the COVID-19 pandemic, it was conceived as a framework that combined crisis responsiveness, performance orientation and cross-cutting green and digital objectives (Schout et al., 2023).

The 2021-2027 MFF is organised into seven headings, with Cohesion, Resilience and Values (€1,099.7 billion) and Natural Resources and Environment (€373.9 billion, including CAP) representing the bulk of spending, followed by Single Market, Innovation and Digital (€143.4 billion) (Council of the European Union, n.d.). Other headings, Neighbourhood and the World, Migration and Border Management, Security and Defence, and European Public Administration, account for smaller but strategically important shares.

Climate action is a core cross-cutting priority: at least 30% of MFF spending should contribute to climate objectives. Within Cohesion Policy, ERDF and Cohesion Fund programmes allocate €94 billion specifically to climate, nearly doubling the 2014-2020 share; including the Just Transition Fund and ESF+ raises climate-related support above €110 billion, or €152 billion with national co-financing, consolidating the European Green Deal's budgetary underpinning (European Commission, 2023b). Digitalisation is supported by Horizon Europe, the Digital Europe Programme and cohesion-funded investments in broadband and digital skills (Busse et al., 2025). Horizon Europe itself receives €95.5 billion, consolidating EU research and innovation programmes under a single framework (European Commission, 2025b).

Migration and security instruments, notably the Asylum, Migration and Integration Fund and the Integrated Border Management Fund, reinforce the EU's capacity to handle migratory pressures and internal security challenges (European Commission, 2024b). External action is streamlined through the Neighbourhood, Development and International Cooperation Instrument (NDICI), which merges several earlier instruments and redirects resources toward the EU's neighbourhood and Africa (Jones et al., 2018).

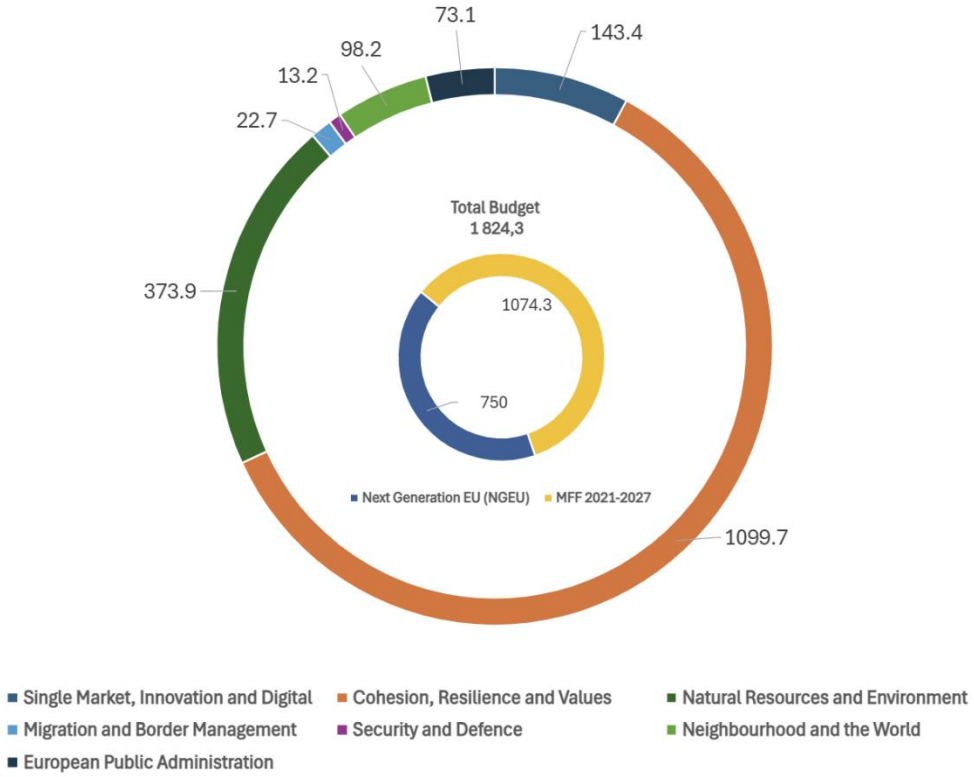
On the revenue side, the MFF relies predominantly on traditional own resources, VAT-based contributions and especially GNI-based contributions. A new plastics-based own resource on non-

recycled plastic packaging waste was the only new category implemented during the period, despite broader Commission proposals for additional own resources (Busse et al., 2025).

The MFF is complemented by the €750 billion NGEU recovery instrument, which is financed by EU-level borrowing and significantly increases the Union's aggregate financial firepower for 2021-2027, combining the traditional budget with unprecedented common debt issuance (Busse et al., 2025).

Fig. 3.1: EU expenditure for 2021-2027. (Billion €, 2018 prices).

Source: Council of the European Union



This framework's flexibility was quickly tested. Russia's invasion of Ukraine in February 2022 and the ensuing energy shock, with gas prices surging from around €25 to €350/MWh, exposed the limits of the MFF's built-in buffers (Tocci, 2022; Siddi, 2025). The Versailles summit in March 2022 anchored the EU's response in REPowerEU, linking energy security with climate objectives and redeploying resources within the existing budget (Schramm & Terranova, 2024).

However, successive crises soon outstripped the available tools. The Commission's proposal for a mid-term revision highlighted three main pressures: rapidly rising interest costs on NGEU borrowing, which exhausted the original €14.9 billion envelope by mid-2023; heightened migratory pressures and the costs of implementing the New Pact on Migration and Asylum; and the need for new strategic investments in competitiveness and critical technologies via the Strategic Technologies for Europe Platform (STEP). The result was a €64.6 billion revision in 2024,

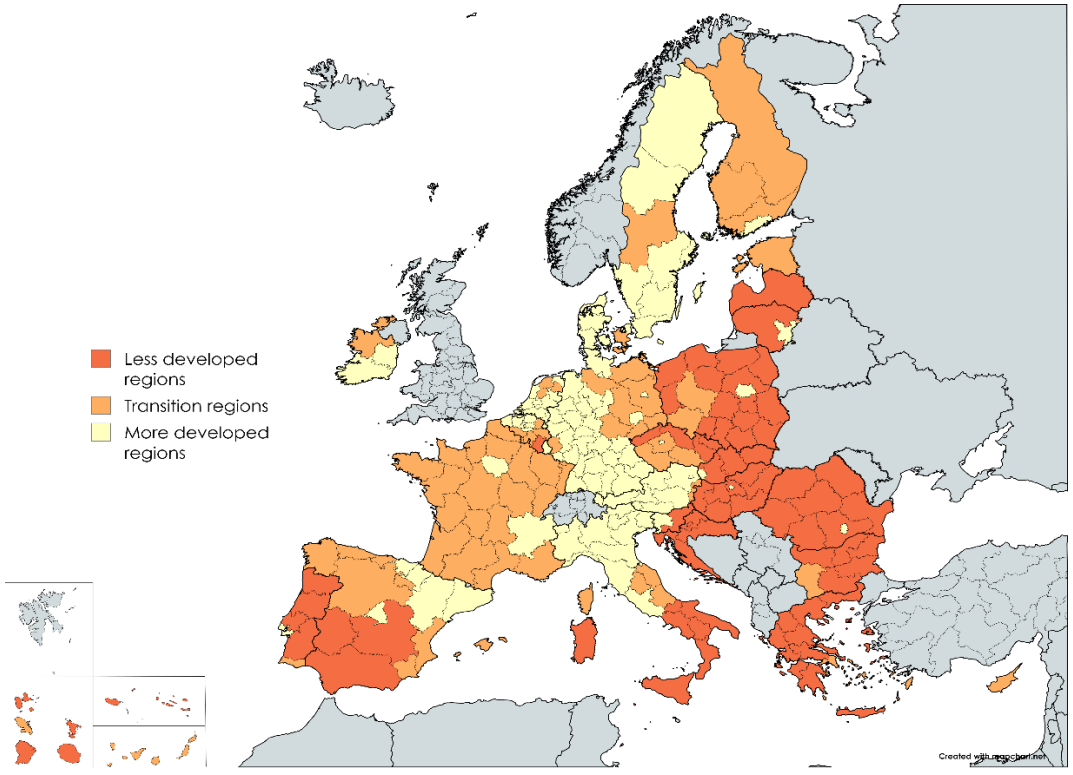
the first in MFF history that increased ceilings, underlining how swiftly shocks had depleted limited flexibility instruments (Eucrim, 2024; European Commission, 2023a).

3.1.2 Cohesion programmes: aligning national economies

With a history as long as that of the European Economic Community, European cohesion policy has consistently been one of the most interesting and expensive programmes on the European agenda. Cohesion Policy is intended to align and advance the economies within the Union, thereby enhancing its resilience and global relevance through investment designed to foster competitiveness and improve quality of life. Generally, cohesion programmes are mainly targeted towards countries and regions struggling to reach economic objectives related especially, but not exclusively, to GDP or GNI (Gross National Income). Another important objective of the Cohesion Policy is to finance cross-country projects and cooperation.

Fig. 3.2: Classification of NUT2 regions

Source: European Commission



The relevance of Cohesion Policy is evident from several perspectives. Firstly, such policy represents the main source of investment for many of the least developed regions[17], where many of the essential elements required to catch up with the rest of the bloc are still missing. Secondly, already developed regions benefit from the policy both in terms of direct investment in strategic

[17] Cohesion policy represents almost 13% of total government investment in the EU and 51% in less developed Member States.

sectors and from spillover-effects resulting from the growth of neighbouring regions. Moreover, these aspects are of fundamental importance to avoid the so-called "development trap", defined as the inability to retain past economic growth and prosperity. Prolonged underperformance is indeed becoming increasingly common at all stages of development (European Commission 2017, 2022). This stagnation is also reinforcing a growing sense that Europe is splitting into two distinct tiers: a shrinking cluster of dynamic, high-powered super-regions where economic and political influence converge, and an expanding periphery of neglected places that feel increasingly marginalised or diminished in relevance compared to their former standing (McCann 2020, McCann and Ortega-Argilés 2021, Rodríguez-Pose 2018)[18]. Therefore, as a third perspective, cohesion programmes are increasing trust in European institutions among European citizens in regions at all stages of development, where concrete interventions can be witnessed at a local level.

The Joint Research Centre (JRC) considers cohesion between European economies as a vital condition for restoring EU competitiveness, preserving the Single Market, supporting the green and digital transitions, and maintaining political support for European integration[19]. Cohesion Policy can expand the EU's productive base – by enhancing infrastructure, skills, governance capacity, innovation ecosystems or access to finance – as well as citizens' purchasing power and aggregate demand. These considerations are also supported by the Ninth Report on Economic, Social and Territorial Cohesion (European Commission, 2024), which argues that removing barriers to movement is not sufficient if regions do not have equal capacity to access markets, infrastructure, skills and investment. Cohesion Policy helps "level the playing field" by improving connectivity, innovation, education and business support. Again, the report stresses that cohesion programmes can counter discontent, Euroscepticism and distrust, elements that can weaken European integration and therefore the Single Market.

Within the European legislative framework, articles 174 to 178 TFEU define Cohesion Policy as a core EU objective aimed at strengthening economic, social and territorial cohesion by reducing regional disparities and improving living standards in least-favoured areas. Article 174 places particular emphasis on rural areas, regions undergoing industrial transition, and territories facing severe and permanent natural or demographic constraints, including sparsely populated northern regions, islands, cross-border areas and mountainous regions. These areas generally present significant untapped potential, as is the case for renewable energy[20]. Furthermore, according to Eurostat, more than one in four people in the EU (28%) live in regions where GDP per capita is below 75% of the EU average, while many Member States continue to display a marked centre-periphery divide, with economic development disproportionately concentrated in capital regions

[18] For more information on the development trap, see The regional development trap in Europe | CEPR
[19] European Commission, Joint Research Centre, Rodríguez-Pose, A. and Dijkstra, L., Cohesion and the Competitiveness Challenge in the EU, European Commission, Seville, 2024, JRC139556
[20] For example, Less developed regions hold the key for Europe's energy transition - CR9 | Cohesion Open Data

and major urban agglomerations. Urban areas in Europe host two-thirds of the EU's population, account for 80% of energy consumption and generate 85% of Europe's GDP.
Article 175 TFEU defines the means through which the EU supports cohesion, namely structural funds such as ERDF and ESF (which will be discussed in the next chapter), the European Investment Bank and other financial instruments. The article, however, defines cohesion as a horizontal policy that must be taken into account by all EU policy and requires Member States to coordinate their economic strategies in this sense.

3.1.3 The 2021-2027 Cohesion programme

The EU 2021-2027 long-term budget (Multiannual Financial Framework, MFF) allocates around €378 billion (2021 prices) to cohesion objectives[21], almost one third of the entire budget. Since European funds co-finance projects with national authorities, the total resources employed should exceed half a trillion euros.

Cohesion programmes have the general objectives of creating jobs, enhancing business competitiveness, promoting economic growth and sustainable development, and improving citizens' quality of life. Formally, the 2021-2027 Cohesion Policy follows 5 policy objectives[22] (excluding the European Territorial Cooperation goal, covered by Interreg, and funds for technical assistance):

PO1) A more competitive and smarter Europe
PO2) A greener, low carbon transitioning towards a net zero carbon economy
PO3) A more connected Europe by enhancing mobility
PO4) A more social and inclusive Europe
PO5) A Europe closer to citizens by fostering the sustainable and integrated development of all types of territories

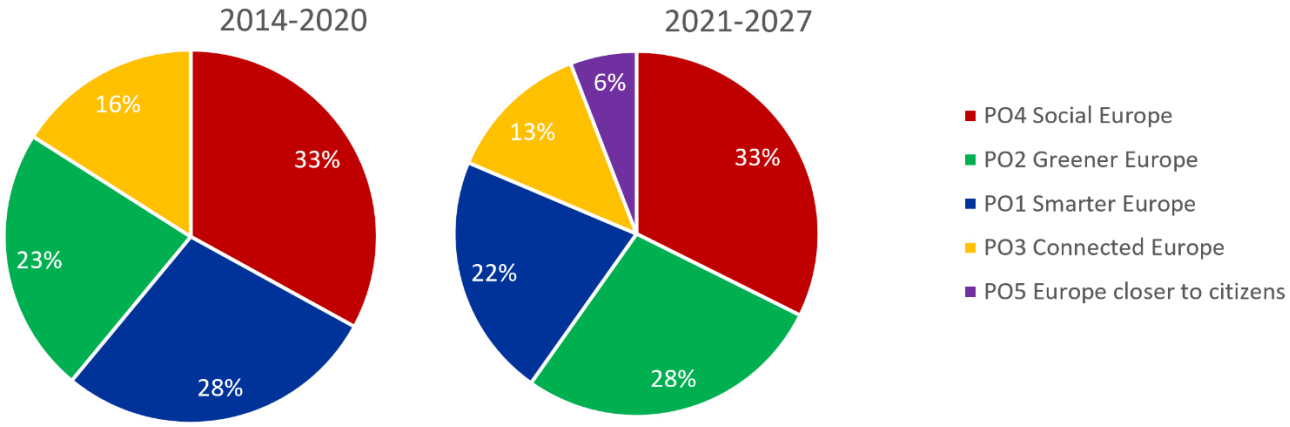
Additionally, Under the JTF, a dedicated specific objective (PO8) was established to address the social, employment, economic and environmental impacts of the transition towards climate neutrality.

Compared to the 2014-2020 Cohesion Policy, which had a budget of over €400bn (2014 prices), the 2021-2027 programme concentrates more resources – both in relative and absolute terms – towards environmental objectives. PO4 Social Europe, which tackles in particular the labour market and social inclusion, continues to be the main target for cohesion investment, currently employing one third of the budget.

[21] The total allocation is €392 billion, however €11.3 billion will be transferred to the Connecting Europe Facility, while €2.5 billion will be used under Commission managed instruments and EU technical assistance in support of programming.
[22] The objectives are established under the Common Provisions Regulation (Regulation (EU) 2021/1060).

Fig. 3.3: Allocation of cohesion resources between policy objectives. Comparison between 2014-2020 and 2021-2027 MFFs

Source: Cohesion Open Data Platform. Note: the 10 'Thematic Objectives' of the 2014 programme are here mapped to 4 current POs for the comparison.



Four instruments cover such objectives, under the Investment in Jobs and Growth (IGJ) and the European Territorial Cooperation goal (Interreg) goals:

- European Regional Development Fund (ERDF), € 214bn
- European Social Fund Plus (ESF+), € 94bn
- Cohesion Fund (CF), € 39bn
- Just Transition Fund (JTF), € 20bn

Fig. 3.4: Initial resource allocation between cohesion instruments (2021-2027 MFF)

Source: Cohesion Open Data Portal

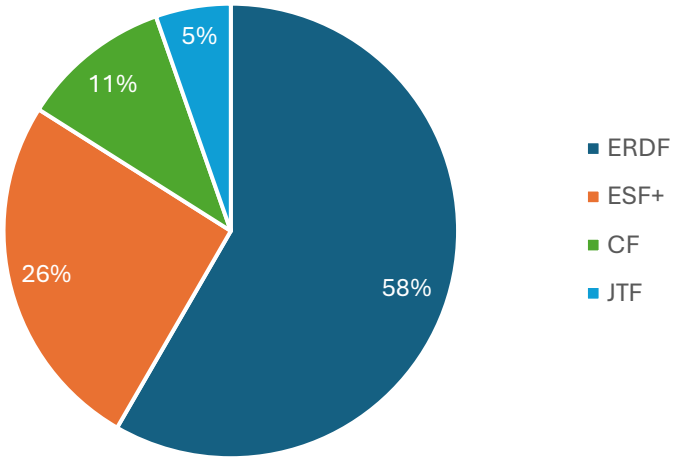
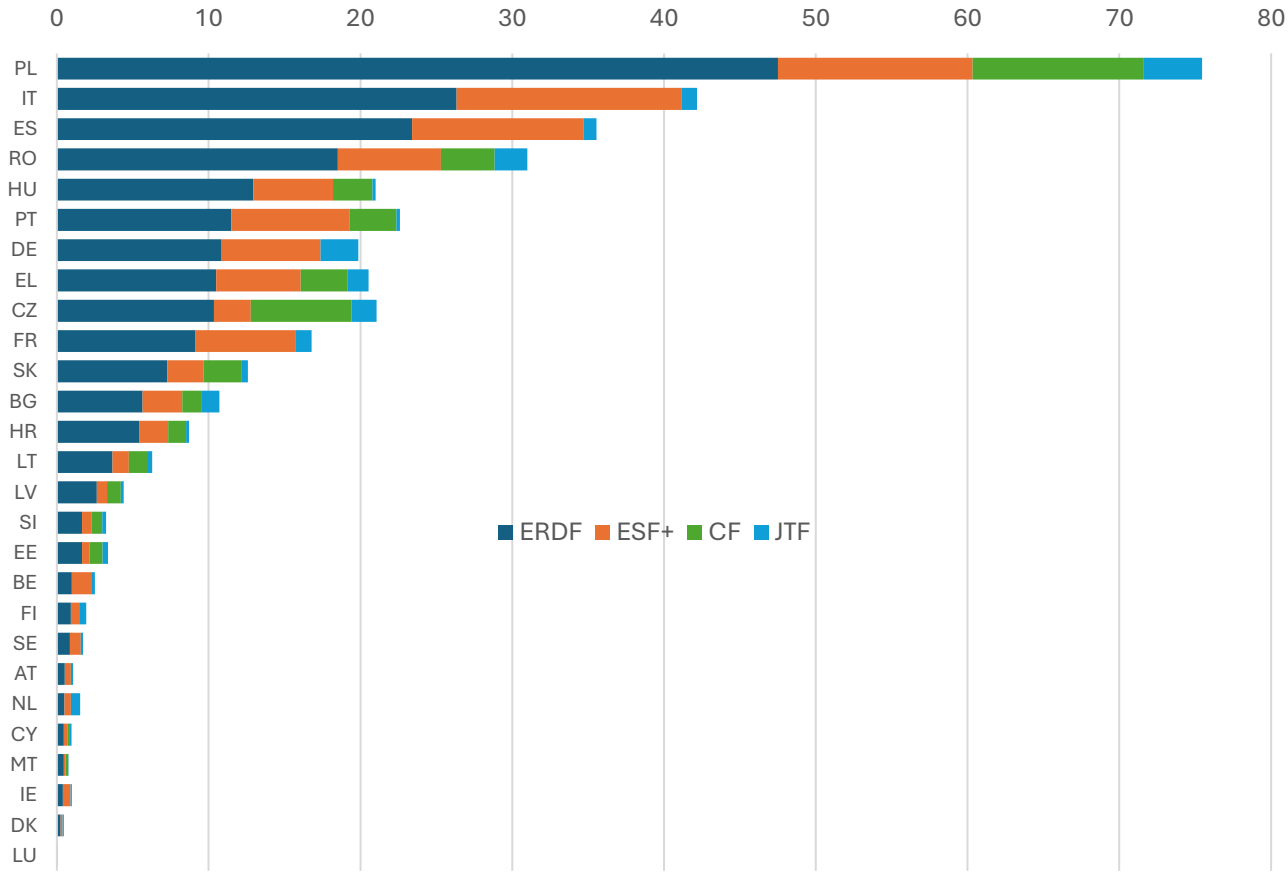


Fig. 3.5: Initial allocation of cohesion resources by Member State and fund (2021-2027 MFF, billion €)

Source: Cohesion Open Data Portal



The European Regional Development Fund[23] represents the main European instrument in this context, with a budget of €214.3 billion for the period 2021-2028. The fund aims to correct imbalances between regions by financing programmes in shared responsibility between the European Commission and national and regional authorities. Despite generally tackling all the aforementioned objectives, the ERDF mainly operates towards *a more competitive and smarter Europe* (PO1) and *a greener, low carbon transitioning towards a net zero carbon economy* (PO2). At least 30% of ERDF resources are meant to tackle climate objectives, while at least 8% of the ERDF resources are set aside for cities of all sizes and their metropolitan and functional area.

Programmes financed by the ERDF span from competitiveness investments (SME support, innovation ecosystems, digitalization) to structural transformation investments (green transition,

[23] Regulated by Regulation (EU) 2021/1058.

climate adaptation and circular economy) and territorial cohesion investments (infrastructure, urban regeneration and public services).

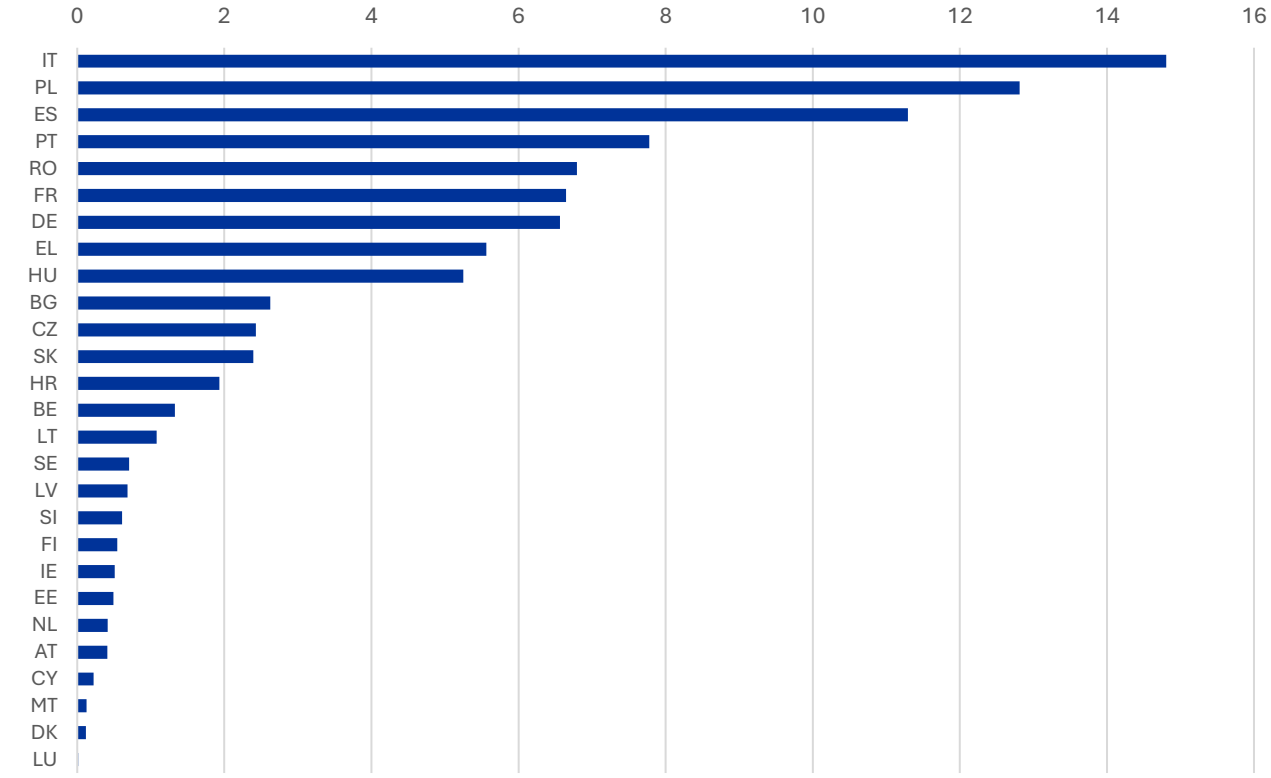
In addition to the IGJ, the ERDF finances the Interreg goal with around €9 billion, plus minor contributions from other instruments. Interreg is structured into four strands – cross-border (A), transnational (B), interregional (C) and outermost regions (D) cooperation – and it supports joint initiatives between public authorities and stakeholders from multiple countries to address shared challenges and exploit common development opportunities. Interreg interventions span areas such as innovation, climate transition, connectivity and governance, but are distinguished by their requirement to generate cross-border added value through jointly designed and implemented projects. By reducing the economic, administrative and social barriers associated with national borders, facilitating policy learning and strengthening macro-regional integration, Interreg plays a unique role in complementing other cohesion instruments, contributing to a more integrated, resilient and cohesive European territory.

The European Social Fund Plus[24], with a budget of €94.2 billion, is designed to support the implementation of the European Pillar of Social Rights and to contribute to *a more social and inclusive Europe* (PO4) by financing policies and reforms in employment, education, skills and social inclusion. Its interventions focus primarily on improving access to employment, enhancing human capital through lifelong learning and training, reducing poverty and social exclusion, and supporting vulnerable groups, while also promoting institutional capacity and social innovation. Implemented mainly under shared management with Member States, the ESF+ plays a central role in addressing structural labour market challenges and in supporting the green and digital transitions by fostering a skilled, adaptable and resilient workforce across EU regions. The ESF+ consolidates four funding instruments included in the 2014-2020 MFF, namely the European Social Fund, the Fund for European Aid to the most Deprived, the Youth Employment Initiative and the European Programme for Employment and Social Innovation.

[24] Regulation (EU) 2021/1057.

Fig. 3.6: ESF+ allocation per Member State (2021-2027 MFF, billion €)

Source: Open Cohesion Data Platform.

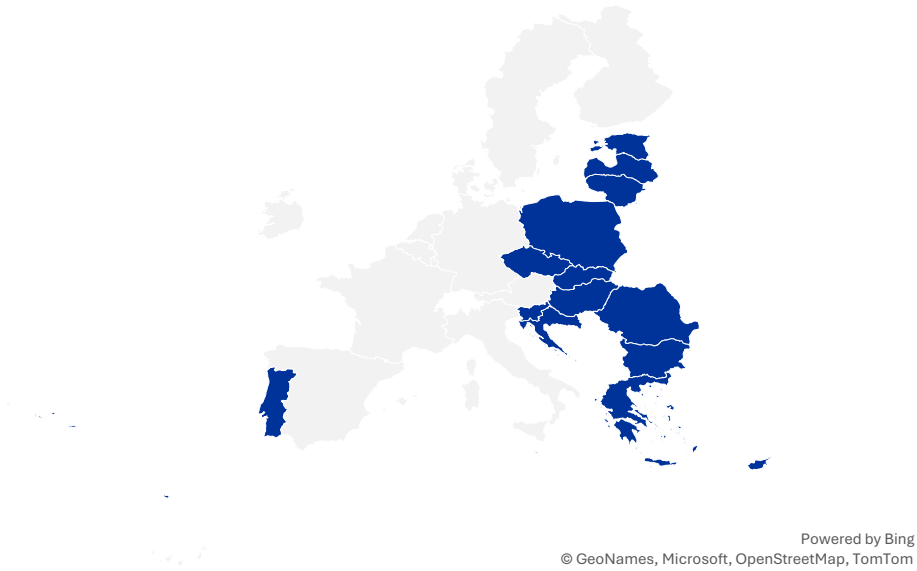


The Cohesion Fund[25] is a central pillar of EU Cohesion Policy, with a budget of approximately €39.2 billion, aimed at supporting Member States with a gross national income per capita below 90% of the EU average. For the 2021-2027 MFF, fifteen countries fall under that threshold, namely Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovakia and Slovenia, as shown in Figure 6. It finances large-scale public investments primarily in structural environmental sustainability and trans-European transport infrastructure, thereby contributing to both the green transition and the integration of the EU internal market. Concentrated on two policy objectives – *a greener, low-carbon Europe* (PO2) *and a more connected Europe* (PO3) – the Fund plays a strategic role in addressing structural infrastructure gaps and promoting convergence across less-developed economies. Implemented under shared management with national authorities and featuring high co-financing rates, the Cohesion Fund also reflects the increasing alignment of Cohesion Policy with EU climate goals, with a substantial share of its resources (37%) earmarked for climate-related investments.

[25] Regulation (EU) 2021/1058.

Fig. 3.7: Beneficiaries of the Cohesion Fund under the 2021-2027 MFF (in blue)

Source: Open Cohesion Data Platform.



The Just Transition Fund[26] is a key instrument of EU Cohesion Policy in the 2021-2027 Multiannual Financial Framework meant to ensure that the transition to climate neutrality under the European Green Deal is conducted in a fair and inclusive manner. With a budget of around €19.6 billion (of which €10bn financed under NextGenerationEU), again complemented by national co-financing, the Fund provides targeted support to regions and sectors most adversely affected by decarbonisation, particularly those dependent on fossil fuels and carbon-intensive industries. Its interventions focus on economic diversification, labour market adjustment and environmental transformation, including support for SMEs, reskilling of workers, clean energy investments and the regeneration of industrial sites. Implemented through Territorial Just Transition Plans under a place-based approach, the JTF addresses the social and economic consequences of structural change, thereby bridging climate policy and Cohesion Policy and reinforcing the EU's objective of achieving climate neutrality without exacerbating regional disparities.

[26] Regulation (EU) 2021/1056.

Fig. 3.8: JTF allocation per Member State (2021-2027 MFF, billion €)

Source: Open Cohesion Data Platform.

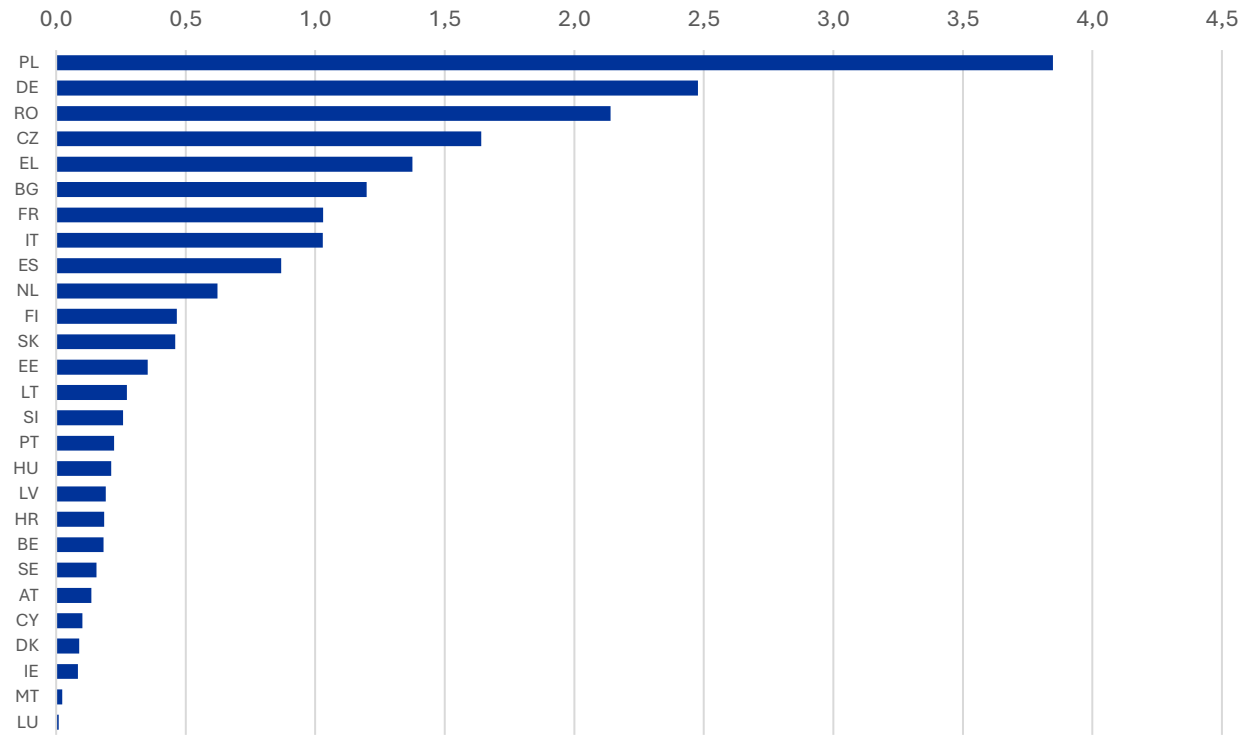
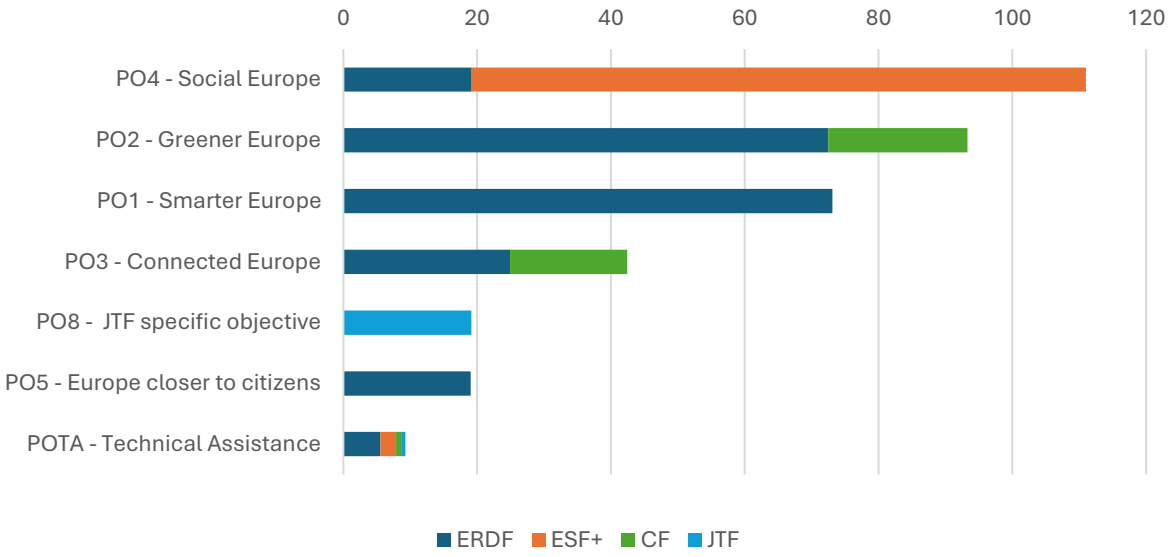


Fig. 3.9: Cohesion Policy budget by Policy Objective (2021-2027 MFF, billion €)

Source: Open Cohesion Data Platform.



Additional resources are then employed from the following funds:

- Asylum, Migration and Integration Fund (AMIF)
- Border Management and Visa Instrument (BMVI)
- Internal Security Fund (ISF)
- European Maritime, Fisheries and Aquaculture Fund (EMFAF)

The Home Affairs Funds (AMIF, BMVI, ISF), governed under the Common Provisions Regulation, address structural preconditions for cohesion by supporting migration management, integrated border governance and internal security, thereby underpinning the stability and mobility necessary for balanced territorial development. AMIF, in particular, promotes the integration of third-country nationals and solidarity among Member States, reinforcing social cohesion, while BMVI and ISF operate to secure external borders and internal safety, conditions that facilitate economic activity and the functioning of the single market. Their design explicitly emphasises coherence and complementarity across migration, border and security policies, although evaluations note that synergies could be further strengthened. In parallel, the European Maritime, Fisheries and Aquaculture Fund (EMFAF) operates as a sectoral component of shared management funds, supporting coastal and maritime regions through sustainable blue economy investments. Overall, these instruments complement the core cohesion funds (ERDF, ESF+, CF) by addressing enabling conditions – such as security, migration governance and sector-specific development – thus broadening the scope of Cohesion Policy beyond traditional regional investment towards a more integrated and resilience-oriented framework.

3.1.4 Implementation, effectiveness and recent reprogramming

The 2025 Mid-Term Review of Cohesion Policy adapted the policy to new emerging priorities by incentivising Member States and regions to relocate funds through, among other things, changes to co-financing rates, eligibility and implementation periods and simplification.

Almost 10% of the Cohesion budget – €34.6 billion – has been reprogrammed towards initiatives aiming to boost competitiveness, defence and civil preparedness, affordable and sustainable housing, water resilience and energy connectivity. In particular:

- €15.2 billion to boost competitiveness through critical technologies, innovation and the development of skills.
- €11.9 billion to strengthen defence industrial capabilities, military mobility and civil preparedness and skills development.
- €3.3 billion for affordable and sustainable housing, supporting social inclusion.
- €3.1 billion for water resilience, strengthening sustainable resource management.
- €1.2 billion to enhance energy security and industrial decarbonisation, supporting quality jobs in the green transition.

This exercise demonstrates the capacity of European institutions and instruments to adapt swiftly and flexibly to emerging priorities. At the same time, it underscores that mounting pressures –

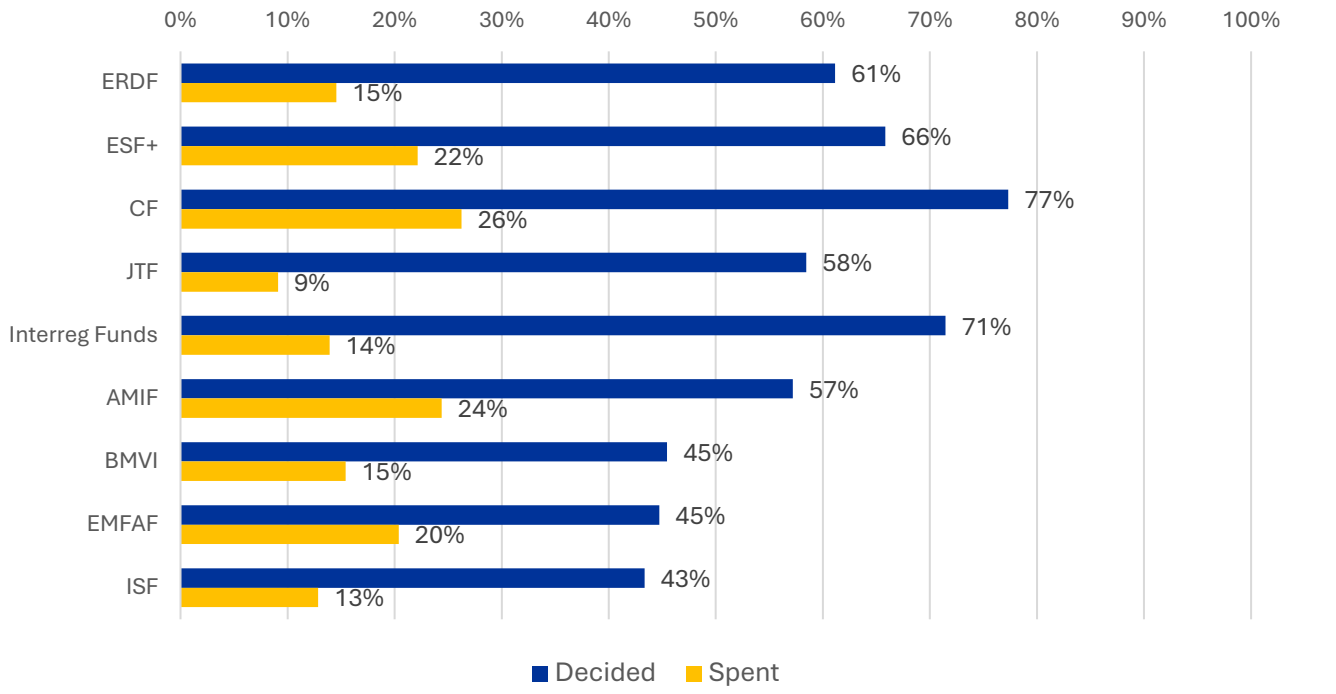
originating, for instance, from geopolitical tensions and climate change – require institutions, public authorities, and citizens at all levels to become significantly more resilient and adaptable than in previous decades.

Similarly, while the mid-term review has demonstrated that important steps towards a better and more forward-looking approach to resource management are being taken, there are still many downsides in the administration and operation of Cohesion instruments.

A persistent structural weakness of EU Cohesion Policy lies in the limited and uneven absorption capacity of Member States and regions, which reflects deeper shortcomings in administrative capability, governance quality, and programme design. Absorption rates (the share of allocated funds actually spent) remain slow: in the 2014–2020 cycle, only 52.5% of funds had been disbursed by 2020, exceeding 90% only at the end of 2023[27]. This pattern suggests systemic delays in project selection, procurement, and implementation, often linked to complex regulatory frameworks, burdensome administrative procedures, and overlapping funding instruments, which increase transaction costs for managing authorities and beneficiaries. In addition, fragmentation across programmes and multi-level governance structures can slow decision-making and dilute accountability, while strict audit and control systems, though necessary, may generate risk-averse behaviour and discourage innovative or complex projects.

Fig. 3.10: Cohesion Policy implementation by Fund, as share of resources planned (2025)

Source: Open Cohesion Data Platform.



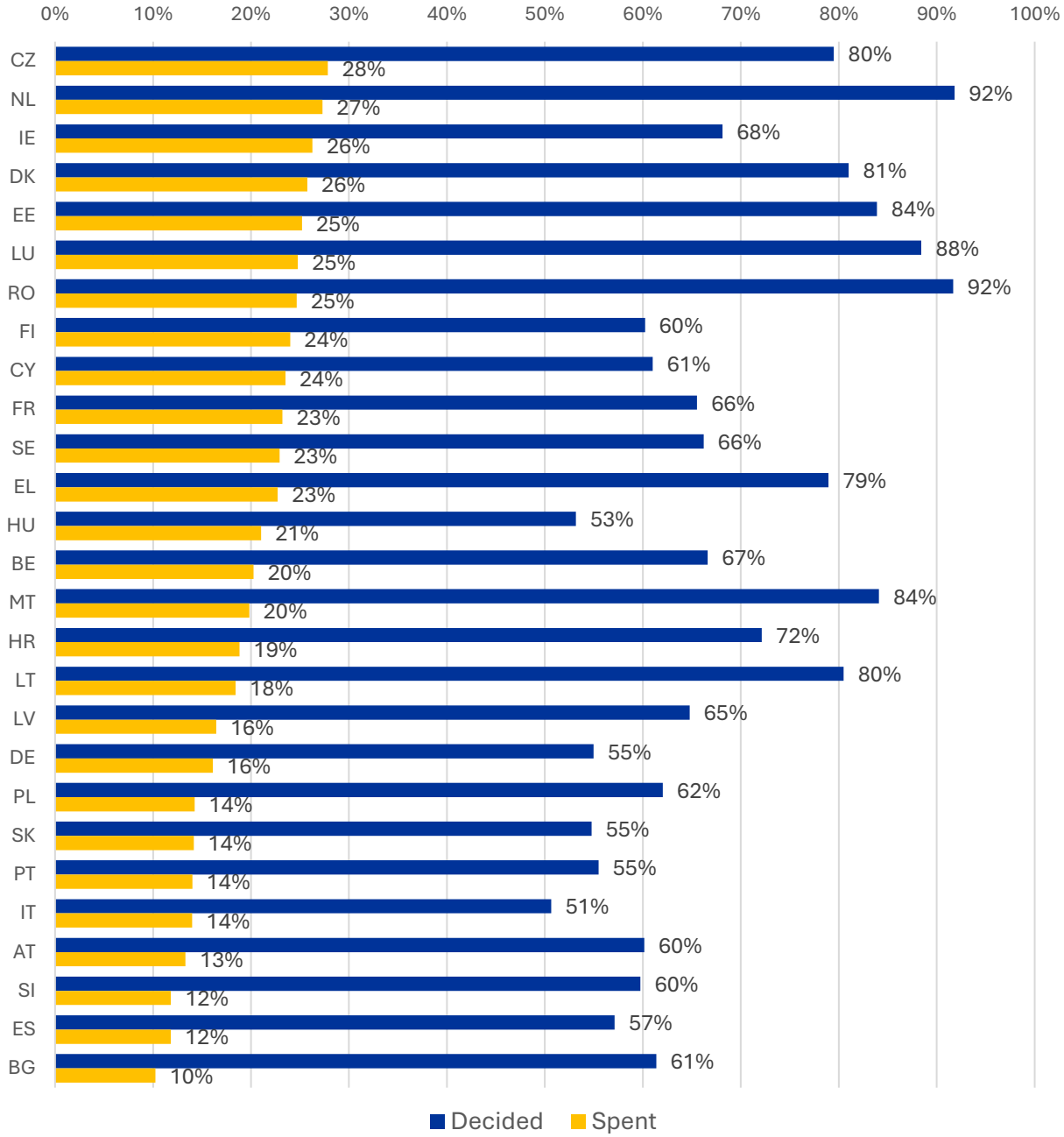
[27] Ciffolilli, A. & Pompili, M. (2024). Absorption rates of Cohesion Policy funds. European Parliament, Policy Department for Structural and Cohesion Policies, Research for REGI Committee, Brussels.

Countries such as Poland, Italy, Spain and Portugal have spent, as of 2025, less than 15% of the resources allocated to them, despite being among the largest cohesion beneficiaries. This figure highlights once again a structurally weak implementation capacity.

Beyond absorption, effectiveness is also affected by a bias toward spending compliance over results, meaning that pressure to use funds before deadlines can prioritise easily executable projects over strategically transformative investments.

Fig. 3.11: Cohesion Policy implementation by Member State, as share of resources planned (2025)

Source: Open Cohesion Data Platform.



Overall, however, current evidence points to a broadly positive, but uneven, assessment of Cohesion Policy's effectiveness. The Ninth Cohesion Report shows that Cohesion Policy has supported long-term convergence, most visibly in the Member States that joined in 2004, where GDP per capita rose from around 52% of the EU average in 2004 to nearly 80% in 2023; it also estimates that every euro invested under the 2014-2027 programmes will generate around €1.3 of additional EU GDP by 2030 and almost three times its value by 2043. Current results are also significant in operational terms: the 2014-2020 programmes supported millions of firms, contributed to job creation, improved broadband access, financed green investment and strengthened education, health and social infrastructure. The Commission's macroeconomic modelling further estimates that the combined 2014-2020 and 2021-2027 programmes could raise EU GDP by about 0.9% by 2030, with stronger effects in cohesion countries such as Croatia, Poland, Slovakia and Lithuania. However, the policy has been more effective in countries and regions with stronger administrative capacity, better project selection and clearer development strategies, while weaker governance, delayed absorption, fragmented objectives and insufficient outcome measurement continue to reduce its impact. Academic studies, including Becker, Egger and von Ehrlich (2018) and Pellegrini et al. (2025), generally find positive effects on regional growth, but also show that impacts are not automatic and are weaker for employment or in regions lacking complementary reforms.

3.1.5 Lessons for the next long-term budget

The post-2027 debate on EU Cohesion Policy is shaped by a fundamental tension between the policy's traditional role as a long-term, place-based investment instrument and the growing pressure to use it as a more flexible budgetary tool for crises and emerging EU priorities. Recent shocks, including the Covid-19 pandemic, Russia's war against Ukraine, the energy crisis and broader geopolitical instability, have exposed the rigidity of the EU budget and increased demands for the rapid reallocation of existing resources. This is particularly relevant in a context where future Multiannual Financial Framework negotiations are likely to focus more on repurposing available funds than on significantly expanding EU budgetary capacity. Cohesion Policy is therefore under particular scrutiny, both because it represents one of the largest areas of EU expenditure and because it has already been repeatedly mobilised to respond to emergencies. However, this growing reliance on cohesion funding raises the risk of "goal congestion", whereby the policy is progressively asked to finance too many objectives, potentially diluting its core Treaty-based mandate of reducing economic, social and territorial disparities.

As Rubio, Alcidi and Andersson (2024) argue, a more flexible policy framework may be necessary, but such flexibility should be carefully structured. Greater discretion for managing authorities can improve implementation if it simplifies rules, reduces administrative burdens and harmonises fragmented funding instruments. However, it should not become a blanket authorisation for national governments to shift resources away from weaker regions. Similarly, crisis-related flexibility can be useful when unexpected shocks threaten regional development prospects, but

Cohesion Policy should not become the EU's primary crisis-management instrument, as this would undermine its long-term investment function. The repurposing of cohesion resources towards priorities such as competitiveness, strategic technologies, energy security or industrial resilience may be legitimate only where these priorities remain territorially sensitive and contribute to convergence, rather than reinforcing agglomeration in already stronger regions. The challenge, therefore, is to design a model of structured flexibility: one that makes funds easier to implement, more adaptable in exceptional circumstances and more responsive to emerging EU investment needs, while preserving the policy's role as a predictable, multiannual instrument for convergence, territorial balance and inclusive development.

This view is reinforced by the Report of the High-Level Group on the Future of Cohesion Policy (2024)[28], which argues that Cohesion Policy should remain the Union's central instrument for reducing territorial, economic and social disparities, while also contributing to broader EU objectives such as competitiveness, innovation, strategic autonomy, the green and digital transitions, demographic change and resilience to external shocks. At the same time, the European Court of Auditors[29] provides an important operational warning: cohesion objectives have broadened over time, and the growing pressure to use cohesion funds for competitiveness, housing, water resilience, defence-related production or crisis response risks increasing fragmentation and moving the policy away from its primary purpose. Future reform should therefore avoid turning Cohesion Policy into a general-purpose budgetary reserve for shifting EU priorities. Instead, it should preserve its long-term convergence mission while making delivery simpler, faster and more effective. This requires a clearer legal framework, lower administrative burdens, better coordination with other EU instruments and earlier programming of funds, in order to prevent end-period spending pressure that can weaken project quality.

A stronger Cohesion Policy should also be genuinely place-based and people-based. It should be tailored to local capabilities and territorial needs, while investing in institutional capacity, human capital, innovation and access to opportunities. At the same time, the policy should become more performance-oriented, with clearer objectives, stronger monitoring, reliable evaluation and better project selection.

The European Commission's current proposal for the 2028-2034 Multiannual Financial Framework – which is covered in the following subchapter – seems to point in this direction. Out of the almost €2 trillion budget, around €865 billion will be available for economic, social and territorial cohesion with a minimum of €218 billion ringfenced for less developed regions[30]. The proposal includes the introduction of National and Regional Partnership Plans, which are intended to provide a more integrated, flexible and place-based delivery model, as well as the European

[28] Inforegio - Forging a sustainable future together
[29] European Court of Auditors, review 04/2025: "The Future of EU Cohesion Policy – drawing lessons from the past", Publications Office of the European Union, 2025.
[30] SWD(2025) 565 final.

Competitiveness Fund. Financing and delivery for this fund will be centralised. This centralised approach intended to produce results across the EU, such as cross-border research infrastructure, defence industrial capacity and critical technology sovereignty. It justifies the concentration of substantial resources under the control of the Commission, with limited veto power for Member States, on the basis that fragmented national interventions cannot deliver the necessary scale or coherence (BST, 2025). At the same time, it exacerbates the tension between competitiveness and cohesion. With resources being allocated to a largely excellence-based, centrally managed fund, territorial equity risks becoming a secondary consideration (Buti, 2025). While one of the Competitiveness Fund's main objectives is to reduce persistent disparities in competitiveness and innovation across European regions by connecting less-developed regions to European value chains, debates are arising about its effectiveness in this respect. The future of Cohesion Policy therefore rests on whether the new overall architecture can reconcile flexibility with territorial fairness and EU strategic priorities with the long-term convergence mission that defines the policy.

3.1.6 The next MFF (2028-2034) and its priorities: the European Competitiveness Fund

The 2028-2034 Multiannual Financial Framework defines the financial plan and priorities of the European Union for the next seven years, representing a strategic declaration of the EU collective policy ambition. The MFF comes out in a period characterized by geopolitical and economic tensions, global instability, and commercial frictions. To all these features, add the need for the EU to boost the reduction of its external dependencies.

The Commission emphasised the characteristics the new budget should possess: ambition, simplicity, flexibility and effectiveness. The proposed budget amounts to almost €2 trillion, which is equivalent to 1.26% of the EU GNI. It is then broken down into seven macro-programs[31]:

1. National and Regional Partnership Plans (NRPPs): This is the largest block of the budget (€865 billion) and will replace the current fragmentation of 14 funds through a more integrated system. The principal areas of interest concerning the program are:
    - Agricultural and rural areas enforcement, food security and sustainability
    - Cohesion policy strengthening and modernisation
    - Social rights, quality of employment, skills, social inclusion and housing
    - Migration, border management and security challenges
    - Fisheries, coastal communities and economies

[31] European Commission (2025), A Dynamic EU budget for the priorities of the future – The Multiannual Financial Framework 2028-2034", https://commission.europa.eu/publications/multiannual-financial-framework_en.

2. European Competitiveness Fund and Horizon Europe: This new fund integrates and rationalises existing programmes in a unique instrument with simplified norms. The endowment for this fund is €409 billion, reaching €584 billion including Horizon Europe.

   The strategic areas on which the European Competitiveness Fund focuses are four:

   - Clean Transition and Industrial Decarbonisation (€67.4 billion)
   - Digital Leadership (€54.8 billion)
   - Health, Biotech, Agriculture and Bioeconomy (€22.6 billion)
   - Resilience and security, Defence, Industry and Space (€130.7 billion)

   On the other side, Horizon Europe is more related to excellent science, competitiveness and society, innovation, European research area.

3. European Defence Union: Following the war in Ukraine, European defence has become crucial in the European strategy. This segment will focus on several areas, such as boosting the EU's defence capacity, military mobility, and the development of space systems.

4. Strengthening the European single market: This goal will be pursued through two instruments. The first is the Connecting Europe Mechanism that covers the development of the completion of Trans-European Networks and fosters the clean transition in energy and transport. The second one is the Single Market Programme, which relates mainly to consumer protection, competition policy, standardisation measures, and European statistics

5. Global Europe: With an endowment of €200 billion, the priorities of this program are sustaining candidate countries in preparing for the EU accession, supporting Ukraine, and financing Common Foreign and Security Policy actions.

6. Education, democracy and European values: This instrument boosts investments in civil and cultural dimensions of the EU with three main programmes (Erasmus+, AgoraEU, and Justice Programme).

7. Preparedness and resilience: The Commission incentivizes the enforcement of the financing instruments for civil protection and health preparedness. This would be achieved by enhancing the resilience of the critical structures, cooperation between security forces, and enforcing cybersecurity and the mechanisms to counter criminal organisations.

The NRPPs are expected to become the main implementation tool, bringing together several existing EU funding instruments under a single strategic framework at national and regional level, with the aim of simplifying access, improving coordination and maximising the impact of EU investment. Designed jointly by the Commission, Member States and regional and local authorities, the plans would translate EU priorities into tailor-made, place-based investment strategies, ensuring that cohesion spending remains aligned with territorial needs while also

supporting wider objectives such as competitiveness, the green and digital transitions and resilience to crises. At the same time, the official proposals emphasise continuity in the policy's core principles: a strong focus on less-developed regions, supported by minimum allocation safeguards; shared management and multilevel governance; and the central objective of reducing regional disparities[32].

Additionally, of particular relevance is the European Competitiveness Fund (ECF). The ECF comes out from the union and rationalization of several previous instruments and responds to the recommendations set out in the Draghi and Letta reports, which highlighted the need to fill the gap between European investments and those of the U.S. and China in strategic and technological sectors.

The ECF is composed of four thematic priorities (referred to as policy windows), each endowed with its own financing share. The regulatory proposal defines specific objectives across the four windows. The Clean Transition and Decarbonization window, with €26 billion complemented by €41 billion from the Innovation Fund, will support decarbonisation, energy efficiency, renewable and new energy solutions, circular economy measures, clean-tech manufacturing, advanced materials, water efficiency, pollution control, ecosystem restoration and biodiversity protection, including through LIFE activities and EU research and innovation support. The Health, Biotech, Agriculture and Bioeconomy window, allocated slightly under €23 billion, aims to strengthen preparedness for cross-border health threats, promote prevention, innovation and supply security, advance Health-in-All and One Health approaches, expand the use of health data, digital tools, AI and robotics, support biotechnology and medical countermeasures, and improve the competitiveness, sustainability and resilience of agriculture, fisheries, aquaculture and forestry. The Digital Leadership window, with €54.8 billion, will support the digital value chain, cybersecurity, secure and interoperable digital infrastructure, AI deployment, digital public services, EU Digital Identity and Business Wallets, standardisation, advanced digital skills, resilient digital supply chains and cultural and creative industries. Finally, the Resilience and Security, Defence Industry and Space window, receiving €130.7 billion, will focus on strengthening Europe's strategic resilience, raw material supply chains, stockpiling and diversification, defence industrial readiness through the EDTIB, cross-border defence partnerships, EUDIS, European Defence Projects of Common Interest, civil security capabilities, and space policy, including Galileo, EGNOS, Copernicus, IRIS², GOVSATCOM, space situational awareness, autonomous access to space, space commercialisation and the reduction of critical dependencies on non-EU technologies.

To these, add InvestEU, which is projected to attract private investments through budget guarantees, loans and equity instruments. The logic of the ECF is that of developing strategic projects, overcoming the traditional fragmentation between the many phases characterizing the

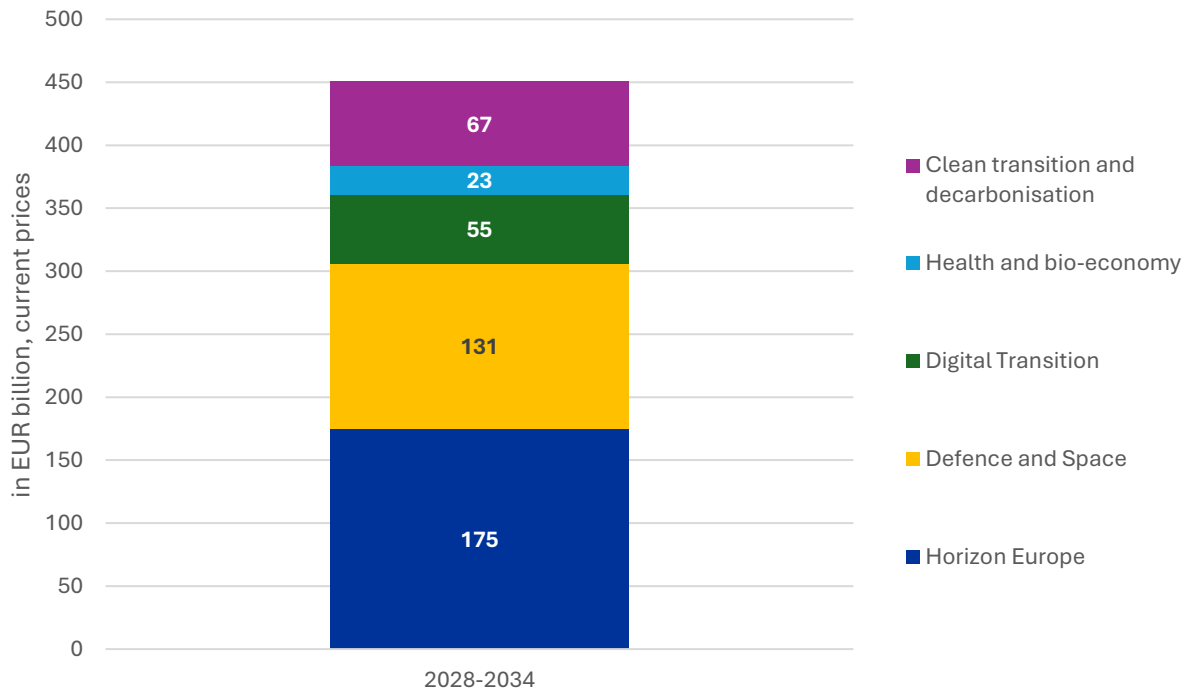
[32] The exact proposed criteria to allocate funds to Member States under the National and Regional Partnership Plans can be found here: Methodology for calculating allocations to Member States under the national and regional partnership plans - Publications Office of the EU

development of such projects. Among the innovations is the introduction of a single regulatory framework and simplified procedures in order to reduce the time needed to disburse the loans.

The allocation of ECF funds reveals the EU's priorities, with the largest share of these regarding the area of space and defence, reflecting the current geopolitical situation. The green transition and industrial decarbonisation are the second most financed areas of the ECF, and most of the investments are devoted to sustaining the decarbonization processes of the heavy industry and energy grid, while limited resources are delivered to the water sector. The health, biotech, agriculture and bioeconomy policy window, which might cover investments regarding the quality of water and its availability, is the least financed of the four.

Fig. 3.12: European Competitiveness Fund (Including Horizon Europe)

Source: European Commission



Water – will be comprehensively analysed in the following section – is a fundamental resource on which almost all economic, social and environmental activities of the European Union rely. However, despite this central role, water resilience remains one of the least financed priorities in the European budget. Given the evidence of the European Commission, today the water sector receives less than 3% of total EU financing.

As reported by Water Europe[33], water scarcity affects 38% of the EU population and 29% of the EU's territory experienced water scarcity. Moreover, extreme events linked to water, such as drought, floods and intense rainfall, have increased dramatically in the last two decades.

The current MFF proposal does not provide a specific endowment for water resilience nor a binding expenditure target. This is a critical point as water should start to be considered as a crucial component of the EU's competitiveness and security. The integration of water resilience in the MFF is fundamental, as the water sector could boost the decarbonisation in industrial processes directly and could help move towards a circular economy. Moreover, more resources must be allocated to water quality as these resources are critical to reduce the dependence of the food system on water availability.

3.2 Financing Europe's Water Resilience

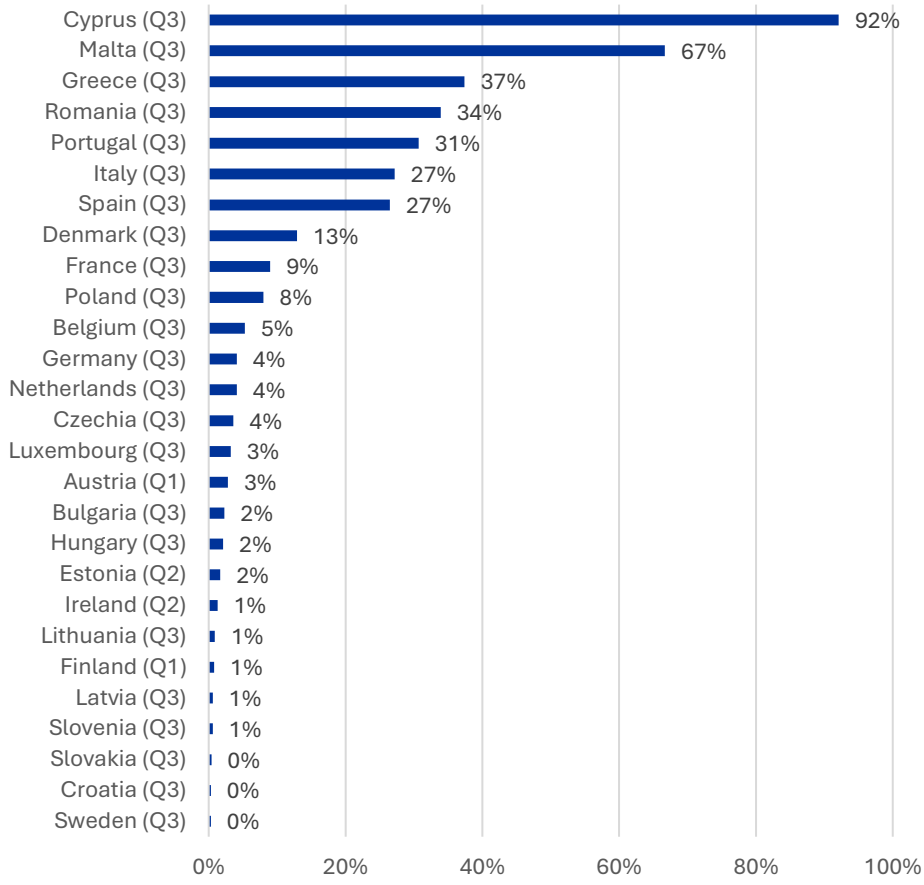
3.2.1 Water: key figures

Water resilience is one of the defining global challenges of the 21st century, cutting across food security, public health, energy, ecosystems, and geopolitical stability. Roughly half of the world's population experiences severe water scarcity for at least part of the year. More precisely, about 4 billion people – nearly two-thirds of the global population – face severe water scarcity during at least one month of the year[34]. Approximately 10% of the global population – around 720 million people – lived in countries with high and critical water stress levels in 2021. At the basin level, three out of seven world regions had water stress values above 25%, including two subregions with high water stress (Central and Southern Asia) and one with critical water stress (Northern Africa)[35].

[33] Water Europe (2025), Water Resilience Strategy. A Step towards a Water-Smart Society, https://watereurope.eu/wp-content/uploads/2025/02/WE-Position-Paper-Water-Resilience-Strategy_.pdf.
[34] Mesfin M. Mekonnen, Arjen Y. Hoekstra, Four billion people facing severe water scarcity. Sci. Adv.2, e1500323(2016). DOI: 10.1126/sciadv.1500323
[35] UN Water, https://www.unwater.org/sites/default/files/2024-12/SDG6_Indicator_Report_642_Progress-of-water-stress_2024_EN.pdf

Fig. 3.13: Worst seasonal water scarcity conditions, as measured by the WEI+ index (2023)

Source: EEA, 2025



Dismissing water resilience may lead to severe socioeconomic losses. According to the Global Commission on the Economics of Water (GCEW), if the water resource is not protected, the GDP of high-income countries could fall by an average of 8% by 2050 – and 10-15% for lower income countries.[36] Water is far more than a natural resource. It enters into the mix of determinants of competitiveness in a way similar to raw materials availability and energy costs as it is an essential input to nearly every sector of the economy, and its availability, quality, and reliability increasingly determine where businesses locate, how they operate, and how they compete globally.

Across Europe, climate change has amplified the frequency and severity of extreme droughts and floods, placing mounting pressure on water resources, biodiversity, agricultural and energy systems, and public health. According to the European Environment Agency, each year, roughly 30% of Europe's land area and 34% of its population face water stress conditions, with southern regions and densely populated zones bearing the greatest burden. Beyond quantity, climate

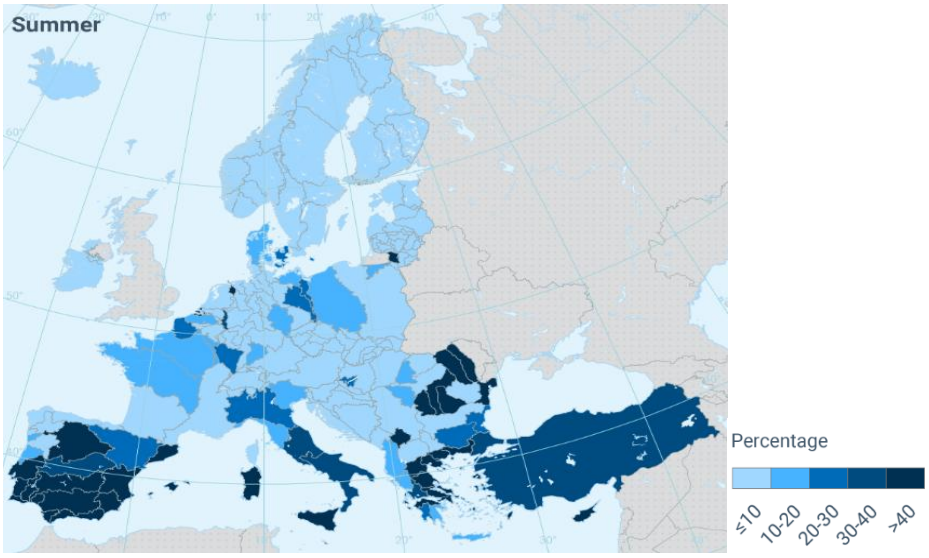
[36] The Global Commission on the Economics of Water (GCEW), The Economics of Water: Valuing the Hydrological Cycle as a Global Common Good

change also degrades water quality by concentrating pollutants and driving saltwater intrusion as sea levels rise.

The seasonal water exploitation index plus (WEI+) provides a measure of total water consumption as a percentage of the renewable freshwater resources available for the European river basins (EEA, 2025)[37]. In the summer of 2023, at a national level, Malta and Cyprus experienced high water stress levels (a WEI+ greater than 40%), while five European countries suffered from moderate water stress (a WEI+ index between 20% and 40%). The picture gets more refined when the WEI+ is presented at sub-unit level, highlighting the stark regional differences (Fig. 3.3) within the same country.

Fig. 3.14: Summer 2023 water scarcity conditions, as measured by the WEI+ index for European river basin sub-units

Source: EEA, 2025



Between 1980 and 2022, flooding claimed 5,582 lives across the continent. The scale of individual events can be staggering: the July 2021 floods that swept through Germany, Belgium and the Netherlands killed over 200 people and inflicted EUR 44 billion in damage to property and infrastructure. The October 2024 Valencia floods in Spain resulted in a comparable loss of life. Meanwhile, in May 2024, severe spring drought gripped approximately 30% of European land – predominantly agricultural areas.

On the supply side, the EU has made some progress: from 2000 to 2023, total freshwater abstraction across the EU dropped by 14%, driven primarily by a 30% reduction in water withdrawn for electricity cooling – falling from roughly 90,000 million m^3 in the 2000s to 62,000 million m^3 between 2020 and 2023. This decline closely tracks the continent's energy transition: as

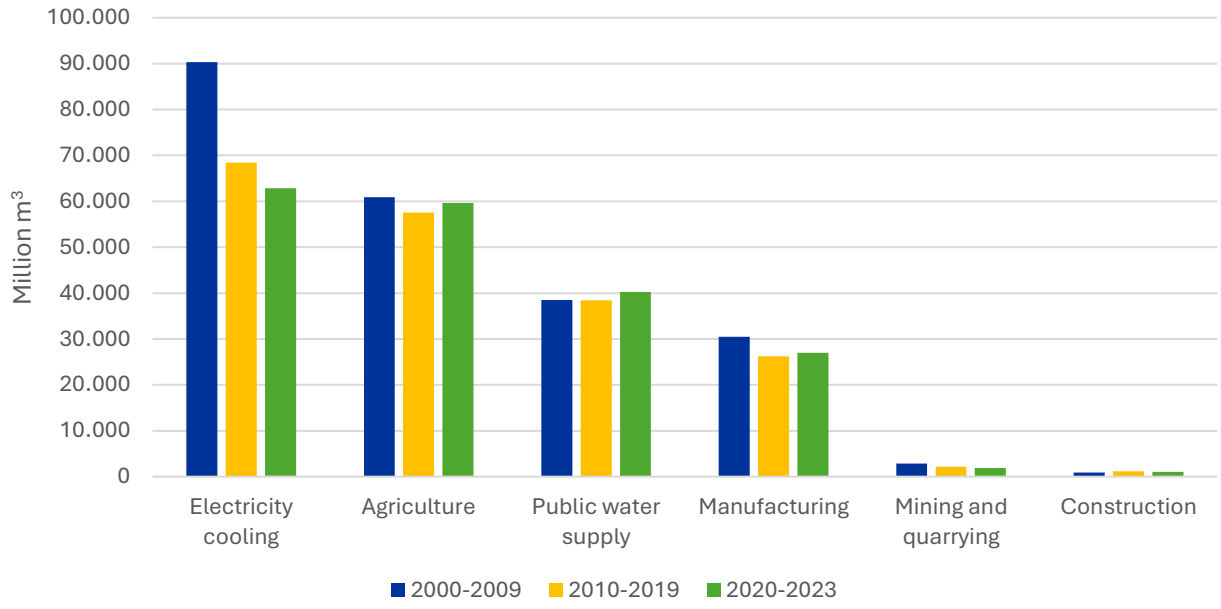
[37] WEI+ accounts for environmental flow requirements (i.e., the minimum amount of water that must remain in a water body to sustain ecosystems). WEI+ = Total freshwater abstraction / (Total renewable freshwater resources – Environmental flow requirements)

renewable sources grew from 19% of the electricity mix in 2005 to 47% in 2023, the cooling demands of fossil fuel power generation diminished accordingly. The sharp fall in electricity-sector abstraction has largely defined the overall EU-wide trajectory.

Since 2010, however, total water abstraction has plateaued, and several sectors have in fact moved in the opposite direction – public water supply, agriculture, and manufacturing each recorded modest increases of 5%, 4%, and 3% respectively. These diverging trends highlight how fragile the overall progress is, and reinforce the urgency of improving water use efficiency across all sectors if the EU is to achieve the 10% reduction target set out under the European Water Resilience Strategy.

Fig. 3.15: Total water abstraction by economic sector in average of moving decades (2000-2009; 2010-2019) and 2020-2023

Source: EEA, 2025



The OECD and World Bank estimate global water infrastructure needs will reach $6.7 trillion by 2030 and could rise to $22 trillion by 2050[38], far exceeding current public funding commitments. This gap itself creates a competitive divide – regions and companies that invest proactively in water infrastructure and technology will hold a structural advantage over those that don't.

Bluefield Research forecasts a total of US$476 billion in water & wastewater infrastructure CAPEX from 2024 to 2030. According to the report Europe Municipal Water & Wastewater: CAPEX Market Forecasts, 2024-2030, the market is forecast to grow by 2% annually, from US$60 billion to approximately US$75 billion in 2030[39].

[38] OECD (2018), https://www.oecd.org/content/dam/oecd/en/publications/reports/2018/03/financing-water_2be68120/bf67ec4e-en.pdf

[39] Bluefield Research (2024), *Europe Municipal Water & Wastewater: CAPEX Market Forecasts, 2024–2030*

The European Investment Bank plays a significant financing role: the EIB is one of the world's largest multilateral lenders to the water sector, financing on average more than €2 billion per year in water infrastructure[40].

Digital water infrastructure will play a prominent role: according to Bluefield Research, Europe's digital water solutions market, the world's largest overall, is set to double, growing at a CAGR of 8.0% to reach US$27.2 billion by 2033, up from US$13.7 billion in 2024. This will drive a cumulative US$196.0 billion in spending from 2024 to 2033, highlighting European utilities' increasing adoption of digital technologies and solutions to manage water infrastructure more efficiently[41].

3.2.2 Ensuring water resilience for the bloc

The centrality of water is fully recognized in the EU Commission's portfolio and has been outlined in the 2024-2029 Political Guidelines by President von der Leyen, announcing a new European Water Resilience Strategy (WRS)42. The Strategy has been designed with the aim of providing clear guidance to all EU bodies to improve the management of water basins, address resource scarcity crises, and support innovation in the water industry, addressing water scarcity, pollution, and efficiency challenges while fostering innovation and a circular economy.

Despite the existence of a comprehensive regulatory framework already in place, such as the EU framework for freshwater, the Water Framework Directive, the Flood Management Directive, and the Nature Restoration Regulation, effective implementation and a clear pathway for water resilience across all sectors is still needed.

In the WRS, the European Commission has outlined three objectives for ensuring the resilience of the water sector:

1. Restore and protect the water cycle as the basis for sustainable water supply.

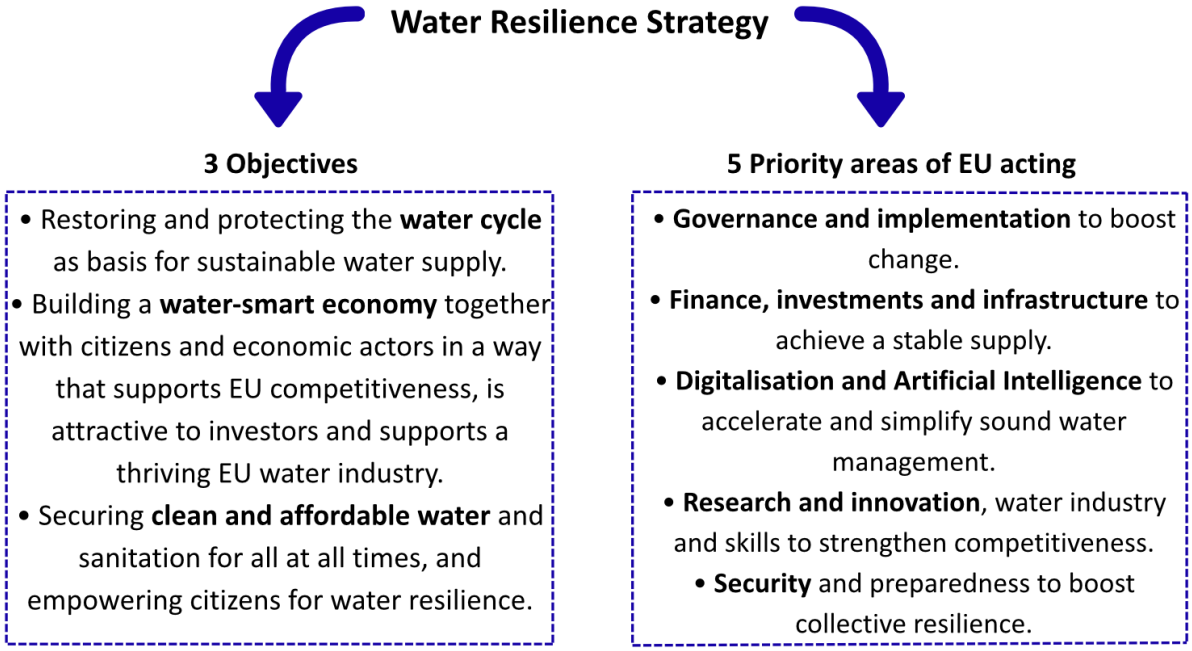
2. Build, together with citizens and economic actors, a smart water economy that supports the EU's competitiveness, is attractive to investors, and supports a thriving European water sector.

3. Ensure clean water and affordable sanitation for all, at all times, and empower citizens to achieve greater water resilience.

[40] EIB (2023), https://www.eib.org/attachments/lucalli/20230016_eib_water_sector_orientation_en.pdf
[41] Bluefield Research (2025), Europe Digital Water Market Outlook: Key Drivers, Competitive Shifts, and Forecasts, 2024–2033
[42] European Commission (2025), European Water Resilience Strategy, https://environment.ec.europa.eu/publications/european-water-resilience-strategy_en.

Fig. 3.16: Scheme of European Water Resilience Strategy

Source: European Commission



The actions around the first objective - restoring and protecting the water cycle as the basis for sustainable water supply – include addressing water retention on land, planning and coordination of water storage in reservoirs, preventing pollution and restoring water quality.

Regarding the second objective - building a smart water economy for the EU's competitiveness and attractiveness to investors -, the pillar is the water efficiency first principle. It sets out guiding principles for decision-making and investments based on a clear and predictable, yet flexible, prioritisation in the way water demand and supply are managed. The EU should aim to enhance water efficiency by at least 10% by 2030.

Water resilience should be integrated into all industrial sectors, especially those deemed strategic: agriculture, energy production, industrial processes are the core of integrated water management and efficiency.

Key sectors for the EU's strategic autonomy - such as battery production, semiconductors, hydrogen, microchips and datacentres - consume large volumes of often ultra-pure water. It is thus necessary to assess and, wherever possible, limit the water needs that come with the clean industrial and digital transformation and to support it through water smart planning.

At the same time, water-efficient energy production can significantly strengthen water resilience: the more efficiently water is used in energy production, the less vulnerable the overall water system becomes, which directly enhances its resilience to environmental and economic pressures.

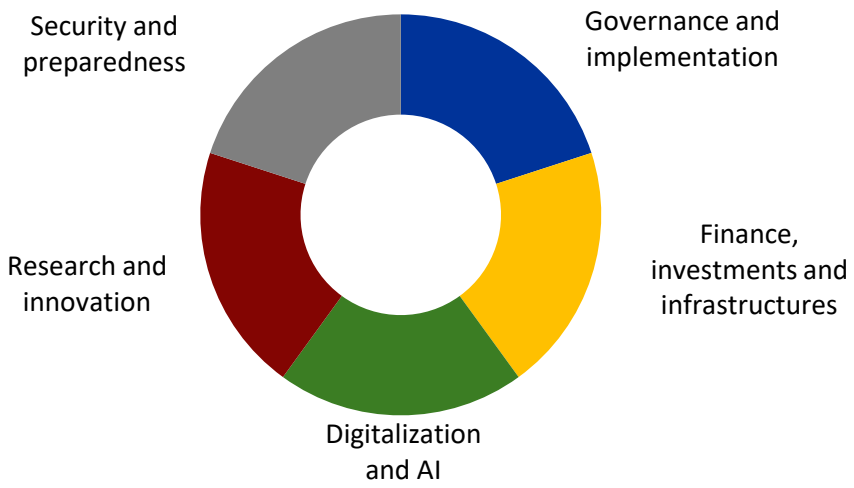
This works through several mechanisms. Less water used in energy production results in less strain on water resources; water-efficient systems are less vulnerable to climate shocks; efficient use of water resources allows its allocation to other critical uses and supports practices like wastewater reuse–key components of resilience. Currently, only 2.4% of wastewater is reused in the EU.

Regarding the third objective – ensuring clean water and affordable sanitation –, water pricing policies based on actual use, environmental impact and capacity to pay are deemed essential to ensure access to water.

The European Commission, in the Water Resilience Strategy, has identified five enabling areas for water resilience: governance and implementation, finance and investments, digitalization and AI, research and innovation and security and preparedness.

Fig. 3.17: The five enabling areas to water resilience, as stated in the Water Resilience Strategy

Source: European Commission



1. Governance and implementation

This area supports the enhancement of synergies in crucial sectors: in order to guarantee a sustainable deployment of the green and digital transition, water-smart spatial planning must be the guiding principle. The Commission, as stated in the Water Resilience Strategy, will enhance cross-border cooperation, enforcement of regulation and standards, and simplification and harmonization of existing EU rules. The aim is to inform Member States' spatial planning decisions by helping them identify the best areas for setting up water-intensive business operations and at the same time attract investors to carry out nature restoration and modernisation of water supply networks to support these businesses. Among the projects, the Commission has created a Water Resilience Forum to take stock of progress made in enhancing water resilience across all levels of government.

2. Finance, investments and infrastructures

Financing and investment funds are framed as critical enablers to ensure a solid water resilience strategy. The current annual capital investment for water measures (combining the EU, EIB and national budgets) reaches around EUR 55 billion (in 2022 prices). However, to implement the existing water legislation, there is a considerable necessity for further investments. These investment needs will have to be addressed by both the private and public sector.

In order to guarantee a wide financial backing for water projects and mobilizing public and private capital, the Commission is setting up a specific cooperation with the European Investment Bank Group (EIB), already today the largest global financier in the water sector: EIB has developed a Water Programme with over EUR 15 billion in planned financing during 2025-2027 for projects covering crucial areas such as access to water, pollution control, resilience and competitiveness of the EU water sector.

With the aim of scaling up investment and modernizing infrastructure across the full water cycle, emphasis is placed on cooperation with financial institutions, integrated investment planning across the water cycle and on scaling nature-based solutions, including through initiatives such as Water Resilience Investment Accelerator and Green and Blue Corridors. Among those projects, a Roadmap for Nature Credits has been successfully adopted to leverage more private financing into water resilience through blended finance approaches.

3. Digitalization and AI

The Strategy proposes an EU-wide digitalization action plan (2026): building on the upcoming Communications on Data Union and on Apply AI, the Commission will adopt an Action Plan based on the building up of digital skills and fostering the development of national data portals to overcome fragmentation and make data easily findable, accessible free of charge, interoperable, and reusable.

It also envisages the creation of a Copernicus Water Thematic Hub (2026) and the deployment of advanced modelling tools, such as Destination Earth and Digital Twin technologies, by 2030. These measures aim to enable data-driven, anticipatory water management and reduce informational fragmentation.

4. Research and innovation

Research, innovation, and skills are positioned at the core of the EU's competitive advantage in the water sector, which already accounts for 40% of global patents and generated EUR 111.7 billion in value added. The Strategy seeks to address the gap between innovation development and market deployment through initiatives such as a Water Smart Industrial Alliance (2026), a dedicated Water Resilience R&I Strategy (2026), and the establishment of a European Water Academy (2026–2027). In parallel, it aims to tackle structural skills shortages and strengthen

knowledge transfer through new partnerships, including a Knowledge and Innovation Community under the European Institute of Innovation and Technology.

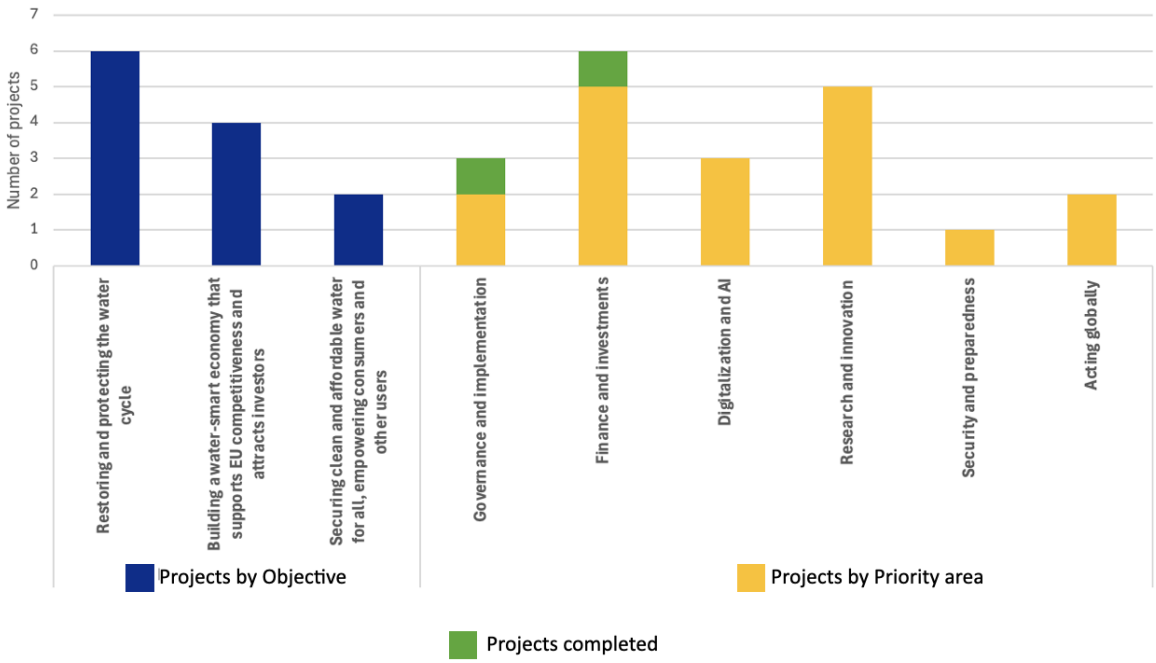
5. Security and preparedness

Security and preparedness are increasingly central in light of growing climate-related risks, infrastructure vulnerabilities and disruption of critical water infrastructure and supply. The Strategy advances a more integrated risk management approach, enhancing resilience of on- and offshore water infrastructure, combining the implementation of the Critical Entities Resilience Directive and the development of a European Climate Adaptation Plan by 2026. The objective is to enhance systemic resilience by linking disaster risk reduction, infrastructure protection and societal preparedness.

Finally, the Strategy embeds water resilience within a broader external action framework ("Acting globally"), recognizing the increasing geopolitical, developmental and security implications of water scarcity. The actions can be carried out through frameworks and instruments such as the Global Gateway, Clean Trade and Investment Partnerships and Climate Investor 2, a blended finance facility mobilising up to EUR 2.2 billion for water, sanitation, and ocean infrastructure projects.

Fig. 3.18: Water Resilience Strategy Action Tracker, projects stated and/or completed by Objective and Priority area

Source: European Commission, Water Resilience Strategy Action Tracker



Policy Recommendations

European Competitiveness Fund and Cohesion Policy

1. **Maximise the ECF's leverage by providing dedicated funding and creating agencies similar to DARPA.**

The European Competitiveness Fund should earmark funding for ambitious, high-risk, high-impact European 'moonshot' projects. A European DARPA with substantial operational autonomy to identify, fund and scale breakthrough innovations should be established.

2. **Strengthen the synergy between Cohesion Policy, the European Competitiveness Fund and other public and private instruments.**

The future EU budget should ensure a stronger operational link between Cohesion Policy and the European Competitiveness Fund, so that the pursuit of European competitiveness does not remain detached from territorial development objectives. While Cohesion Policy primarily supports SMEs and local development needs, and the European Competitiveness Fund is expected to better synergies with larger companies, there are potential benefits from better local-level connections and multiple sources of funding for regional ecosystems. In practice, Cohesion Policy could help prepare the territorial conditions for competitiveness-oriented investments by supporting skills, infrastructure, SME upgrading, research and innovation capacity and local supply chains, while the European Competitiveness Fund could provide scale and strategic direction in areas such as clean technologies, digitalisation and industrial transformation. Stronger coordination mechanisms should be established with respect to other EU, national, public and private funding instruments.

3. **Flexibility is important, but stability and predictability are fundamental.**

The 2025 mid-term review highlighted several issues of the Cohesion Policy. In particular, it is clear that the current Cohesion Policy can only insufficiently tackle new emerging priorities and pressures. However, the objective of the policy remains that of bridging regional disparities and align national economies, especially through long term investments. Flexibility is essential for overcoming crises, adjusting aims and improving absorption. At the same time, long-term programming is required to address structural deficiencies, such as infrastructure and investment gaps in weaker regions. This programming can only be enabled by stable and predictable policies.

4. **Leverage simplification to improve absorption.**

Simplification appears to be one of the main points currently emerging from discussions on the post-2027 Multiannual Financial Framework, and it should be leveraged more systematically to improve the absorption of Cohesion Policy funds. This should include clearer eligibility rules, standardised templates, single integrated digital reporting systems and a wider use of simplified cost options (SCOs), all of which would help reduce administrative burdens for managing

authorities, intermediate bodies and final beneficiaries. Simplification should also address unnecessary national and sub-national "gold-plating", the additional rules, procedures or documentation requirements that go beyond what is strictly required and increase administrative burdens for beneficiaries. Such requirements can make access to Cohesion Policy funds more difficult, particularly for smaller beneficiaries such as SMEs, NGOs and local governments, which often have more limited administrative capacity.

Water Resilience

1. **Ring-fence funding for water and mobile private capital**.

The EU should establish a dedicated funding line or binding expenditure target for water resilience within the ECF or Cohesion Policy, recognizing water infrastructure as strategic infrastructure on par with energy, digital and transport networks. Alongside public funding, public-private financing mechanisms should be reinforced through closer collaboration with the European Investment Bank, the use of blended finance instruments, and the introduction of incentives and risk-sharing instruments to encourage long-term private investment in water infrastructure and innovation.

2. **Modernize Water Systems**.

Investment priorities should accelerate the modernization of water systems through large-scale deployment of digital water technologies, wastewater reuse, smart monitoring systems and nature-based solutions capable of improving efficiency and reducing systemic vulnerability. Modernized water infrastructure would reduce losses, optimize resource management, and strengthen the capacity of communities and industries to cope with increasing climate-related pressures such as droughts and water scarcity.

3. **Operationalize Water Efficiency First.**

The "Water Efficiency First" principle should become systematically integrated and operational across all industrial and infrastructure planning to ensure that water demand is considered from the earliest stages of project development: this is particularly crucial in preventing future resource bottlenecks, reduce operational risks, and support the sustainable growth of strategic sectors such as semiconductors, batteries, hydrogen and data centres, where rising water demand risks creating new structural dependencies.

4. **Strengthen Water Governance**.

Without a structural shift in how Europe finances, governs, and manages water resilience, the Union risks undermining not only its environmental objectives, but also the industrial competitiveness and economic and food security that increasingly depend on reliable access to water resources. The EU should strengthen coordination between water, industrial, agricultural, and climate policies to ensure a more coherent approach to water resilience. Improved

governance would facilitate long-term planning, reduce fragmentation across Member States, and help safeguard the reliable water supplies increasingly required to support economic activity, industrial development, and climate adaptation.