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Making the EU's 2028-2034 Multiannual Financial Framework Work for Southern Europe

INTRODUCTION

Long-term planning is among the most delicate yet indispensable functions in any decision-making system. Balancing competing interests, anticipating structural trends, mitigating future risks, and allocating adequate resources constitute a complex exercise that requires informed contributions from multiple actors. **Economic competitiveness** is a policy area where such strategic foresight is particularly critical. As demonstrated by large-scale investment strategies from the United States to China, sustained competitiveness depends on timely investment in the right sectors and **technologies**.

Among such technologies, the **digital** ones – together with broad digital resilience – can represent a turning point for Europe's future social and economic prosperity. Their successful development and diffusion, however, depend on a thriving innovation ecosystem and on a productive environment that is adaptable and capable of rapid technological uptake. This sector, as with many others, is characterised by intense global competition in which first movers can secure worldwide market positions and shape technological standards, thereby influencing both economic and societal processes. Additionally, achieving these technological ambitions requires contributions from every other sector, ranging from concrete and diffuse skills to a reliable, sustainable and affordable energy base.

In this respect, EU programmes such as the **European Competitiveness Fund** and **Horizon Europe** play a central role in nurturing innovation and supporting key technologies across the Union. Their impact, together with the other cohesion policies, is particularly significant for **Southern Europe**, where economies continue to face persistent structural challenges in keeping pace with other Member States and global competitors.

The European Union's long-term budget – the seven-year **Multiannual Financial Framework (MFF)** – is inherently more complex than similar national planning mechanisms. Divergences between and within Member States in terms of priorities, socioeconomic conditions and vulnerability to global

shocks complicate both negotiations and implementation. Heightened geopolitical tensions, rapid technological change and the accelerating consequences of climate change further intensify the difficulty of achieving a coherent strategic consensus. The forthcoming MFF has been announced with **a budget of nearly € 2 trillion – equivalent to 1.26% of the Union's gross national income** – and it structured around **three main pillars**: i) economic, social and territorial cohesion; agriculture, rural and maritime prosperity and security; ii) competitiveness, prosperity and security; and iii) Global Europe. This design is meant to address present and future challenges through a more streamlined and focused architecture than in previous cycles. Assessing the extent to which this approach is effective is one of the core objectives of this report.

This publication is organised as follows. *Chapter 1* compares the 2028-2034 MFF with the current framework. *Chapter 2* provides an in-depth analysis of the European Competitiveness Fund. *Chapter 3* examines the Fund's contribution to EU digital leadership. *Chapter 4* evaluates the impact of Horizon 2020 and Horizon Europe on the European innovation landscape and provides recommendations for the next Horizon flagship included in the new MFF.

EXECUTIVE SUMMARY

Chapter 1

This chapter compares the Multiannual Financial Frameworks (MFF) 2021–2027 and 2028–2034, assessing how the EU budgetary architecture has evolved in response to crises, structural challenges, and growing geopolitical pressures. The analysis highlights both continuity and major innovation in the design, priorities, governance model, performance system, and financing of the next MFF.

The 2021–2027 MFF was shaped by Brexit, the climate and digital transitions, the COVID-19 pandemic, and rising geopolitical instability. It maintained the traditional budget distribution, nearly two-thirds allocated to the Common Agricultural Policy and Cohesion Policy, limiting the expansion of emerging priorities such as energy, research, and defence. Nonetheless, important reforms strengthened performance orientation through a more coherent indicator system, a consolidated intervention logic and streamlined objectives under the Common Provisions Regulation. Conditionality expanded with the introduction of the Rule of Law Conditionality Regulation and a strengthened enabling-conditions framework.

Most transformational was **NextGenerationEU (NGEU)**, which introduced common borrowing at scale and a results-based payments model through the Recovery and Resilience Facility (RRF), creating a precedent for supranational macro-fiscal intervention. Performance and monitoring mechanisms were significantly reinforced. Common output indicators covered 80-90% of ERDF allocations; common result indicators were introduced for all cohesion funds; financial reporting became quarterly and indicator reporting semi-annual. The 2025 mid-term review enabled reprogramming of unspent flexibility amounts.

Despite these improvements, the period revealed **persistent rigidity**: **limited reallocation (around 2.4%), and slow absorption in several Member States**. Implementation showed both strengths and weaknesses. The framework enabled rapid crisis mobilisation, deploying €30.5 billion for Ukraine by June 2023 alongside sustained COVID-19 recovery funding. Southern European Member States achieved milestone completion rates of 37–54% while managing reform portfolios corresponding to 8–16% of GDP. However, Cohesion Policy absorption remained low. Performance-based financing introduced verification bottlenecks and administrative burdens.

These implementation experiences directly shaped the design of the next financial framework, with the Commission's proposal for the MFF 2028–2034 representing a structural overhaul. It simplifies the budget architecture from 52 to 16 programmes and from seven to four headings. The total envelope rises to €1.98 trillion (current prices), or 1.26% of EU GNI, although after excluding NGEU repayments it represents only a small increase to 1.15% from 1.1%. The reform responds to

intensified geopolitical competition, the EU's strategic investment gap (estimated at €750–800 billion annually), and lessons drawn from NGEU implementation.

The most consequential institutional change is the introduction of National and Regional Partnership Plans (NRPPs), which integrate expenditure from cohesion, agricultural, fisheries and home-affairs instruments under a single planning and governance structure. These plans aim to produce European Public Goods through aligned national reforms and investments, extending the RRF's performance-based payment model across all funds. The framework also establishes the **European Competitiveness Fund (ECF)**, designed to finance strategic priorities through centralised, excellence-based allocation. These changes have generated **substantial institutional resistance**. The NRPP model has provoked opposition from Member States and the European Parliament, who argue it threatens the identity of Cohesion Policy, weakens regional participation, and potentially erodes democratic oversight. The concentration of authority at national levels under NRPPs risks marginalising regional governments. The shift toward centralised, excellence-based funding in ECF has also revealed divisions between Member States advocating for geographical balance mechanisms and those opposing any departure from pure excellence criteria, reflecting **divergent conceptions of whether competitiveness and cohesion are complementary or competing priorities**.

Overall, the comparison reveals a turning point in EU budgetary governance, marked by **fundamental tensions**: centralised strategic steering versus territorial equity; accountability through conditionality versus operational simplification; crisis flexibility versus multiannual predictability; and competitiveness through concentration versus cohesion through distribution. Its ambition has generated significant institutional conflict, raising questions about the feasibility of reforms, implementation capacity, and the balance between European added value and territorial cohesion.

Chapter 2

The **European Competitiveness Fund (ECF)** was established by the European Commission to strengthen the resilience and competitiveness of the EU economy. **With a budget of €234.3 billion for 2028–2034, it supports four macro-areas: clean transition and decarbonisation; health, biotech, agriculture and bioeconomy; digital leadership; and defence industry and space**.

These macro-areas referred – to as policy "windows" – are considered essential enablers of a prosperous and secure European economy at a time when international tensions and supply-chain vulnerabilities expose the risks of excessive global dependence. **The ECF's primary objective is to close the innovation gap with global competitors and reduce strategic dependencies by leveraging the Single Market**. This approach, rooted in the Draghi and Letta reports and the Competitiveness Compass, aims to improve the EU's investment framework, crowd in private capital, and streamline the fragmented funding landscape across the Union.

Simplification is a core feature of the Fund's design: it merges fourteen instruments into a single framework, integrates access points, introduces a unified rulebook, and offers a single gateway for funding applications, thereby substantially simplifying the overall funding process.

The four policy windows span nearly all areas of economic activity, though resources are unevenly distributed, reflecting the Commission's strategic priorities. The **Defence Industry and Space** window will receive nearly €125 billion – almost half of the Fund's resources, including contributions from other programmes – to support innovative projects and long-term investments steered by the new Defence Industrial Advisory Board, composed of Member State and Commission representatives. These investments include strengthening Europe's capacity to extract, process and recycle raw materials, as well as supporting projects of common European interest.

The second window in terms of budget is the **Digital** one, with a total of €51.5 billion, which aims to establish a secure and interoperable digital economy – including digital public infrastructure – by tacking skills, standardisation and security of supply of advance digital technology and infrastructure.

Third is the **Clean Transition and Industrial Decarbonisation** window, with €26.2 billion plus other €41 billion from the Innovation Fund, with which it will work in great synergy. This window is intended to facilitate the transition to a sustainable, circular and efficient economy, by adopting decarbonisation technologies and developing flexible energy systems.

Finally, the **Health, Biotech, Agriculture and Bioeconomy** windows will count on €20.3 billion to strengthen public protection, cross-border health threats, foster innovation in the sector and prioritise health promotion and prevention, as well as promote the competitiveness, sustainability and resilience of agriculture and fishery.

The ECF, however, will not only operate through the numerous financial measures at its disposal. It will also provide advisory support throughout the investment cycle, including **business coaching and acceleration services**. Furthermore, particular attention will be devoted to developing **skills** across all sectors.

Compared to previous measures, the ECF presents itself as a turning point in terms of comprehensiveness of the action and resources deployed by the Commission to cover those economic areas. However, it's yet to be seen how efficient the **distribution of such resources** will be, how public-private partnerships will be implemented, and weather dependencies will be effectively reduced.

This chapter of the publication explores all these aspects, beginning with a general overview of the framework and its objectives, going through a detailed analysis of each window, illustrating then strengths and weaknesses. Finally, a **comparison with comparable measures from the US and China** is presented.

Chapter 3

The proposal for the next Multiannual Financial Framework places "digital leadership" at the centre of Europe's industrial and geopolitical agenda. This term, however, brings together several interpretations: building capacities across the digital stack, securing control of bottlenecks, protecting autonomy, encouraging disruptive innovation and ensuring adoption of digital technologies.

The difficulty now is translating this ambition into an investment system that can guide decisions across programmes and Member States. This chapter concentrates on two elements of the European Competitiveness Fund that will shape that system**: Article 10, which introduces EU-preference rules, and Article 20, which sets the conditions for exceptional procedures**. Together, they define how control over technological assets is exercised, how sourcing obligations are applied and how time-sensitive actions can move forward when ordinary procedures would be too slow.

To make these instruments work, Europe needs a clear understanding of **enabling infrastructure**. This refers to the shared technical, regulatory and institutional systems that sustain digital development over time. It includes **cloud–edge capacity, connectivity, testing and certification environments**, but also **long-term funding mechanisms, procurement rules and human-capital pipelines**. Without this foundation, the different visions of leadership risk pulling policy in competing directions. With it, Europe can align research, deployment and industrial needs, reduce exposure to external chokepoints, and support private investment.

Southern Europe can reinforce this approach by contributing assets that already exist in the region. For this to succeed, these capacities need to be connected to the shared European infrastructure rather than treated as isolated national efforts.

Chapter 4

The European Union approaches the midpoint of its *Digital Decade* and has already mobilized more than €170 billion through its Research and Innovation (R&I) Programmes, Horizon 2020 and Horizon Europe. These instruments serve as the primary engine for the "Twin Transition", tasked with not only pushing the frontiers of science but also ensuring that 90% of SMEs reach at least a basic level of digital intensity by 2030**. In this chapter, we argue that while the EU has successfully cemented its status as a global powerhouse in "deep tech" research excellence, it faces a widening "deployment gap".** A structural paradox exists where Europe is effectively funding the *supply* of advanced digital technologies (i.e AI algorithms, quantum prototypes) but systematically underperforms in ensuring their *diffusion* by the industrial fabric, especially in the economies of Southern Europe.

The roots of this divergence can be traced back to the **design of Horizon 2020**. Its *Industrial Leadership* pillar successfully prevented Europe's technological obsolescence by mobilizing critical

mass in key enabling technologies through instruments like the *LEIT* Programme and Public-Private Partnerships. However, **participation was heavily skewed towards established incumbents and Research and Technology Organizations (RTOs) in Northern innovation hubs**. For SMEs in Southern Europe, the Programme often functioned as a source of academic funding rather than a catalyst for industrial transformation. **This dynamic has been reinforced in *Horizon Europe* with its focus on "Strategic Autonomy"** via Cluster 4, which has consolidated a bias towards high-end, capital-intensive R&D. While the *European Innovation Council (EIC)* was introduced as a necessary tool for scaling "unicorns," it structurally favors mature ecosystems with deep venture capital markets. Recent data (EIC Accelerator) reveals a **stark geographic concentration**: till October 2024, German and Dutch companies captured the lion's share of funding, while applicants from Southern states faced a "financial Valley of Death," due to a lack of local private co-investment to match EU grants.

This asymmetry has crystallized into a multi-speed digital Europe, where high participation in EU research calls does not translate into local economic impact, especially in the South. **Greece**, ranks highly in securing Horizon funding relative to its size, driven by a robust academic sector that excels in winning grants. Yet, this success has not trickled down to its economy, where only 53% of SMEs have reached basic digital intensity and adoption of AI remains negligible at 10%. **Italy**, despite its strong manufacturing base, faces a severe skills mismatch that stifles the adoption of advanced tools; while basic digitization is widespread due to regulatory mandates like e-invoicing, the uptake of AI remains at 8.2%. Similarly, **Spain** excels in leading "Twin Transition" projects (Horizon Europe), yet its SME landscape remains fragmented, unable to absorb the high-tech outputs generated by its own research centers. **Portugal** relies heavily on cohesion funds rather than competitive innovation grants to drive business R&D, resulting in a disconnect between its startup rhetoric and industrial reality. These cases confirm that EU funds risk creating isolated islands of excellence (universities and some startups) amidst a sea of digital stagnation in the broader economy.

This gap is driven by **specific structural barriers that current policy fails to address**. First, the "Valley of Death" for adoption is acute in the South, where venture capital markets are shallow, leaving companies with successful prototypes unable to finance the final leap to market deployment. Second, the "plug-in" mechanism between research funding (Horizon Europe) and deployment funding (Digital Europe Programme, Structural Funds) remains bureaucratic; the "Seal of Excellence" does not yet provide automatically alternative funding, leaving high-quality proposals in limbo. Third, the network of European Digital Innovation Hubs (EDIHs), while expanding, suffers from uneven maturity. Hubs in the North act as advanced testing grounds for AI and HPC, while those in the South are often still struggling to provide basic cloud migration services.

To bridge this gap, the next Multiannual Financial Framework (2028–2034) must recalibrate its approach. We propose that the 10th R&I Framework Programme (FP10) moves beyond the dichotomy of "Excellence" versus "Cohesion" to **prioritize *diffusion* alongside *invention***. This requires **shifting from a "technology-push" model to a "diffusion-first" mandate**, where Cluster 4 projects are required to allocate specific budgets to active technology transfer activities targeting

SMEs in lagging regions. Furthermore, the administrative friction between Horizon Europe and the Digital Europe Programme must be eliminated by automating the "Seal of Excellence," allowing successful prototypes to access structural funds via a fast-track window without national re-evaluation. Finally, to address the "missing middle," the EU should introduce a place-based "Regional EIC" pilot, offering smaller, non-dilutive grants specifically for the *adoption* of existing digital tools by SMEs. Only by actively engineering the downstream absorption of technology can the EU ensure that the benefits of European innovation are deployed across the entire Union.

CONTRIBUTORS

Chapter 1: Comparing the Multiannual Financial Frameworks 2021-27 and 2028-34

IPP-Lisbon
Joana Pereira dos Reis, Steffen Hoernig

Chapter 2: The European Competitiveness Fund: an early assessment

I-Com, Institute for Competitiveness
Alessio Caramitti, Stefano da Empoli

Chapter 3: Policy approaches to effectively build digital leadership in the Multiannual Financial Framework and European Competitiveness Fund

Real Instituto Elcano
Raquel Jorge Ricart, Darío García de Viedma

Chapter 4: Digital Horizons or Policy Gaps? Rethinking How EU R&I Policy Shapes the Digital Decade

LIEE – The Laboratory of Industrial and Energy Economics
Petros Dimas, Aggelos Tsakanikas

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List of abbreviations

- **AMPR:** Annual Management and Performance Report
- **GEF**: Global Europe Fund
- **MFF**: Multiannual financial framework
- **PPS:** Programme Performance Statements
- **RRF:** Recovery and Resilience Facility
- **WEEE:** Waste Electrical and Electronic Equipment Directive

1.1 MFF 2021-2027 and Next Generation EU

1.1.1 The original MFF 2021-2027

A. Overview

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).

Despite this more strategic framing, negotiations were still largely dominated by national net-balance concerns, with Member States focused on limiting gross contributions and preserving rebates (Darvas, 2019; Schout et al., 2023). As a result, nearly two-thirds of resources continued to flow to the **Common Agricultural Policy (CAP)** and **Cohesion Policy**, leaving less space for expanding newer priorities such as energy, research, and defence (Busse et al., 2025).

B. Main ideas of the MFF 2021-2027, as compared to the previous framework

The **Common Provisions Regulation (EU) 2021/1060** streamlined the programming architecture and reinforced the performance orientation of Cohesion Policy, building on the unified framework first introduced in 2014-2020 under CPR 1303/2013 (European Commission, 2025a). Operational refinements, such as a more coherent indicator set and clearer intervention logics, aimed to strengthen result orientation while maintaining continuity with previous periods (European Commission, 2023b).

Conditionality also evolved. The **Rule of Law Conditionality Regulation (2020/2092)** linked EU fund disbursement to respect for rule-of-law principles, introducing what the Commission described as a new governance mechanism for budget protection (European Commission, 2024a, 2024b). In parallel, Cohesion Policy embedded four horizontal and sixteen thematic enabling conditions covering areas such as public procurement, state aid and strategic policy frameworks, with the possibility to suspend payments until compliance is ensured (European Commission, 2023b). Finally, the **Recovery and Resilience Facility (RRF)**, the core of the **Next Generation EU (NGEU) initiative**, pioneered a results-based payment model, tying disbursements to the fulfilment of milestones, an approach without precedent at this scale in EU budgeting (Busse et al., 2025).

C. Structure of spending on different headings, sources of funds

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.

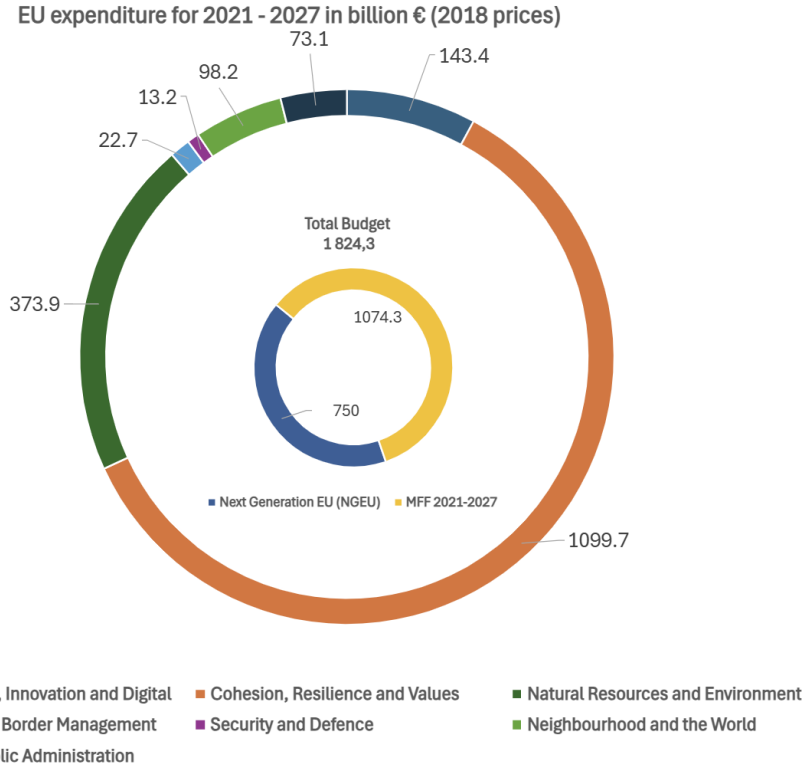


Figure 1.1 – Source: Council of the European Union (n.d.)

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).

D. Monitoring and performance framework

The 2021–2027 MFF builds on the results-oriented system introduced in 2014–2020, when Cohesion Policy programmes were required to set up a Performance Framework and reserve. Under that model, milestones for 2018 and targets for 2023 determined the release of 5–7% of each priority's allocation following the 2019 performance review, helping shift Cohesion Policy towards measurable outcomes (Sweco et al., 2016; Dozhdeva & Fonseca, 2023).

This architecture is retained and strengthened. The number of policy and specific objectives is reduced to simplify the intervention logic. Common output indicators cover roughly 80–90% of allocations in adopted ERDF programmes, compared to 50–60% in 2014–2020, while common result indicators are introduced for ERDF, Cohesion Fund and Just Transition Fund (European Commission, 2023b). Reporting requirements are tightened: financial data must be transmitted quarterly, and indicator information every six months (European Commission, 2025a). A mid-term review in 2025

assesses progress against milestones and allows reprogramming of unspent flexibility amounts (European Commission, 2025a).

Cohesion-specific monitoring feeds into the Annual Management and Performance Report (AMPR) and Programme Performance Statements (PPS), which provide integrated performance reporting across all EU spending programmes (European Commission, 2024a, 2024c).

E. Revisions in 2022 and 2024 to address new challenges

The 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) (European Commission, 2023a). The result was a €64.6 billion mid-term 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).

1.1.2. Next Generation EU

A. Purpose, source of funds, structure, relation to MFF

Next Generation EU (NGEU) is a temporary recovery instrument established in response to the COVID-19 crisis, financed by €750 billion of common EU borrowing guaranteed by the EU budget (Busse et al., 2025). This unprecedented step in fiscal integration increased the budget's "headroom" and demonstrated Member States' willingness, at least temporarily, to empower the Commission to issue large-scale debt, a precedent likely to influence post-2027 debates, despite its initial 'one-off' nature (Kengyel, 2025).
Around 90% of NGEU resources are channelled through the **Recovery and Resilience Facility**, a performance-based instrument allocating €672.5 billion (2018 prices), of which €312.5 billion are grants and €360 billion loans (Bruegel Dataset, 2023). Disbursements are conditional on meeting milestones and targets relating to reforms and investments aligned with EU objectives (European Commission, 2024a). Although legally separate from the MFF, NGEU uses a similar implementation and control architecture, and its expenditures are integrated into the broader EU performance framework, including the AMPR and programme statements (European Commission, 2024a).

B. Priorities and conditionality

Rather than displacing pre-existing priorities, NGEU reinforced them under crisis conditions. Contrary to fears that climate objectives would be sidelined, as in the aftermath of the 2008–2012 crisis, the RRF requires that at least 37% of spending support climate objectives and at least 20% support digital transitions (Regulation (EU) 2021/241, Dupont et al., 2020).
The RRF introduced a fundamental shift in EU financing mechanisms: funds are disbursed only after the Commission positively assesses the achievement of agreed milestones and targets, creating a rigid link between verified results and payment (Busse et al., 2025). Rather than embedding austerity-style conditionality, this model aims to incentivise reforms and investments consistent with European Semester country-specific recommendations, reflecting what has been described as "constrained supranationalism" under European Council political oversight (Butti & Fabbrini, 2022).

1.1.3. Implementation of the MFF 2021-2027 and NGEU

The implementation of the MFF 2021-2027 and Next Generation EU reveals a complex picture: demonstrated crisis-response capacity alongside persistent structural constraints that limit the EU budget's strategic agility. This section analyses key achievements and shortcomings, examining how the framework's design shaped its performance in practice.

A. Successes: deployment of crisis response to Ukraine, Covid, and NGEU

The MFF 2021-2027 enabled rapid crisis mobilisation, deploying €30.5 billion for Ukraine by June 2023 alongside sustained COVID-19 recovery funding (European Commission, 2023a). However, this responsiveness depended critically on borrowing instruments beyond the traditional MFF structure, as NGEU, SURE, and the Solidarity and Emergency Aid Reserve provided resources that the framework's own limited margins could not supply (Busse et al., 2025; European Commission, 2023a), revealing that crisis response capacity derived less from enhanced MFF flexibility than from external financing mechanisms.

Institutionally, crisis management was used strategically to deepen pre-existing agendas. COVID-19 allowed the Council and Commission to align immediate recovery with longer-term Green Deal objectives, layering new recovery structures atop the MFF without displacing established priorities. Russia's invasion of Ukraine and REPowerEU similarly converted existing NGEU resources into tools for linking energy security and climate objectives, demonstrating how crises were exploited to entrench long-term commitments rather than derail them (Schramm & Terranova, 2024).
NGEU's bond issuance also strengthened the euro's international role and created a new "safe asset", transforming the Commission from a pure budget overseer into an investor in national economies (Kengyel, 2025). Yet these innovations face a "permanence paradox": if NGEU is highly successful, its temporary framing appears arbitrary; if its impact disappoints, replicating common borrowing becomes politically harder (Kengyel, 2025). Its issuance expires in 2026, but debt service

begins only in 2028, with repayment extending until 2058. Rolling over this borrowing structure could free fiscal space for future European Public Goods investment (Busse et al., 2025). This effectively would change crisis-driven temporary borrowing into quasi-permanent financing capacity, suggesting that the NGEU's most significant legacy may not be its immediate recovery impact but rather the institutional precedent for sustained EU borrowing independent of acute crisis justification.

Greece, Italy, Portugal and Spain also successfully managed the RRF's largest and most structurally complex reform portfolios, with allocations representing 8–16% of GDP, compared to <1.5% for many Member States. Their milestone completion rates of 37–54%, when adjusted for portfolio size, confirm substantial implementation capability and validate the performance-based financing model.

The strategic opportunism evident in the NGEU's design translated into **concrete sectoral achievements**, particularly in advancing the **digital transition** across Member State. According to a mapping exercise conducted by the Joint Research Centre, €177 billion out of approximately €957 billion across five key funding instruments (RRF, Cohesion Policy, Horizon Europe, Digital Europe Programme, and Connecting Europe Facility-Digital) were identified as having potential impact on **Digital Decade targets** established under Decision (EU) 2022/2481, representing approximately 18% of the total budget (Signorelli et al., 2024). The RRF accounts for around €136 billion, or 77% of this total, with a strong focus on the digitalisation of public services and businesses. Digital skills receive €26 billion, including €7.5 billion in Italy alone and around €950 million from Cohesion Policy for basic skills in less developed regions (Signorelli et al., 2024). By mid-2023, reported outcomes included 5.6 million additional homes with very-high-capacity internet, 309 million users of new or improved public digital services, and 3,000 terabits per second of additional backbone capacity (European Commission, 2024a).

A similar pattern is visible in **climate-related investments**. According to Commission data, Italy, Spain and Poland allocated the largest absolute amounts to renewable energy under NGEU and cohesion instruments, positioning them as potential energy leaders under the next MFF due to their demonstrated capacity to deploy large-scale green funding (European Commission, n.d.a).

B. Structural Constraints and Implementation Challenges

Despite these achievements, implementation underscored **persistent structural limits**. The weight of traditional policies continued to shape the budget's operation: historical commitments absorbed most resources, while newer priorities competed for limited flexibility margins. This pattern highlights the tension between distributive stability and strategic responsiveness in the EU's fiscal governance, also illustrating how political compromise in the Council continues to outweigh collective investment logic, constraining the Union's ability to deploy its budget as a forward-looking policy instrument (Darvas, 2019; Schout et al., 2023; Busse et al., 2025).

While the MFF 2021-2027 introduced new flexibility mechanisms, the experience during implementation revealed **that these innovations did not materially increase the EU's crisis-**

response capacity. By mid-2023, 75% of the €5.5 billion unallocated margins (0.45% of total expenditure) had been consumed or earmarked, the Flexibility Instrument was fully committed through 2024, and the Solidarity and Emergency Aid Reserve was depleted in both 2021 and 2022 (European Commission, 2023a). The eventual decision to increase ceilings confirmed that built-in flexibility had become too narrow to cope with repeated shocks (Eucrim, 2024; European Commission, 2023a).
Absorption problems further constrained effectiveness. Busse et al. (2025) report that by end-2024 less than 7% of Cohesion Policy funds had been paid, even though the implementation period was beyond its midpoint, undermining programme relevance and delaying the realisation of intended benefit, though it has to be taken into account that there is a delay between execution and payment. The RRF also faced implementation challenges: heavy programming, monitoring and audit requirements created administrative burdens, leading to revisions of milestones and targets that, in some cases, reduced the ambition of planned reforms (Busse et al., 2025).

Similarly, the enhanced performance orientation of Cohesion Policy through operational refinements led to **growing implementation complexity and an 'audit explosion' that placed increasing demands on authorities**, with administrative capacity varying greatly across the EU (Bachtler, 2022). This tension between accountability and operational efficiency emerged as a persistent challenge throughout the implementation period.

Portugal's "1.º Direito" programme illustrates these tensions. By mid-2025, the Prime Minister reported an execution rate of only 27% for RRF-financed housing investments, while the Court of Auditors warned of risks of losing funding: by March 2025 only 1,950 of 9,375 planned homes had been delivered, in part because complex verification procedures and limited capacity slowed implementation (Idealista, 2025; ECO, 2025).

These implementation challenges become more comprehensible when examined through the **NGEU's performance reporting framework**, which reveals both macroeconomic effectiveness and persistent structural weaknesses. At the macro level, the RRF is expected to raise EU GDP by 0.4–0.9% by 2026, with effects up to 1.2% by 2031 (Bańkowski et al., 2024). Country-specific reform implementation improved from 52% in 2021 to 69% in 2023 (Busse et al., 2025). However, performance reporting remains fragmented. AMPR Volume I presents headline metrics without systematically benchmarking outcomes against original objectives, while Volume II focuses on RRF milestones, 82% of those due by end-2023 were fulfilled, though 18% of Q3 2024 targets were delayed (European Commission, 2024a, 2024b). Reporting is organised by national plans rather than themes, obscuring whether delays cluster in specific policy areas. Programme Performance Statements in Volume III offer granular detail but no EU-wide synthesis (European Commission, 2024c).

C. Governance Tensions and Policy Coherence Challenges

The **introduction of rule-of-law conditionality** and the **reinforcement of enabling conditions** represented significant governance innovations. However, some scholars argue that tighter conditionality can undermine Cohesion Policy's redistributive objectives, particularly if applied unevenly or if it centralises control at the expense of subnational actors whose contextual knowledge is crucial for place-based interventions (Kölling, 2024).
The expansion of cross-cutting priorities, notably climate, into Cohesion Policy raised concerns about thematic overload and a gradual erosion of the policy's core identity. **Some analyses suggest that Cohesion Policy has become a "catch-all" instrument with too many objectives, mixed evidence of achievements and increasingly complex multi-level governance**, which risks diluting its focus on long-term structural transformation (Hunter, 2023; Cappellano et al., 2024).

D. Measurement challenges

Climate tracking remained contested throughout the period. The Commission reported 34.3% of the budget for climate-related spending in 2021–2027, yet external assessments challenged these figures (Busse et al., 2025). The European Court of Auditors recalculated the overall 2014–2020 climate share at around 13% (vs. the Commission's 20.1%), pointing out mixed bases for reporting (planned, committed and spent amounts) and inconsistent coefficients. The Commission stood by its OECD-based (Rio marker) methodology and argued that a uniform application of taxonomy or "Do No Significant Harm" principle across the entire budget was neither feasible nor appropriate given programme diversity (European Court of Auditors, 2022; European Commission, 2021). Independent assessments also flagged uneven "Do No Significant Harm" practices that could allow environmentally harmful projects to receive EU funds, underscoring the need to strengthen the tracking architecture (Darvas and Sekut, 2025).

1.2 Comparison with the MFF 2028-34 - Main Differences and their Rationale

1.2.1 Priorities and Allocations

The MFF 2028-2034 marks a significant departure from its predecessor, both in structure and priorities. The Commission proposes a total of €1.98 trillion in current prices (€1.763 trillion in 2025 prices) which corresponds to 1.26 % of EU GNI, including 0.11% for Next Generation EU repayment) (European Commission, 2025e; Pari & Pradier, 2025). This means the new MFF (without NGEU repayments) amounts to 1.15% of GNI, whereas the 2021-2027 MFF was 1.1% (ETUI, 2025). This raises questions about whether the proposed envelope matches the EU's expanded ambitions in competitiveness, defence and climate, especially in light of the Draghi Report's estimate of a €750–800 billion annual investment gap (Draghi, 2024).

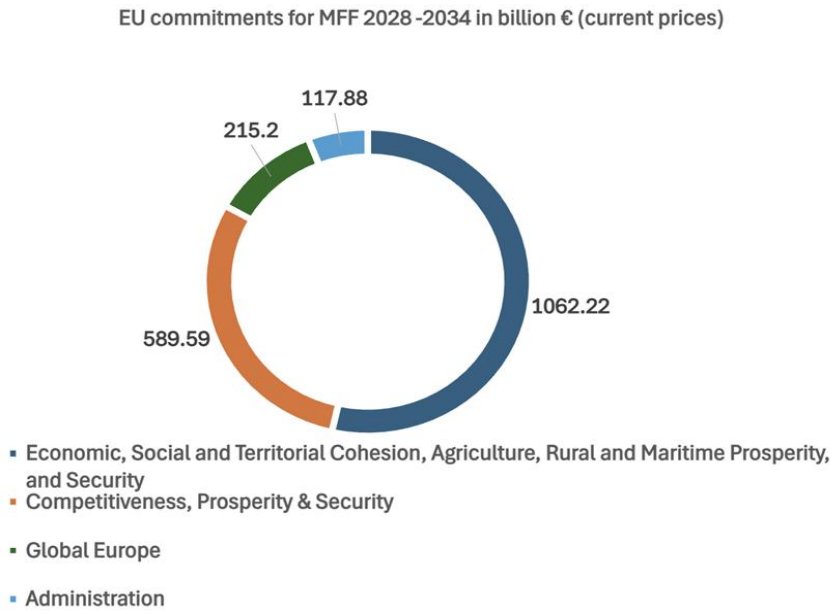


Figure 1.2 – Source: (European Commission, 2025c)

Structurally, the proposal simplifies the budget architecture. It reduces the **number of programmes** from 52 to 16 and compresses seven headings (plus sub-headings) into four: Economic, Social and Territorial Cohesion, Agriculture, Rural and Maritime Prosperity, and Security; Competitiveness, Prosperity and Security; Global Europe; and Administration (European Commission, 2025d). This reorganisation aims to simplify the EU budget's architecture by merging multiple strands under broader umbrellas, particularly through the creation of National and Regional Partnership Plans (Pari & Pradier, 2025).

A. Economic, Social and Territorial Cohesion, Agriculture, Rural and Maritime Prosperity and Security centred on National and Regional Partnership Plans

The National and Regional Partnership Plans (NRPP) bring together 21 existing EU programs under a single strategic framework, merging 14 of them into one integrated plan per Member State, while the remaining seven are coordinated with, but implemented separately from, the Plans. The NRPP will support investments and reforms to achieve EU priorities, with funding conditional on their successful implementation (Pari & Pradier, 2025).

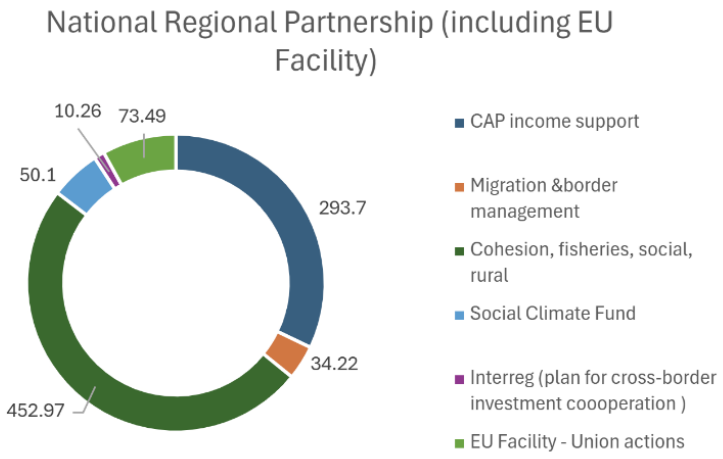


Figure 1.3 – National and regional partnership plans: pre-allocated amounts in billion EUR current prices and EU Facility. Source: European Commission (2025d)

Conditionality under NRPPs

Drawing on mechanisms established in the Common Provisions Regulation and the RRF, **the framework incorporates conditionality** where funding disbursement depends on adherence to rule-of-law principles and the Charter of Fundamental Rights. For instance, funding to educational institutions could be suspended if academic freedom is undermined, and suspension powers are extended to CAP payments where Charter violations occur (European Commission, 2025d).

Furthermore, **the NRPPs extend the RRF's results-based payment model to all funds**, fundamentally changing how and when EU resources are disbursed. Instead of the traditional N+3 rule governing payments based on implementation timelines, disbursement under NRPPs depends on the verified achievement of milestones and targets, assessed ex post by the Commission (European Commission, 2024d;2025c). This represents a shift from monitoring inputs and processes to evaluating outputs and outcomes, potentially enhancing accountability and ensuring Union funds generate tangible results rather than merely financing activities.

Centralization

Under this approach, each Member State, in cooperation with its regions, would adopt a single, integrated plan detailing tailored investments and reforms. According to the European Commission, "plans will be designed and implemented in close partnership with national and regional authorities and relevant stakeholders" (European Commission, 2025e).

However, scholars warn that regional authorities fear recentralisation and a more place-neutral approach. Regional scope for designing and managing programmes appears reduced: "regional

chapters" are not formally defined, and a national coordinating authority becomes the main interlocutor for the Commission, overseeing payment claims and implementation. This may limit regional influence over project selection and resource allocation, particularly in larger Member States with strong traditions of regional programmes. Regions and Member States with strong administrative capacity and reform track records will likely be better positioned to **design milestones and demonstrate compliance, risking a bias towards already developed territories. If reform-focused NRPP pillars prioritise national, place-neutral policies and performance criteria do not adequately reflect regional capacity differences, centralisation may be reinforced and regional autonomy weakened** (Connolly et al., 2025).

The Commission, by contrast, presents a more optimistic reading. It insists that regions will remain "at the centre of the plans" and that Member States may include regional or territorial chapters akin to today's operational programmes, with regional and thematic managing authorities still responsible for their parts. It also argues that regional entities will not be penalised for national-level delays, as payments will be earmarked to milestones under their control (European Commission, 2025d).

A key challenge will be calibrating performance requirements to the Cohesion Policy's long-term investment logic. Milestones must capture progress in infrastructure and human capital projects that generate returns over decades, avoiding an excessive bias towards easily measurable but less transformative interventions.

Focus on European Public Goods and flexibility

Seven programmes complement the NRPPs, notably the EU Facility, which provides centrally managed funding for projects with high European added value and for emerging crises. It reflects the Commission's conceptualisation of NRPPs as tools to produce European Public Goods (EPGs) "by aggregation": EU funding coordinates national delivery of outputs – e.g. energy security, migration capacity, decarbonisation – that yield Union-wide benefits (Buti, 2025; European Commission, 2025d). The Assembly of European Regions cautions, however, that treating cohesion mainly as a vehicle for EPGs risks subordinating its constitutional goal of territorial cohesion to competitiveness objectives (AER, 2025).

Building on lessons from the limited 2.4% reallocation of funds during 2021–2027 (Kengyel, 2025), **the framework embeds flexibility through unprogrammed reserves ("flexibility amounts") within NRPPs and a dedicated cushion within the EU Facility for crises and new priorities** (European Commission, 2025d). These mechanisms intend to overcome the rigidity observed in the current MFF, but they also raise concerns that greater flexibility, if centralised, could reduce the predictability and autonomy crucial for regional planning.

B. Competitiveness, Prosperity and Security

Reorientation of budgetary priorities

Beyond structural consolidation**, the 2028–2034 MFF also reflects a reorientation of budgetary priorities** in response to evolving geopolitical and economic challenges. This rebalancing is evident in the redistribution of resources across the four new headings, with traditional policies seeing modest adjustments while newer strategic priorities receive substantial reinforcement. Spending under cohesion, agriculture, and rural development declines from approximately 60% of the 2021–2027 framework to around 54% in 2028–2034. By contrast, allocations for Competitiveness, Prosperity and Security expand markedly from around 8% of the 2021-2027 MFF (representing "Single Market, Innovation & Digital") to 29.6% in 2028-2034 (European Commission, 2025d).

At its core sits **the European Competitiveness Fund (ECF)**, which consolidates 11 existing programmes under a single rulebook, combining direct and indirect management and channelling €409 billion (current prices) in MFF funding over 2028–2034 (see Figure 4) (European Commission, 2025c; 2025d).

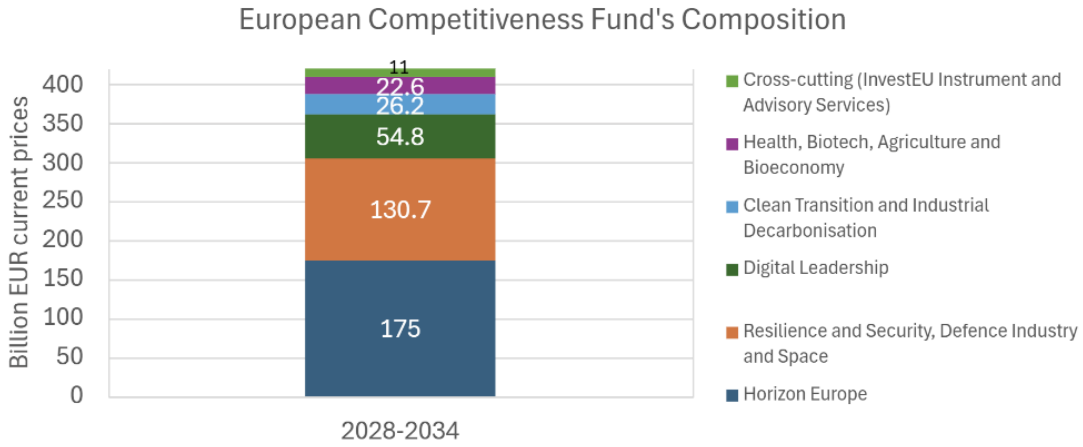


Figure 1.4 – ECF composition (€bn in current prices). Source: European Commission, 2025c

While NRPPs produce EPGs "by aggregation" (as discussed above), the European Competitiveness Fund operationalises "genuine" EPGs, where both financing and delivery occur at the centralised EU level to produce outputs generating Union-wide benefits (Buti, 2025; European Commission, 2025d). This is an exemplification of the purest form of supranational budgetary intervention. This conceptual framework represents a departure from the traditional distinction between "shared management" and "direct management" funds, reorienting the budgetary architecture toward functional capabilities that transcend national boundaries: pan-European research infrastructure accessible to innovators across the Union, defence industrial capacities enhancing collective

security, critical technology sovereignty reducing strategic dependencies, and cross-border digital networks enabling the Single Market's full potential (European Commission, 2025d).

The ECF embodies the idea of "genuine" EPGs: both financing and delivery occur centrally to produce Union-wide outputs, such as cross-border research infrastructure, defence industrial capacity and critical technology sovereignty (Buti, 2025; European Commission, 2025d). **This framing justifies concentrating large resources under Commission control with limited Member State veto power, on the grounds that fragmented national interventions cannot deliver the necessary scale or coherence** (BST, 2025). At the same time, it accentuates the tension between competitiveness and cohesion. With €409 billion allocated to a largely excellence-based, centrally managed fund while pre-allocated national envelopes shrink, territorial equity risks becoming secondary (Buti, 2025).

The merit-versus-geographical-allocation debate discussed below reflects this underlying conceptual conflict: whether the ECF should operate purely according to excellence criteria to maximise aggregate European competitiveness (genuine EPG logic), or whether it must also address innovation gaps and ensure participation from less-developed regions (cohesion logic). The Commission's position that excellence must prevail, with geographical balance pursued through separate cohesion instruments, reveals the extent to which the EPG framework subordinates territorial equity to functional effectiveness, marking a significant philosophical departure from the EU's historical commitment to balanced territorial development as a foundational objective rather than a secondary consideration (Science|Business, 2025b).

Focus on defence

Within the ECF, the "Resilience and Security, Defence Industry and Space" window receives €130.7 billion, about 53.3% of total ECF resources (including InvestEU and advisory services), a five-fold increase in EU-level defence and space spending compared to 2021–2027 (European Commission, 2025f; Euractiv, 2025). This reflects the heightened emphasis on security and strategic autonomy. The allocation within the ECF reveals a clear hierarchy of strategic priorities. This represents a fivefold increase in EU-level defence and space spending compared to the 2021–2027 period, reflecting the heightened emphasis on security and strategic autonomy in the proposed framework (Euractiv, 2025).

This substantial concentration of resources, however, raises critical questions about path dependency and strategic flexibility. The indicative nature of the window allocations, allowing for adjustments of up to 20% through the annual budget procedure (European Commission, 2025f; Jarlebring, 2025), offers only a limited scope to redirect funding to other priorities, such as digital transformation or health resilience. Critics also note the absence of a dedicated European Defence Fund heading, arguing that the security response remains incomplete and that "European defence is clearly struggling to make its mark beyond rhetoric" (Brehon, 2025).

ECF governance and Horizon Europe

Governance reforms further enhance Commission control. The ECF introduces the **"advisory procedure"** as the default for adopting work programmes, enabling the Commission to proceed even without Member State support, whereas many current programmes follow the **"examination procedure"** allowing Member States to block decisions (European Commission, 2025f; Jarlebring, 2025). The regulation gives the Commission wide discretion in designing evaluation procedures; independent external experts are optional for most activities, in contrast to Horizon Europe, where they are mandatory for research and innovation actions (European Commission, 2025f). In defence, committees may be assisted by security-cleared experts (European Commission, 2025f).

Horizon Europe is structurally integrated into this architecture. It receives €175 billion (current prices), about 63% more than in 2021–2027, with roughly €68 billion from its "Competitiveness" pillar aligned with ECF windows, while €107 billion fund stand-alone components such as the ERC (see figure 5) (European Commission, 2024c, 2025f, 2025g; Pari & Pradier, 2025). The design aims to create a seamless pathway from frontier science to commercialisation, supported by the EIC and ECF financial instruments, representing a holistic, if centrally steered, attempt to manage the entire innovation chain and mitigate the systemic fragmentation previously identified as a critical weakness in European competitiveness (Draghi, 2024).

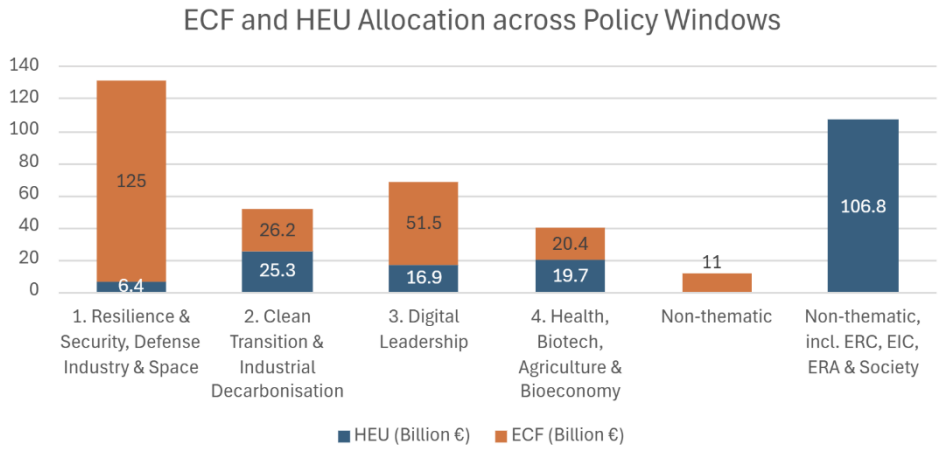


Figure 1.5 – Integration of Horizon Europe and European Competitiveness Fund Across Policy Windows (€409 billion, current prices). Source: Adapted from Jarlebring (2025), based on data from European Commission (2025f, Art. 4) and European Commission (2025g, Art. 6).

The ECF has revived the long-standing debate over excellence versus geography. At the October 2025 General Affairs Council, Portugal, the Czech Republic, Croatia and others called for mechanisms ensuring geographical balance, such as earmarking funds for lower-income Member States, noting that pre-allocated national envelopes would fall from 62% to 44% of the budget

(Science|Business, 2025b). Germany and Sweden opposed any deviation from pure excellence criteria, warning that this could spill over into cohesion allocations.

Eulalia Rubio of the Jacques Delors Institute argued that introducing geographic quotas could "kill the impact of the ECF", given the need to concentrate resources to compete with the US and China, while the Commission defended the excellence principle but suggested that SME-focused support might naturally spread benefits more widely (Science|Business, 2025b). This reveals a deeper conceptual divide: whether the EU budget should prioritise maximising aggregate competitiveness through concentrated, excellence-based funding, or reconcile that with territorial cohesion by ensuring participation from less-developed regions.

C. External Action

The third heading consolidates external spending under a **single Global Europe instrument**, with an indicative envelope of €200.3 billion. It merges seven existing instruments, including NDICI-Global Europe, IPA III, the Ukraine Facility and new facilities for the Western Balkans and Moldova, into a unified framework structured around five geographic pillars (Europe; MENA and Gulf; Sub-Saharan Africa; Asia and Pacific; Americas and Caribbean) plus a global pillar (European Commission, 2025h).

Each pillar combines programmable actions (through multiannual indicative programmes) with non-programmable components for humanitarian aid, macro-financial assistance, resilience, competitiveness and crisis/foreign policy needs. An emerging challenges and priorities cushion of €14.8 billion supports responses to unforeseen crises, new needs or policy initiatives, subject to information and scrutiny by Parliament and Council (European Commission, 2025h).

As with the ECF and NRPPs, governance proposals trend towards greater Commission autonomy. Below certain thresholds – doubled compared to the current framework – the Commission may adopt measures without prior committee approval, merely notifying Member States and Parliament afterwards, particularly for special and crisis measures (European Commission, 2025h; Regulation (EU) 2021/947, Art. 25(2)).

Ukraine retains a prominent place through dedicated support outside the standard pillars, including loans of up to €100 billion for 2028–2034 under Article 6 of the MFF Regulation (European Commission, 2025h).

D. Administration

Administrative expenditure increases moderately to 5.9% of the total MFF 28-34, compared to 4% in the current MFF 21-27, marking a departure from the stable staffing principle that had driven staff reductions and prolonged hiring freezes characterised (Pari & Pradier, 2025; European Commission, 2025c).

The Commission argues that past cuts created capacity gaps and operational risks. It proposes 2,500 additional full-time equivalents across EU institutions between 2028 and 2030, while maintaining a 2% annual cap on non-salary expenditure growth (European Commission, 2025c). This builds on earlier mid-term revision work that had already identified needs for hundreds of additional posts (European Commission, 2025c, 2025d).

Simplification of programmes, combined with an organisation-wide review and investments in digital tools and AI, is expected to generate future efficiency gains, though the extent to which higher staffing and digitalisation translate into improved responsiveness remains to be seen (European Commission, 2025d).

1.2.2 New Sources of funding

The Commission's MFF 2028-2034 proposal includes fundamental reforms to the EU's revenue architecture, addressing the structural over-reliance on GNI-based contributions, which have evolved from a residual balancing mechanism into the dominant funding source, creating what the High-Level Group on Own Resources termed "visibility problems" in national budgets (van der Vlugt, 2025; Monti et al., 2016). The package aims to diversify funding streams while financing Next Generation EU debt repayment without increasing national contributions or reducing expenditure, as committed in the 2020 Interinstitutional Agreement (European Commission, 2025d).

The **Corporate Resource for Europe (CORE)** represents the most analytically significant innovation. By establishing a direct contribution on large companies in the internal market (€6.8 billion annually), CORE constitutes a genuinely new financing category not derived from pre-existing national tax streams (European Commission, 2025i; van der Vlugt, 2025). This creates potential for more transparent budgetary accounting if Member States adopt separate own-resources categories rather than treating contributions as general expenses. However, CORE faces normative challenges: its turnover-based flat-sum structure creates horizontal inequities and blurs the line between taxation and regulatory fees, contradicting ability-to-pay principles (van der Vlugt, 2025; Avi-Yonah & Imparato, 2025). The proposal also integrates climate policy into budget financing through environmental own resources (ETS, CBAM, e-waste levies), a tobacco excise tax, and adjustments to existing customs and plastics-based revenues (European Commission, 2025d).

Critically, the proposal's success in shifting budgetary narratives away from juste retour logic depends substantially on whether Member States adopt separate accounting practices that enhance transparency regarding actual financial burdens and benefits. However, implementation faces formidable obstacles: constitutional challenges regarding parliamentary taxation prerogatives (particularly CORE's ambiguous tax/fee classification), questions about legal basis under Article 311 TFEU, political resistance from Member States managing fiscal deficits under the reformed SGP, and the unanimity requirement for new own resources (van der Vlugt, 2025).

1.2.3 Reactions and Proposals for Revisions

The proposed governance architecture has generated **substantial institutional resistance from both the European Parliament and Member States**, revealing fundamental tensions in EU budgetary politics. On 7 May 2025, Parliament rejected the "single national plan" approach and the merger of existing funds into the Competitiveness Fund, arguing that this model cannot serve as the basis for negotiations (Wahl, 2025). Similarly, in July 2025, 14 Member States opposed the Commission's plans in a non-paper, demanding that post-2027 budgets reflect regional development differences through stand-alone cohesion policy frameworks (Soler and Cosic, 2025).

Following the publication of MFF 2028-34, the Parliament's four main pro-European groups united in demanding the restoration of separate budget lines for cohesion and agriculture, rejection of pooled national envelopes, and parliamentary approval rights for National and Regional Partnership Plans (Griera, 2025). Buti (2025) offers a critical counter-analysis, arguing that Parliament overlooked the strategic innovations of the Commission proposal, particularly how unified plans could reduce fragmentation, increase flexibility, and strengthen alignment with EU priorities. He suggests that instead of outright rejection, Parliament could have advocated for a larger budget financed partly through joint borrowing, stronger safeguards for competitiveness spending, and incorporation of RRF lessons into NRPP design. Buti warns that this dual institutional pushback risks producing a smaller, less flexible, and less strategically coherent MFF (Buti, 2025). The Commission's subsequent amendments to its own proposal, including mandatory rural targets, stronger regional authority involvement, and enhanced parliamentary decision-making roles, represent an unusual attempt to prevent rejection but created new tensions in the Council, where several Member States opposed granting Parliament early leverage (Sorgi, 2025). This episode underscores the deeper challenge of reconciling strategic coherence with territorial representation and democratic accountability in EU budgetary governance, a tension that persists in making interinstitutional consensus increasingly difficult to achieve.

Chapter 2: The European Competitiveness Fund: a highly anticipated novelty with a few significant ambiguities yet to be clarified

2.1. ECF Policy Rationale: Objectives, Ambitions, and Expectations

2.1.1 Fund objectives, ambitions and expected outcomes

In times of political and economic uncertainty, competitiveness has been increasingly identified as a key factor in maintaining our societies in place and independent. The other main global competitors, namely the USA and China, are operating at the frontier of innovation. They employ the best talents and have their own digital and physical infrastructures, which grant them resilience and economic supremacy. The European Union feels this pressure and the urge to set its tracks on the right course. The European Competitiveness Fund (ECF) is set to be introduced in the "Competitiveness, prosperity and security" framework of the 2028 MFF with the objective of establishing the Union as a robust and resilient global player while upholding its values and identity.

To achieve this major goal, the ECF is being designed to address a series of structural issues within the European economic landscape. Specifically, legislators intend to (i) improve the inadequate support currently provided throughout the investment journey; (ii) meet the substantial investment required to fulfil the Union's priorities; and (iii) structure the complex and uncoordinated scenario of Union funding. By tackling these issues, it is also expected that the path will be set to close the innovation gap, reduce external dependencies, and address other challenges identified in the Competitiveness Compass and other studies such as the Draghi report.

Among other strategies and tools, **the core principle of the ECF is to pool and coordinate resources at the Union level to achieve economies of scale**. Funding – discussed extensively in Sections 2 and 3 – aims to encourage investment and reduce risk in critical policy areas where the private sector has persistently underinvested. Infrastructure, the green and digital transitions, and industrial capacity, first and foremost, have been affected by a fragmented capital market that has hampered long-term cross-border investment, and which now needs to be revitalised through public intervention.

One of the European Commission's objectives is to strengthen and empower industrial ecosystems to promote collaboration, spillovers and innovation. The ECF is meant to guarantee a more seamless investment journey, by providing advisory support to originate and develop projects and support skills development. Particular attention will be devoted to SMEs and startups, so as to facilitate their business growth and access to finance. Indeed, centralized access to advisory and business acceleration services will be provided across all sectors covered by the Fund. Additionally, a "EU for Business" Network will be established to assist business to grow and scale in the Single Market.

Another objective is to level out the persistent disparities in competitiveness and innovation found across European regions. Effectively connecting less-developed regions to the European value chains is rightfully expected to better position the Union to compete globally. However, debates are arising regarding the ability of the ECF to tackle regional disparities, as it will discussed at the end of the chapter.

Even with reduced firepower, the ECF has been designed to some extent in line with the recommendations set out in the Draghi and Letta reports, as will be evident throughout this chapter. The Fund is meant to leverage the Single Market and streamline project development also through a single and clear regulatory regime. Indeed, one of the key pillars **of the Fund's design is simplification**. As immediate signal to this point, the Fund is designed to merge fourteen instruments into one framework. The Commission aims to integrate access points, introduce a single rulebook, simplify the funding process, offer a single gateway to funding applications and create a business-friendly environment. Additionally, companies to be covered by the 28th regime will benefit from the ECF.

2.1.2 Policy areas and synergies

The European Competitiveness Fund clearly builds on two foundations. The starting point for this will be the **InvestEU Programme**[1], in force during the current MFF (2021-2027), which – apart from grouping several instruments into one framework – mobilised private financing by providing a modest EU guarantee. The other instrument on which the ECF will stand is the **STEP programme**[2]. STEP works by pooling existing funding instruments and re-orienting them toward strategic sectors – digital technologies, clean technologies and biotechnologies – through the "STEP Seal" to identify high-quality projects, and by steering cohesion and research funding toward these priorities. While it acts more as a platform that steers and coordinates existing funds rather than having its own large, dedicated budget, STEP provides insightful lessons for future programmes. As an example, a Competitiveness Seal will be introduced with the ECF to facilitate deserving projects.

The ECF covers a wide range of sectors, including R&I, digitalisation, space, defence, the environment, health, support for the circular economy and the energy transition. A key aspect targeted by the Fund will be preparedness and crisis management, which will be achieved through consolidated funding in this area. These sectors are organized under four policy windows, as analysed and discussed in Section 2.

The objective of the Commission is to integrate the ECF with other initiatives currently in place, so as to enhance their effectiveness and coordination. For example, great synergy is expected with the Clean Industrial Deal, to accelerate reindustrialisation and decarbonisation under an organic growth

[1] Established with Regulation (EU) 2021/523.
[2] Established with Regulation (EU) 2024/795 and active since 1 March 2024.

strategy that comprehends climate action and competitiveness. Additionally, the Industrial Decarbonisation Bank will be placed within the governance of the ECF. The Fund will also align with the Digital Decade Policy Programme 2030 and will tackle the gaps and priorities identified in the State of the Digital Decade 2025 report, especially regarding digital connectivity, advanced computing and digital skills. Skills, moreover, will represent a fundamental dimension on which the Fund will work. The ECF will finance activities in support of skills development, building stronger connections between higher education, vocational education and training providers, applied research and businesses, especially when related to strategic sectors. The Fund will also work closely with the new Erasmus+ programme for skills development to implement the Union of Skills.

"Clear synergies" are identified by the European legislator between projects within the ECF's scope and Connecting Europe Facility (CEF), regarding in particular cross-border infrastructure projects on decarbonization, digital, transport and energy. Cross-border digital connectivity infrastructure, identified as vital for the European competitiveness by the Draghi report, will be funded under the ECF.

Moreover, **the ECF will work closely and in strong synergy with the Innovation Fund, Horizon Europe and the Single Market Programme**. In particular, the ECF will support industrial decarbonisation and innovation in the field of clean technologies – in synergy with the Innovation Fund – and digital technologies, pan-European digital public infrastructure and digital solutions for customs and taxation – in synergy with the Single Market Programme. Additionally, together with Horizon Europe and other national, public, and private sources, the ECF will co-fund "moonshot projects" from research to demonstration and real-world deployment.

The ECF will be tightly linked to the Global Europe Fund, to support global competitiveness, ensure diversified supply sources, and strengthen export potential and opportunities of European companies. Furthermore, as is read in the proposal for the regulation of the Fund, several other initiatives are relevant for the activities deployed under the ECF, including: Critical Raw Materials Act, Net Zero Industry Act, Chips Act, Industrial Action Plan for the European automotive sector, Ecodesign for Sustainable Products Regulation, AI Act, Interoperable Europe Act, Life Sciences Strategy, Advanced Materials Act, Pharmaceutical Package, Medical Countermeasures Strategy, White Paper on Defence, Economic Security Strategy, Preparedness Union Strategy, the Sustainable and Smart Mobility Strategy and the European Ocean Pact.

Finally, the ECF will leverage the **Savings and Investments Union** to create the financial ecosystem required to mobilize insurers, pension funds, banks and asset managers to invest in projects of European interest.

2.2 Four Policy Windows

2.2.1 Comprehensiveness and articulation of the scope: from AI and digital to space, from clean tech to biotech, from defence to health

The ECF will operate through four policy windows, which mirror the Union's key policy priorities. The current indicative financial envelope will be of €234.3 billion in current prices – not including Horizon Europe and the Innovation Fund, that will add a total of €41 billion to the first policy window – covering the period from 2028 to 2034.

These policy windows are targeted area for support by the ECF toolbox. They consist of the following, reported together with their indicative budget allocation:

1. Clean Transition and Decarbonization: € 26.21 billion
2. Health, Biotech, Agriculture and Bioeconomy: € 20.39 billion
3. Digital Leadership: € 51.49 billion
4. Defence Industry and Space: € 125.20 billion

The remaining €11 billion will be allocated to cross-cutting activities that contribute to the general objectives.

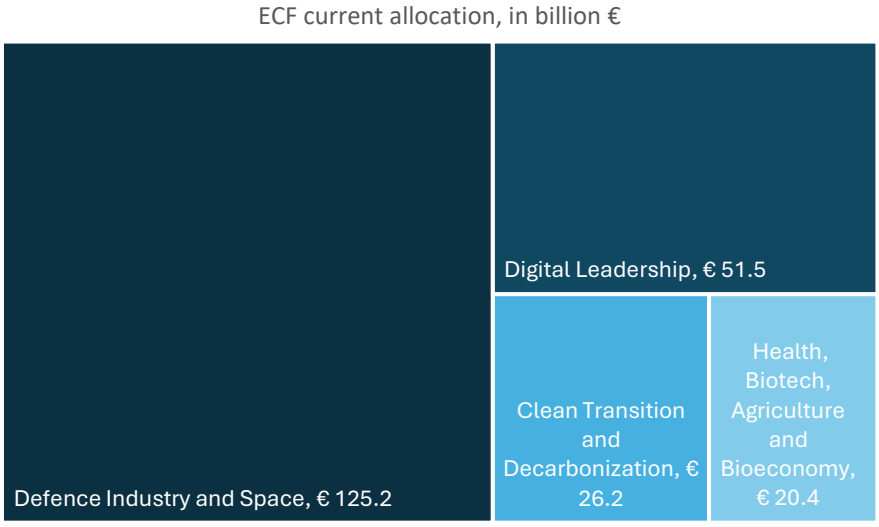


Figure 2.1 – Source: European Commission - COM(2025) 555.
Note: excluding contributions from the Innovation Fund and the €11 billion for cross-cutting activities.

These policy windows are designed using the "open architecture" logic to enable the fund to swiftly adapt whenever necessary. The allocation listed above is indeed indicative; the windows – each

with their own set of policy priorities – are flexible, and the budget distribution will eventually be adjusted to match new challenges and priorities throughout the entire duration of the MFF. However, to stabilise expectations and provide certainty for investment planning, a minimum budget envelope is guaranteed for each window. While this concept is well suited to increased preparedness and flexibility, it remains to be seen how this mechanism will operate in real-life scenarios.

The ECF's regulatory proposal sets out specific objectives for each policy window.

1. Clean Transition and Decarbonization

With a budget of 26 billion euros, plus €41 billion from the Innovation Fund, this window will support projects that promote decarbonisation and energy efficiency, as well as integrated renewable energy, new energies, energy renovations and innovative heating and cooling solutions. The Fund is intended to **facilitate the transition to a sustainable, circular, resource-efficient and climate-neutral economy**. This involves supporting industries in adopting decarbonisation technologies and clean energy solutions, while developing flexible energy systems.

These objectives will be addressed through a wide range of activities, including 'LIFE activities' for demonstrating, testing and promoting innovative solutions, as well as raising awareness on climate action.

Further support extends to scaling up clean tech manufacturing, advanced materials and manufacturing processes, and circular economy solutions, including water efficiency, pollution control, ecosystem restoration and biodiversity protection.

Support may take the form of collaborative research and innovation activities under the EU Framework Programme for Research and Innovation.

2. Health, Biotech, Agriculture and Bioeconomy

A sum of slightly more than twenty billion euros, the smallest allocation within the Fund, will be used to support health at every stage of its realisation.

The Fund's clear objectives are, firstly, to improve the ability to manage cross-border health threats, strengthen public protection, and prioritise health promotion and prevention; and secondly, to foster innovation and ensure supply security.

Strictly regarding health, the approach adopted by the Union consists of **Health-in-All** policies, meaning that the health issue is tackled across all domains of public policy – from transport and housing to finance and education – and **One Health** policies, which recognises the health of humans, animals and ecosystems as closely interdependent. Moreover, the EU recognises the importance of

digital technologies in the healthcare sector. The ECF also aims to improve access to, and the use and reuse of, health data and digital tools, infrastructure and services. This includes the European Health Data Space, as well as the deployment of artificial intelligence and robotics in healthcare. Digital technologies are also expected to foster coordination and integrated work between national health systems.

For support to biotechnologies, the specific objectives are to promote the development, scalable production, and uptake, as well as the availability and accessibility, of medicinal products, medical devices, diagnostics, and other medical countermeasures; while for support to bioeconomy policy, the specific objectives are to foster an innovative and competitive bioeconomy within the Union.

As is the established practice, the majority of funding to support farmers and fishermen under the MFF comes through the Common Agricultural Policy (CAP). However, the ECF's objective is to promote the competitiveness, sustainability and resilience of agriculture, fisheries, aquaculture and forestry.

3. Digital Leadership

Fifty-one and half billion euros will be allocated toward **"Digital leadership"** policies. Leadership is sought for digital and AI technologies by supporting the entire digital value chain and investing in the digitalization of both the public and private sectors.

The EU aims to establish a **secure and interoperable digital economy**, which includes an advanced digital public infrastructure, and in which significant investment is expected to achieve high levels of cybersecurity.

To accomplish these goals, the ECF will support innovation and the development of advanced, resilient infrastructure to create a European digital ecosystem, where innovative companies can thrive. Furthermore, the Fund aims to ensure the rapid adoption of AI and other technologies, such as the EU Digital Identity Wallets and European Business Wallets, within both the public and private sectors.

The European Union is committed to address issues such a **standardisation, security of supply** of advanced digital technologies and infrastructures, as well as **advancing digital skills** across the entire society.

As previously mentioned, cybersecurity is a priority that the Fund seeks to strengthen. Indeed, the ECF will support the development and deployment of advanced cybersecurity capabilities, **focusing on securing critical infrastructure and digital supply chains**.

Finally, the Fund will also support cultural and creative industries, in synergy with the new AgoraEU programme.

More details about the Digital Leadership facility will be exposed in the third chapter.

4. Defence Industry and Space

The 'Resilience and Security, Defence Industry and Space' window will receive the lion's share of the ECF budget, with an allocation of €125.2 billion. A Defence Industrial Advisory Board – composed of representatives of the Member States and the Commission – will be established to assist the Commission and provide recommendations on the long-term investment strategy of the defence policy window.

Security – in its broad sense – has risen as a top priority in the European political agenda, effectively translating in development plans and resources allocated. The EU's key objective is to secure itself against state- and non-state-actors within the military, economic and information spheres.

Supply chains – both physical and digital – lie at the heart of this agenda. They are among the least resilient aspects of our economy and therefore represent one of the weakest spots in every Member State. While the previous window will address digital supply chains, this one will tackle physical supply chains. The objective is to reinforce European resilience by **strengthening the Union's capacity to explore, extract, process and recycle raw materials.** At the same time, the diversification of supply sources and markets will be supported, as will the stockpiling of products and raw materials.

In terms of the defence industry, the ECF's specific objective is to increase defence industrial readiness by strengthening the **European Defence Technological and Industrial Base** (EDTIB) and improving its capabilities, competitiveness and responsiveness. The EDTIB should be able to develop, produce and sustain the production of critical defence capabilities on the necessary scale and at the necessary speed.

The ECF will also incentivise cross-border industrial partnerships (including public-private partnerships) to **coordinate production capacities and plans**, and the stockpiling of defence products, components, and the corresponding raw materials.

New entrants, start-ups, scale-ups and SMEs will be supported to foster a groundbreaking EU defence ecosystem – in which the collaborative research and development of defence products will take place – through the dedicated programme **EU Defence Innovation Scheme** (EUDIS). To promote innovation and scalability, this programme will carry out activities such as: matchmaking events and business coaching for innovators, agile funding mechanisms, innovation challenges and hackathons, support for innovative procurement, iterative upgrade models for rapidly evolving systems, as well as other measures that accelerate innovation cycles, technology integration, validation, and experimentation.

Furthermore, the Fund will support the deployment of **European Defence Projects of Common Interest**, collaborative projects – involving at least four Member States – that contribute to defence capabilities of public interest.

A key step in maximising the benefits of space-based activities is the development of a genuine Single Market for these activities, especially to promote collaborative research. This space policy will be implemented with particular attention towards the following programmes: **Positioning, Navigation & Timing** (PNT), including Galileo and EGNOS sub components; **Earth Observation** (EO), including Copernicus and Earth Observation Governmental Service (EOGS) sub-components; **Secure Connectivity**, including Infrastructure for Resilience, Interconnectivity and Security by Satellite (IRIS²) and Governmental Satellite Communication (GOVSATCOM) sub-components; **Space Situational Awareness** (SSA), including Space Surveillance and Tracking (SST, incorporating the tracking and mitigation of space debris), Space Weather Events (SWE), and Near Earth Objects (NEO) sub components. Moreover, the ECF will focus on improving autonomous access to space – meaning also that the Fund will invest in ground infrastructure – and fostering **space commercialisation** and space economy. As specified in the legislative proposal, the technological sovereignty component within the space policy "shall prioritize the reduction of critical dependencies on non-Union technologies and focus on dual-use technologies that can benefit both civil and defence applications".

Finally, the ECF will support the competitiveness and responsiveness of the European civil security industry.

2.2.2 Financial and non-financial toolbox

One of the specific objectives of the fund is to "facilitate access to funding from EU programmes through user-centric, faster, simplified and harmonised procedures and improve coherence among EU instruments and with Member States investments".

The proposed toolbox at the disposal of the Competitiveness Fund to support eligible projects comprehends every instrument allowed by Regulation (EU, Euratom) 2024/2059. The Fund is expected to leverage different instruments, combine funding tools, and determine whether support will be repayable based on the nature of the actions to be funded and their context. The ECF should provide each policy area with tailored advice on the most appropriate funding instrument, taking into account factors such as development stage, industry-specific needs and relevant market failures. Moreover, in line with the Fund's objectives of reducing risk to incentivise private sector investment and creating an "investment culture", the proposed guidelines recommend the selection of financing options that crowd in private investment.

Furthermore, a simplified common award procedure will be introduced to achieve the objectives of multiple policies. As a major simplification measure, the legislative proposal states that “the elimination of burdensome financial reporting through the widest possible use of financing not linked to cost should be pursued”.

In addition to financial measures, the Fund will provide project advisory support throughout the investment cycle. Access to these measures will be centralized, and it will include investment advisory services; business coaching and acceleration services; and skills development programs. Additionally, the ECF policy windows are expected to incorporate dedicated SME measures targeting firms in strategic sectors, including incentive mechanisms that encourage SME participation, with the aim of fostering their innovation, growth, and scale-up.

The ECF will be implemented via grants to European projects under direct management, as well as through the ECF InvestEU instrument, either directly or indirectly. The legislative proposal also places strong emphasis on public-private partnerships, but the implementation tools are yet to be defined.

2.3. Comparison with the Status Quo

2.3.1 Simplification

The European Competitiveness Fund has been designed with the explicit intent of consolidate, strengthen and simplify the current landscape of investment programmes.

As previously mentioned, the Commission aims to incorporate several existing instruments into one framework through the introduction of a single rulebook, the integration of access points, and the provision of a single gateway for funding applications. The programmes that the ECF will incorporate are the following: Digital Europe Programme (DEP); Connecting Europe Facility – Digital (CEF); European Defence Fund (EDF); the Act in Support of Ammunition Production (ASAP); the European Defence Industry Reinforcement through Common Procurement Act (EDIRPA); the European Defence Industry Programme (EDIP); EU4Health; the European Space Programme; IRIS; InvestEU; Single Market Programme (SME Strand);and the financial instrument for the environment (LIFE).

Horizon Europe and the Innovation Fund will continue to exist as self-standing programmes, but they will both closely collaborate with the ECF.

Consolidation of EU programmes under the European Competitiveness Fund

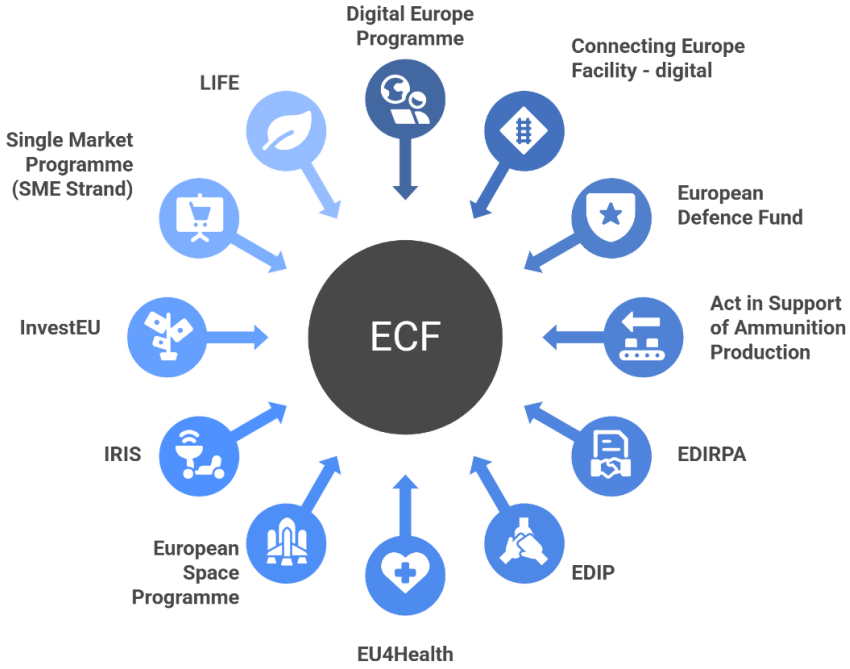


Figure 2.2 – Source: Visualization elaborated from the Proposal for the Regulation establishing the ECF - COM(2025) 555.
Note: Horizon Europe and the Innovation Fund have been excluded since they will remain self-standing programmes.

Merging programmes presents both challenges and opportunities. On the one hand, a single access point could slow down the decision-making process, as each application would need to be sent back and forth between the competent committee and the harmonised platform. Moreover, the lack of precise allocations within each window could result in the process being slowed down further, since priorities and alternative options would need to be reassessed for each project. For instance, consider two applications assessed at the same time: one concerns a technology that supports the digitalisation of health data, while the other relates to an innovative tractor component that no longer falls within the scope of Horizon Europe. Both would be placed under the Health, Biotech, Agriculture and Bioeconomy window. If the budget available for this window is limited, additional effort would be required to determine which project to prioritise. In the absence of sector-specific instruments and with only a broad policy window covering both areas, trade-offs must be carefully balanced. At present, there are no clear guidelines to support this prioritisation.

On the other hand, however, the tracking and evaluation of investments is undoubtedly improved by consolidating several instruments into one framework. It allows immediate identification of the resources deployed to a particular sector and the programmes from which they came, removing the need to collect information from multiple sources. Companies will also benefit from a single access point for gathering details on funding and eligibility criteria, rather than having to check a constellation of different portals.

Nevertheless, this public action will encourage private investment in those sectors by ensuring confidence in their growth and financial stability, given that they are backed by the Commission. This mechanism streamlines the funding process and its evaluation. However, as highlighted by the Survey on the Access to Finance of Enterprises (SAFE) carried out by the European Central Bank and the European Commission, **only around 23% of European firms consider access to finance as a major concern for their business**. Indeed, at least since 2018 and consistently until September 2025, access to finance has been the least concerning challenge for firms, in terms of both the number of companies concerned and the average level of concern across the economy. Meanwhile, both the **availability of skilled labour and production costs are major concerns for over 60% of companies**[3].

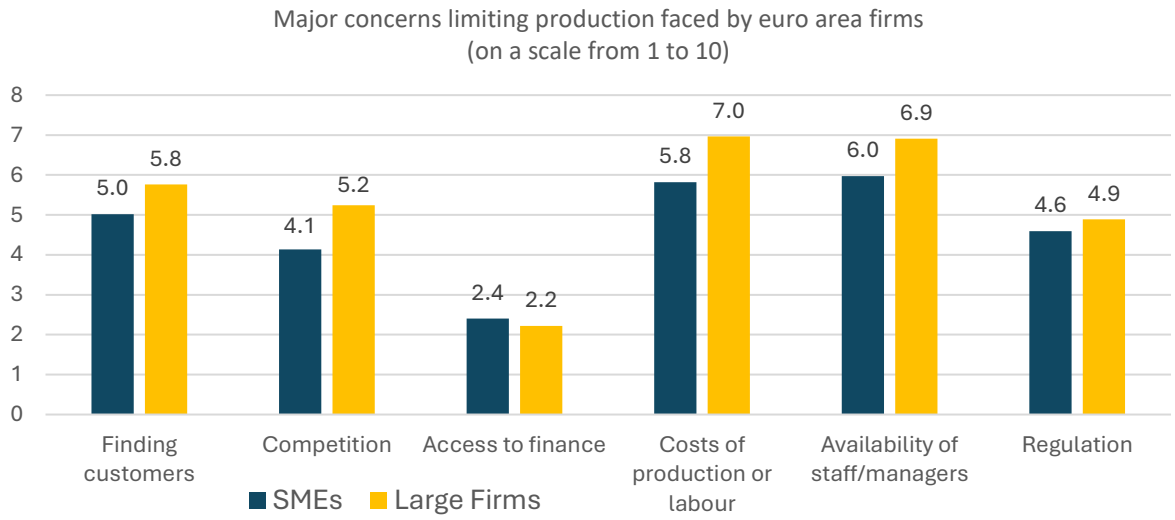


Figure 2.3 – Source: European Central Bank.

2.3.2. Adequacy of resources

The resources currently granted to the ECF are far from the scale deemed necessary by the Draghi report, even when combined with other programmes addressing the report's priorities, such as Horizon Europe, the Connecting Europe Facility, and the Single Market Programme. Nevertheless, if the ECF deploys its resources correctly and crowds in a significant amount of private investment, it could be expected to hold a significant impact on the economy. Its success will depend on how these resources will be distributed and used within each window and for cross-cutting purposes.

Indeed, while the Fund does benefit from increased resources compared to the programmes it will replace, the lack of clear allocation towards specific objectives risks overshadowing sectors where private initiatives are struggling to gain traction.

[3] European Central Bank, *Survey on the Access to Finance of Enterprises in the euro area*, 2025 3Q.

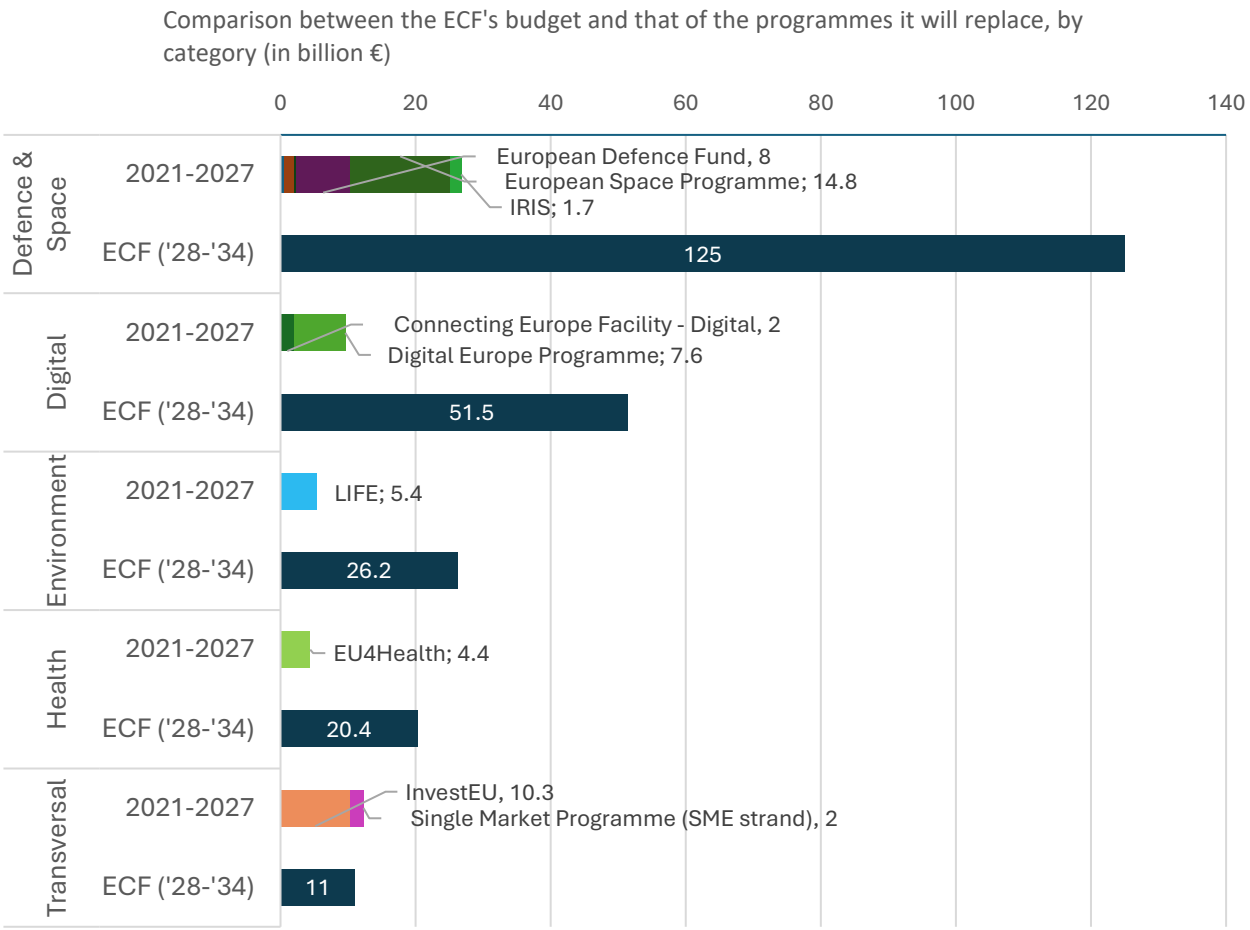


Figure 2.4 – Source: European Commission (MFF 2021-27 breakdown, MFF 2028-34 proposal, various documents from specific programmes). Notes: Excluding resources from Horizon Europe and Innovation Fund. Current prices. The IRIS programme refers to the 2023-2027 period. The Defence & Space category includes ASAP; EDIP; and EDIRPA. Nominal prices.

Since, as previously argued, European firms are generally only moderately concerned by access to finance, and since the first steps of the development of a new technology are covered by Horizon Europe, the ECF should adopt a twofold strategy to be effective. Firstly, it should aim at ensuring financial predictability to disruptive sectors or projects overlooked by the private sector – due to uncertainty, low profitability or lack of information – or deemed of primary importance by the Commission, such as, for example, secure connectivity through space infrastructure. Ring-fencing resources for specific objectives could assist in this regard. Secondly, the ECF should target the factors that hinder the adoption of new technologies or processes, or limit firm growth. It concerns issues such as, for example, the lack of the necessary skills across the economy, limited knowledge sharing, and geopolitical risks, which are also reduced by securing supply chains. This latter element is clearly identified as one of the Fund's objectives, but this commitment could be implemented as

either a priority in the first or the last facility, since there are no relative hierarchies within the policy windows yet.

In this context, however, the staggering increase in resources allocated to the defence and space sectors could potentially signal efforts in that direction. Indeed, the defence industry and space window benefits from a budget that is five times larger than the resources of the programmes it will replace. If impactful investments are made, particularly in securing the supply chain and in developing disruptive dual-use technologies, spending in this sector could stabilise confidence regarding future economic risks and indirectly increase the availability of external financing for European companies[4]. However, European competitiveness will benefit from such spending if investments are made in cross-cutting issues and dual-use technologies. Pursuing the reduction of geopolitical risks only through the production of advanced military technology with low dual-use potential risks fossilising European production capacity in sectors with minimal spillover effects.

The direction in which European society is heading is clearly digital, spanning all sectors of the economy, from precision agriculture to healthcare, cloud computing to automated services, and advanced connectivity to defence systems. The Commission's commitment to digitalisation is evident from the increase in funding for the ECF compared to the programmes it absorbs. However, it is increasingly clear that **there is no possible digital transition without a stable, efficient and sustainable energy system.**

Despite the additional €41 billion from the Innovation Fund over the seven-year period of the 2028–2034 MFF, the Clean Transition and Decarbonisation window risks failing to provide the necessary resources to guide the market towards sustainability and climate adaptation projects that will also support the substantial digitalisation of the economy. Indeed, as the European Central Bank[5] also highlighted, the European Union is currently investing insufficient resources in the green transition. Additional funding equivalent to 2.7–3.7% of 2023 EU GDP is needed for green investments. While the ECF is clearly not the main instrument for tackling the green transition, there are many demonstrated links between the transition and competitiveness. Firstly, the later mitigation and adaptation measures are implemented, the more expensive they become. Secondly, clean technologies can provide a competitive advantage since they are generally more efficient than their traditional counterparts and can potentially enhance public perception of the companies that deploy them. Furthermore, the EU could establish itself as a global leader and exporter of such technologies. Thirdly, climate risks are already factored into investment decisions, particularly lending by banks, which charge a risk premium to firms without credible green transition plans[6].

[4] Indeed, “Firms continued to view the general economic outlook as the main factor constraining the availability of external financing”. As described in ECB, *Survey on the Access to Finance of Enterprises in the euro area*, 2025 3Q.
[5] https://www.ecb.europa.eu/press/economic-bulletin/articles/2025/html/ecb.ebart202501_03~90ade39a4a.en.html
[6] https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/ecb.blssurvey2024q2~f97cb321f1.en.html#toc22

2.3.3 Benchmarking the ECF against comparable instruments from the US and China

The US CHIPS & Science Act (2022) represents one of the most comprehensive industrial and science policy interventions adopted by the United States in recent decades. Its objective is to strengthen high-tech competitiveness, innovation capacity, and national security. Structurally, the Act comprises two components: CHIPS for America, which delivers direct incentives for domestic semiconductor manufacturing; and the **Science Act provisions**, which authorize significant increases in federal R&D across strategic technologies.

The CHIPS and Science Act has established the *Technology, Innovation, and Partnerships* directorate as a new arm of the National Science Foundation (NSF), with the objective of funding and promoting use-inspired research, partnerships, and technology transfers. The Act also identifies ten key technology focus areas and five "societal, national, and geostrategic challenges", which the funded technologies will jointly serve to tackle:

Technology areas and societal challenges identified by the CHIPS and Science Act

Technology areas	Challenges
1. Artificial Intelligence	1. Bolstering US national security
2. High-Performance Computing & Semiconductors	
3. Quantum Science and Technology	2. Mitigating climate change and promoting sustainability
4. Advanced Manufacturing	
5. Disaster Prevention	3. Strengthening US manufacturing and industrial productivity
6. Advanced Communications Technology	
7. Cybersecurity	4. Addressing inequitable access to education, opportunity, and services
8. Biotechnology	
9. Advanced Energy Technology & Efficiency	5. Closing skills gaps in the workforce
10. Material Science	

Table 2.1 – Source: TIP roadmap: An investment strategy for the U.S. National Science Foundation's Directorate for Technology, innovation and Partnerships, June 2024

One of the NSF's key areas of focus in preparing the US for the future is cybersecurity, particularly in emerging technology domains such as AI, quantum computing, and the aerospace industry, as reported by the Foundation in one of its publications[7].

[7] Celebrating 2 Years of the CHIPS and Science Act – US National Science Foundation, 2024. https://nsf-gov-resources.nsf.gov/files/CHIPS_and_Science_2_year_fact_sheet.pdf

The Act allocated a total of $280 billion over the 2023–2027 fiscal period, of which $81 billion going to the National Science Foundation[8]. Beyond semiconductors, the Act seeks to *jump-start* advanced technology development and commercialisation, including through $10 billion for 20 Regional Innovation Hubs intended to decentralise innovation capacity. Implementation relies on a mix of federal grants, loans, tax incentives, and structured public-private partnerships.

In parallel, China has entered a new phase of industrial and science policy, widely described as "**re-engineering the innovation chain**". Emerging since 2020, this is not a single legislative act but a broad, state-driven strategy aimed at achieving science and technology self-reliance. The approach links the full innovation continuum, from basic research to commercial deployment, under strong political and administrative coordination. The Chinese government is establishing new organisational structures and reforming existing ones to align universities, research institutes, state-owned enterprises, and private firms around priority technological missions. A central instrument is the creation of **innovation consortia**, government-endorsed alliances of firms and research entities that jointly pursue specific R&D and engineering breakthroughs. Hundreds of consortia have been launched since 2021 in fields such as advanced manufacturing, AI, biotechnology, semiconductors, and materials science. This "matchmaking" function is embedded within a wider "new whole-nation system" designed to mobilise ministries, provinces, companies, and the military for major technological challenges.

To address gaps in the innovation chains, the Chinese government deployed the complementary **"Little Giants"** and **"Supply Chain Architects"** programmes. *Little Giants* are highly specialised medium-size manufacturing firms that the government identifies as strategically important providers of niche components or processes. More than 12,000 such firms – as of 2024 – have been selected and placed on an official promotion ladder, granting the most competitive enterprises preferential access to subsidies and accelerated pathways to stock-market listing. Their role is to **replicate and internalise international best practices** in areas where foreign specialist firms may withdraw due to geopolitical or market pressures. In parallel, the *Supply Chain Architects* initiative seeks to cultivate large domestic firms capable of orchestrating and governing entire supply chains, similar to the role played by multinational "flagship" firms in global production networks. Companies such as Huawei are positioned to become lead firms within innovation consortia, coordinating suppliers, protecting intellectual property, and structuring production networks to China's strategic advantage.

Nevertheless, the Chinese strategy is notoriously opaque to the exterior and precise budgets are difficult to identify. The whole new industrial policy is estimated to being implemented with a budget of more than $1 trillion[9].

[8] The NSF also provides an interactive dashboard to find and visualize investments. https://www.nsf.gov/tip/data

[9] Most of the Information on the Chinese Programme are derived from Barry Naughton's works, such as "Re-engineering the Innovation Chain: How a New Phase of Government Intervention is Transforming China's Industrial Economy"

Across the three approaches – the US CHIPS and Science Act, China's innovation-chain re-engineering, and the EU's emerging ECF – innovation ecosystems are central but cultivated through different mechanisms**.** The US model relies primarily on market incentives and competitive funding, using grants, tax credits, and public-private partnerships to stimulate private-sector investment and regional diversification. The Chinese model is mission-oriented, explicitly orchestrating collaborations across institutions and sectors and concentrating innovation geographically to achieve rapid technological upgrading. The EU's ECF seeks to construct an integrated EU-wide innovation ecosystem by merging currently fragmented programmes and creating a streamlined pipeline from research (Horizon Europe) to deployment (ECF instruments). While the US emphasises competitive selection and industry leadership, and China emphasises directive coordination, the ECF positions itself as a structural integrator within a multi-layered governance context.

Regional balance is a further differentiating element. The CHIPS and Science Act explicitly aims to distribute innovation capacity beyond traditional coastal hubs through the Regional Innovation Hubs programme and incentives for semiconductor fabs in states like Ohio, Texas, and Arizona. In the EU, debates[10] continue on whether the ECF adequately mitigates risks of geographic concentration; "widening countries" fear that competitive procedures will favour already advanced ecosystems, with the Commission arguing that cohesion funding should address such disparities while the ECF will promote excellence. China, conversely, allocates regional specialisation deliberately, designating specific cities or provinces as national hubs for particular technologies, often strengthening existing local comparative advantages.

[10] An example of the debate: https://sciencebusiness.net/news/planning-fp10/eu-countries-divided-over-geographical-rules-competitiveness-fund

Chapter 3: Policy approaches to effectively build digital leadership in the Multiannual Financial Framework and European Competitiveness Fund

3.1 Introduction

Digital leadership is acknowledged as one of the four thematic investment windows within the European Competitiveness Fund (ECF), the new instrument designed to consolidate existing innovation and industrial programs under a single framework, as a centralized one-stop shop, as part of the proposal for the Multiannual Financial Framework (2028–2034). Jointly with digital leadership, the other three investment windows are: Clean Transition and Industrial Decarbonisation; Health, Biotech, Agriculture and Bioeconomy; and Resilience and Security, Defence Industry and Space.

The Digital Leadership window, with an indicative budget of €51.5 billion (around five times the combined funding of the current *Digital Europe Programme* and *Connecting Europe Facility–Digital*) will support investments in AI, semiconductors, cloud-edge infrastructure, cybersecurity, quantum technologies, and digital skills ecosystems. This increase places digital policy at the same strategic level as energy, defence, and health. It also reflects growing concern about Europe's dependencies on non-EU technologies and the need to build a resilient, sovereign foundation for the next wave of industrial and geopolitical competition.

The inclusion of *digital leadership* among these top priorities marks a shift in the EU's strategic approach.

3.2 Challenges for digital leadership

However, digital leadership is a highly broad concept. It needs to be translated into tangible measures. At the same time, the proposals raised by the MFF and ECF frameworks pose policymaking questions related to the practical viability, effectiveness, and maturity of this digital leadership goal.

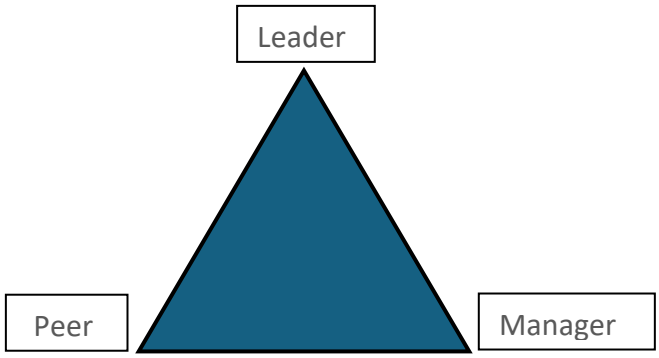
3.2.1 The shift from "digital transition" to "digital leadership"

The shift from "digital transition" to "digital leadership" signals a qualitative leap: Europe no longer sees the digital sector merely as a support tool for modernization, but as **core infrastructure for competitiveness and security**.

However, leadership is a blurred concept which may be understood in five manners (see section below): **leadership across the stack; in strategic bottlenecks** or by creating chokepoints in identified technologies within the value chain; as a **disruptive innovation** (the so-called moonshots); as **sovereignty or autonomy**; or as **technological adoption**.

At the same time, the MFF and ECF proposals do not set out a specific threshold on what "leadership" means. ASPI's Critical Technology Tracker accounts for the number of first-tier monopoly that countries have in concrete technologies. More than 85% of critical technologies are firstly dominated by either China or the United States. This "leadership" threshold within the MFF requires setting a bar of expectations, scheduling concrete goals, and ensuring a long-term planning of investments by assuming failures (moving from a risk-averse culture to a **risk-taking approach**).

It is not about establishing quantitative targets as the Digital Decade framework does. It is about identifying investments and ecosystem generation in those technologies where still there is no definite leadership, such as quantum sensing or certain chokepoints in the biotechnology value chain. Moreover, in those areas where leadership is no longer attainable, leadership should be becoming the right "peer" for third countries to jointly establish R&D ecosystems, unlock institutional private investment into key design, manufacturing, and deployment.



3.2.2 Conditionalities proposed by the European Competitiveness Fund and impact on the effectiveness of digital leadership: EU Preference (Article 10) and Accelerated and Targeted Actions (Article 20).

Article 10 of the European Competitiveness Fund sets out the proposal for an "EU preference". Concretely, it refers to the development, manufacturing and exploitation in the Union of strategic technologies and sectors. Eligibility conditions may take the form of four criteria:

- Participation and performance restrictions requiring participating entities to be established, use facilities, or perform activities in the Member States, and where appropriate other eligible countries
- Transfer restrictions requiring recipients of ECF funding, during or within 5 calendar years after the end of an action, to not directly or indirectly transfer all or certain operations, results or related access and use rights, including granting of licenses, from an eligible Member State or associated country to an ineligible third country

- Supply and content restrictions requiring recipients of ECF funding to ensure a certain minimum use or sourcing of equipment, supplies and materials, or their components, unless those supplies and materials cannot be reasonably sourced from those eligible countries
- Control restrictions requiring recipients of ECF funding to acquire and/or hold the ability to decide, without restrictions imposed by ineligible countries, on the creation and use of results, including the legal authority and practical capability to modify, substitute, or remove components of results that are subject to restrictions imposed by ineligible entities or third countries

Negotiations over these four criteria should take into account the definitions that this analysis include, as setting "digital leadership" across the stack would not have the same implications than setting leadership as the creation of a strategic bottleneck or a chokepoint within the value chain. Implications may vary for shareholders of a European company, and for control restrictions. Also, it will be important to effectively define digital leadership, as some restrictions from Article 10 may include more specifications for the security, defense and public order areas.

Also, digital leadership needs to be effectively addressed with a clearer view on what Article 20 on Accelerated and Targeted Actions for Competitiveness refers to in the ECF framework. This article proposes **actions of imperative public interest or critical time-sensitivity,** which could otherwise not be effectively implemented under the normal rules applicable to the Union budget or sectoral policies. This proposal would ensure **flexibility with certain additions, exceptions, and derogations** from applicable law, during the award procedure or implementation of the supported activities. At the same time, it raises the question of what "imperative public interest" and "critical time-sensitivity" means and how it would be translated into concrete measures.

While it is unclear what these concepts still mean in practical terms, a reflection on the recent White Paper on European Defence, and the ReArm Europe Plan/Readiness 2030 may shed light on. This plan aims to release public funding for defence at the national level and invites Member States to activate the "national escape clause" under the Stability and Growth Pact for the 2025-2028 period, and the possibility to unlock around EUR 650 billion of additional defence investment at the national level.

With the proposal for the SAFE instruments, whose guiding principles are "Buy more, better, together, European", it aims to increase up to EUR 150 billion the available money raised on capital markets, backed by the EU budget; boost defence procurement in critical areas, and provide long-maturity loans to support common procurement.

Although in this case there is no reference to "imperative public interest" and "critical time-sensitivity", the way in which the national escape clause might be activated is an example of how exceptionality may function for Article 20 of the European Competitiveness Fund. Also, the

functioning of the defence SAFE instrument on procured products that must have at least 65% of domestic content" might be related to the idea of imperative public interest.

Other examples may be DG GROW's efforts to create "strategic stocking" frameworks, which are meant to be regulatory frameworks for companies to quickly respond to governments' requirements on critical supplies, such as medicines. However, the implementation at the Member States' level differs with various speeds, intensities, maturity and also interest in setting out these strategic stocking policies.

However, the challenge comes from the different understanding of "imperative public interest" across the 27 Member States, which may differ in what they identify as imperative or critical. Also, it poses the question on how a long-term planification of technological products development, design or manufacturing would encompass with Horizon Europe's nature, characterized by its independence and research nature.

3.3 Priority-setting and identification of key technologies

Article 39 of the ECF identifies a list of digital technologies where support should be directed to: Artificial Intelligence (including AI Factories and Gigafactories), high performance computing, quantum technologies, semiconductors and photonics, robotics, large data technologies, telco-edge and cloud technologies, 6G and other wireless technologies, communication networks, advanced connectivity, including 6G and other wireless technologies, sensing technologies, cybersecurity and network resilience, software engineering, augmented reality and virtual worlds, digital twins, Union digital identity and business wallets, trust technologies, new and emerging digital technologies as well as cross-sectoral digital technologies and applications, including those with dual-use potential, support for data technologies and data spaces, as well as submarine cables and non-terrestrial networks.

While all digital technologies are clearly relevant, there is a need for priority-setting of certain technologies (first, second and third tier); the identification of which stages within the value chain would be much more critical; and the establishment of a calendar, plus contingency plus in cases of failure scenario for the development of the technology.

3.4 Coordination and coherence with investment windows other than digital leadership to avoid imbalance

The ECF aims to serve as the single, centralized framework to ensure agility, simplicity and intertwined coordination among investment windows. However, it remains essential that this coordination is effective and dynamic. Based on the budget proposed by the Commission, only EUR 51,5 billion of the total of expected investments under the ECF would be dedicated to digital leadership, while EUR 125 billion would be devoted to defence and space, and only EUR 26,2 billion

to environment, and EUR 20,3bn to health. Even if under a centralized framework, the ECF risks largely focusing on defence and security. There is a need to ensure that investment windows interact among them in a cooperative manner.

A clear example is STEP, which will be phased out and will be integrated under the ECF. The Strategic Technologies for Europe Platform under DG BUDGET was created to focus on serving as the one-stop shop for all types of investments related to creating technologies which would reduce or prevent strategic dependencies of the Union, and maturing an innovative, cutting-edge element with significant economic potential to the Single Market in three areas: clean and resource-efficient technologies, biotechnologies, and digital and deep technologies. STEP has managed 11 EU-funded programmes. However, the 2025 Annual Report showcases that, during its one-year existence, the STEP Seal awarded to this kind of projects has been given to 401 projects. However, 51% of them have been awarded to one single track (clean and resource-efficient technologies, with 202 awards), while only 12 projects have been awarded to biotechnologies, and 187 to digital technologies.

This thematic imbalance is accompanied by a concentration of financed projects in a limited set of Member States: Spain, France, Germany, Greece, Netherlands and Sweden have concentrated more than half of all projects. While countries such as Slovakia and Slovenia have been limitedly granted projects.

STEP serves as a testing ground for the next MFF 2028-2034. While the STEP framework remains a useful tool to centralize investments, it is relevant to avoid these dual imbalances in the upcoming ECF framework. This is particularly important in the MFF proposal which reduces the number of programmes from 52 to 16 and adds up -under the centralized framework- the fourth layer of defence, security and dual use applications.

3.5 Potential policy approaches to digital leadership

The negotiations for the EU's next MFF have entered what could be described as their political phase. Institutions and Member States start defining the size of each budgetary window and, with so little information available at the moment, one of the only ways that can be done is by shaping the language (and therefore political meaning) that will frame the next cycle of investment. **"Digital Leadership" is now the name of one of the major budgetary windows of the next MFF.**

The most heard of term in the last budgetary phase was "Digital Transition". The fact that Europe aims to "Lead" and no longer "Transition" is a political statement worth analysing. This phase offers an opportunity to reflect on the following question: what do we mean when we say Europe should be a "leader" in digital?

The term will shape how Europe invests public resources in its technological landscape. In current debates, at least five interpretations coexist.

3.5.1 Leadership as capabilities across the stack

This view sees leadership as building strength in all layers of the digital economy: semiconductors, cloud infrastructure, software, and applications. **The goal is to reduce dependency at every step of the value chain and to ensure that Europe maintains technological continuity from hardware to services.** The European Parliament has explicitly called for sovereign digital infrastructures "from semiconductors and connectivity to cloud and artificial intelligence".

Europe currently produces about a tenth of the world's chips and has no fabrication plants below the 10-nanometre process, while the EU Chips Act aims to double this share by 2030 through €43 billion in coordinated investment[11]. In cloud computing, American hyperscalers (mainly AWS, Microsoft and Google) still dominate roughly two-thirds of the European cloud market, and most Western data is physically hosted on U.S. servers.

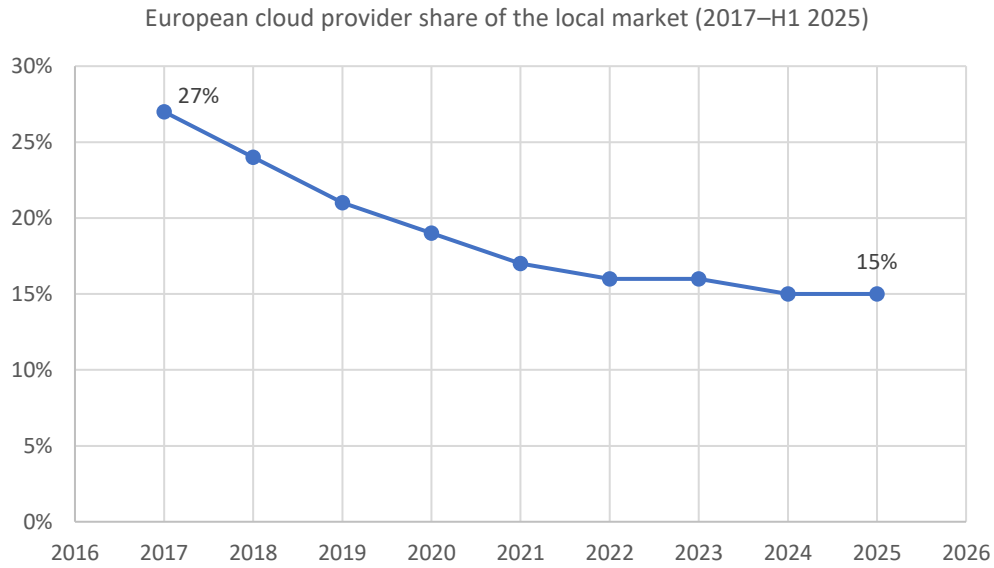


Figure 3.1 – Source: Synergy Research Group

3.5.2 Leadership in bottlenecks

A second interpretation focuses on a narrower set of critical nodes whose disruption could paralyze the entire digital system. In this view, Europe's vulnerability lies less in its lack of broad capability

[11] https://digital-strategy.ec.europa.eu/en/factpages/chips-act

than in its **dependence on a few external chokepoints: advanced chips, high-performance computing, AI hardware, and cloud infrastructure**.

The experience of the global semiconductor shortage revealed how Europe's automotive and electronics sectors depend on a handful of Asian foundries, particularly Taiwan's TSMC, which alone produces more than half of the world's leading-edge chips. To mitigate this exposure, the EU is concentrating resources on the most fragile points of the chain:

- The EuroHPC Joint Undertaking now coordinates one of the largest supercomputing networks in the world, built to provide domestic computing power for scientific research and AI model training.
- Europe's ASML is often cited as an example of successful control of a bottleneck. **By monopolizing the production of extreme-ultraviolet lithography equipment, ASML gives Europe leverage in one of the most strategic points of the global semiconductor chain.**

3.5.3 Leadership as sovereignty or autonomy

Another interpretation links leadership to Europe's capacity to remain secure and operational. **The goal here is to be protected from coercion in a context where major powers such as the United States and China increasingly weaponize interdependencies** in terms of access to technologies, supply chains, and infrastructure. In this sense, digital sovereignty is about ensuring that Europe's critical systems cannot be disrupted or manipulated from abroad.

Many voices are pushing Europe to use the current geopolitical situation as a motivation to build the strategic autonomy required to resist external pressure, safeguard economic continuity, and maintain decision-making freedom.

3.5.4 Leadership as disruptive innovation (or moonshots)

Under this view, **Europe can lead only by producing technologies that change the frontier itself**. When you are the first one to produce or master a new technology, then you are undoubtedly a leader, under this understanding of leadership.

For example, the European Commission's new Quantum Strategy, backed by the €1 billion Quantum Technologies Flagship, aims to establish pilot production lines for quantum chips and to launch a quantum-internet prototype by 2030.

Similar ambitions are visible in the space domain, where the upcoming IRIS² constellation and new reusable-launcher programmes are meant to secure Europe's place in the space-digital economy.

The “moonshot” logic behind quantum computing, foundation AI models, and the integration of space and digital technologies follows this idea: to secure Europe a first-mover advantage in the next technological revolution.

3.5.5 Leadership as adoption

2023, over 90 % of people in the EU used the internet weekly, though only 56 % had basic or above-basic digital skills. By end-2024, 74 % of EU firms had reached a basic level of digital intensity (SMEs ~73 %), and in 2022, 69 % of European firms had adopted advanced technologies such as AI or robotics, only slightly behind the 71 % rate in the U.S.[12,13]

Still, many small firms and less connected regions remain behind. The AI Continent Action Plan aims to close this gap by helping companies apply AI in practice and by launching an AI Skills Academy to train workers in data and digital competences.

3.6 Concentration, Diversification, and the Role of Enabling Infrastructure

All these interpretations of *digital leadership* are valid and, to a large extent, complementary. Europe needs capabilities across the stack, control over bottlenecks, technological sovereignty, adoption, and innovation. There is a certain level of ambiguity that could be a strategic disadvantage and could lead to a bad alignment between stakeholders, which is precisely a *sine qua non* condition for competitiveness.

The report “*The European Way - A Blueprint for Reclaiming our Digital Future*” can offer a way out of this ambiguity. It argues that **leadership should not be measured by domination or scale, but by the capacity to create shared systems that endure while serving a long-term vision of human-centric progress.**[14] From this perspective, Europe’s digital leadership should not mimic the model of technological empires built on control of single chokepoints or hyperscaler platforms. One of the very few certain future trends in tech consumption is that there will be an increasing interest in reliable, transparent and explainable technologies. The demand for such systems is growing fast: global spending on AI transparency tools is projected to exceed USD 2.5 billion by 2027, with annual growth above 25%[15].

[12] https://ec.europa.eu/eurostat/web/interactive-%20publications/digitalisation-2025
[13] https://www.eib.org/en/press/all/2023-203-digitalisation-in-the-european-union-progress-challenges-and-future-opportunities
[14] https://cdn.table.media/assets/wp-content/uploads/2025/05/13123327/2025.05.13-European-Way.pdf
[15] https://www.realinstitutoelcano.org/en/analyses/can-open-source-secure-europes-digital-infrastructure/

3.6.1 From Competing to Designing

Therefore, Europe's digital strength will not come from out-scaling the United States or China but could come, in some parts of the stack, from out-designing them: developing enabling infrastructures and software architectures that are transparent, auditable, and trusted, and therefore can compete in the markets.

Europe should not compete in a race for digital capabilities just for the sake of competing in the race. **The goal should be to protect European security and economic security, and to lead in human-centric technology.** That requires clarity on priorities and discipline on where Europe must be strong. It also requires the enabling conditions that let firms and public services adopt technology at scale. The question is not "how to spend more," but how to spend so that Europe is safer, freer, and more productive.

For the next MFF, should concentrate its resources or diversify them? Concentration allows for critical mass and visible champions but also risks rigidity and capture. Diversification encourages competition and experimentation yet may dilute impact. Most analyses converge on a hybrid formula: **concentrate where dependencies are clear and coordination adds value, diversify where there is high uncertainty**.[16][17]

This tension is re-emerging as industrial policy returns to the EU agenda. On the one hand, concentration could accelerate Europe's presence in strategic nodes (chips, cloud, AI factories). On the other hand, diversification protects the innovation base across sectors and regions, knowing the political fragmentation between member states and regions that exists in the EU.

Betting too narrowly on one set of technologies may help close today's gap, but it risks losing traction in the next innovation wave. Japan's experience in the 1990s illustrates this: a few decades of state-backed focus on electronics and automotive created global champions, yet the same focus left the country less prepared for the software and internet revolutions that followed. Europe faces a similar risk if the current AI and semiconductor drive turns into a closed corridor rather than a bridge to future technologies.

3.6.2 Promoting Enabling Infrastructure

Enabling infrastructure refers to the set of shared assets and systems that make technological progress possible across sectors and over time. It comprises three main layers.

- Technical infrastructure such as connectivity networks, cloud and edge computing, data storage and processing facilities, testing and certification environments, access to high-

[16] https://www.oecd.org/en/publications/pro-competitive-industrial-policy_7c6b4708-en.html
[17] https://www.bruegel.org/policy-brief/rethinking-industrial-policy

performance computing, etc. These elements would allow the EU to maintain the physical and digital capacity needed for research, experimentation, and deployment.

- Financial and regulatory infrastructure such as funding mechanisms, procurement frameworks, and investment tools. The long-term goal here should be that this financial and regulatory infrastructure strengthens private investment, mainly by lowering risk and lower risk and coordinating private and public incentives.
- Human-capital and institutional infrastructure such as education and reskilling systems, research institutions that ensure knowledge transfer and interoperability between sectors and Member States.

Enabling infrastructure is a long-term policy commitment to flexibility and interoperability and should be the core of this MFF's digital leadership funding.

3.7 Southern Europe in this equilibrium

In the past funding cycles, Southern Europe has consolidated its position in the EU's digital landscape through NextGenEU and Horizon Europe. Yet, as Enrico Letta warns, this reliance on extraordinary funds cannot last. The region must attract private investment and align national priorities within a shared European strategy.[18]

The equilibrium between concentration and diversification should lie in the development of enabling infrastructure, serving multiple policy goals at once, linking competitiveness with cohesion and defence. For example, investments in cloud–edge networks or cybersecurity capacity can simultaneously improve industrial performance and protect critical systems, not to mention job creation.

Enabling infrastructure must reflect the specific assets and needs of all European countries, including Southern European ones. Each of the Member State economies has developed distinct capabilities that can form part of a coordinated European base for competitiveness and resilience:

A. Greece has become one of the most effective EU members in capturing and aligning research funding, especially through Horizon Europe. Greek institutions occupy six of the ten top positions among *Widening* countries by funds won, and research centers such as CERTH (Centre for Research and Technology Hellas) have secured more than €100 million in Horizon grants.[19] The next step is to transform this project participation into industrial capacity through new laboratories, digital innovation hubs, and technology transfer centres. Strengthening the interface between research and industry would allow Greece to embed

[18] https://www.elmundo.es/economia/2025/10/09/68e7ad3ffc6c8326588b456e.html
[19] https://sciencebusiness.net/news/horizon-europe/greece-dominates-horizon-europe-funding-success-among-widening-countries

its EU-funded research base into the wider enabling infrastructure of AI, clean tech, and energy.

B. Italy combines a large domestic market with one of Europe's most diversified industrial fabrics. It ranks as the EU's second-largest manufacturing power and the world's seventh[20]. Future EU support should target national cloud and IoT platforms, 5G connectivity, and sectoral innovation hubs linking SMEs, startups, and traditional industries. There is potential for this existing industrial base to gain digital maturity and become the source of new European champions.

C. Spain's strength lies in its highly educated workforce: 46.4% of workers hold tertiary education, compared to a eurozone average of 39%[21] and its position as Europe's bridge to Latin America. Spanish companies have invested nearly €150 billion across the region.[22] Building on this, Spain can become a hub for AI development in Spanish, leveraging HPC infrastructure such as the Barcelona Supercomputing Center and new EU-funded AI factories. European funds should also support retention of technical talent and partnerships with Latin American research ecosystems. Spain's enabling contribution would therefore link computational capacity with linguistic diversity and knowledge diffusion. Spain has confirmed two AI factories: one for computing power access via the Barcelona Supercomputing Center, and another one focused on AI and health in the region of Galicia. Spain has applied, by November 2025, to one of the AI Gigafactories, still waiting for a decision.

D. Portugal stands out as a fast-growing innovation hub, with more than 4,700 active startups[23] and now achieves 90.7% of the EU average in the European Innovation Scoreboard[24]. Its policies for attracting global talent (favorable taxation, startup visas, and an open innovation culture) have made it an ideal testing ground for Europe's next generation of entrepreneurs, but have also generated internal tensions, due to the gentrification of some neighborhoods in Lisbon and Porto and have become very attractive for "digital nomads" and expats. EU funding should reinforce this foundation by extending innovation infrastructure beyond Lisbon and Porto, improving connectivity, and financing venture co-investment mechanisms that allow startups to scale within Europe.

These are some of the assets Southern Europe can bring to the table. However, if they were sufficient, the region would already be a technological powerhouse without the need for public

[20] https://en.wikipedia.org/wiki/Economy_of_Italy
[21] https://www.caixabankresearch.com/en/economics-markets/labour-market-demographics/changes-educational-level-spanish-workers
[22] https://www.mapfre.com/en/insights/economy/value-spanish-investment-latin-america/
[23] https://www.calcalistech.com/ctechnews/article/hywrqvytxg
[24] https://ani.pt/en/portugal-strengthens-its-position-in-the-european-innovation-ranking/

intervention, and that is clearly not the case. The EU (and all the stakeholders involved) need to define the enabling infrastructure we still need to achieve digital leadership under Europe's preferred goals and to remain competitive in future technological revolutions.

This requires designing enabling infrastructure as a territorial system, not a zero-sum race. Each Member State should contribute according to its comparative strengths (research capacity, industrial base, talent or connectivity) so that together they form an integrated and interoperable set of capacities capable of sustaining Europe's technological development over time.

3.8 Conclusions

Europe's debate on digital leadership could be understood in many different ways: strength across the stack, control of bottlenecks, sovereignty, disruptive innovation, and wide adoption.

The next MFF will need to translate these views into concrete choices, and Articles 10 and 20 of the European Competitiveness Fund show how sensitive those choices will be. EU preference rules, control restrictions and the use of exceptional procedures will shape the future of European industry.

These tools will only function well if they sit on a clear notion of enabling infrastructure understood as the shared technical, regulatory and institutional systems that allow research, deployment and industrial use to advance at the same pace. This type of infrastructure links connectivity, cloud-edge capacity, certification environments, financial frameworks and human capital pipelines into a coherent base that lowers risk and supports diffusion. Southern Europe can play a meaningful role if its assets are connected to this shared infrastructure.

Chapter 4: Digital Horizons or Policy Gaps? Rethinking How EU R&I Policy Shapes the Digital Decade

List of abbreviations

- **AI:** Artificial Intelligence
- **cPPPs:** Contractual Public-Private Partnerships
- **DEP:** Digital Europe Programme
- **DESI:** Digital Economy and Society Index
- **DG CNECT:** Directorate-General for Communications Networks, Content and Technology
- **DG RTD:** Directorate-General for Research and Innovation
- **ECSEL:** Electronic Components and Systems for European Leadership
- **EDIHs:** European Digital Innovation Hubs
- **EIC:** European Innovation Council
- **EIS:** European Innovation Scoreboard
- **EU:** European Union
- **FP10:** 10th Framework Programme
- **HLG-KET:** High-Level Expert Group on Key Enabling Technologies
- **HPC:** High-Performance Computing
- **ICT:** Information and Communication Technologies
- **JU:** Joint Undertaking
- **KDT:** Key Digital Technologies
- **LEIT:** Leadership in Enabling and Industrial Technologies
- **MFF:** Multiannual Financial Framework
- **R&I:** Research and Innovation
- **RRF:** Recovery and Resilience Facility
- **RTOs:** Research and Technology Organizations
- **SMEs:** Small and Medium-sized Enterprises
- **TRL:** Technology Readiness Levels

4.1 Introduction

The digital transformation of the European economy has evolved from a sectoral industrial objective into a critical determinant of the Union's geopolitical sovereignty and economic resilience. With the *Digital Decade* policy Programme, the European Commission has established clear, quantifiable targets for 2030: ensuring that 90% of SMEs reach at least a basic level of digital intensity and that 75% of EU companies adopt advanced technologies such as Cloud computing, Big Data, and Artificial Intelligence (European Commission, 2023). To achieve these ambitions, the EU has mobilized unprecedented resources through its Research and Innovation (R&I) Framework Programmes,

Horizon 2020 and Horizon Europe, investing over €170 billion to drive the twin green and digital transition.

However, as the 2030 deadline approaches, a structural paradox has become increasingly evident. While the EU has successfully consolidated its position as a global leader in "deep tech" research excellence by producing world-class outputs in quantum computing, photonics, and advanced manufacturing, it faces a persistent "deployment gap." We observe a distinct failure in translating these scientific breakthroughs into widespread industrial adoption, particularly among the non-tech SMEs that constitute the backbone of the European economy.

This disconnect echoes the concerns raised in recent high-level strategic analyses. Both the Draghi Report on European Competitiveness and the Letta Report on the Single Market identify a "Valley of Death" where EU-funded innovations fail to reach commercial scale or are acquired by non-European competitors before they can benefit the local economy (Draghi, 2024; Letta, 2024). The resulting landscape is one of a "two-speed" digital Europe: high-tech ecosystems in Northern and Western Europe continue to thrive, while SMEs in Southern and Eastern Member States remain locked in digital stagnation, unable to absorb the fruits of European R&I.

In this report, we investigate the root causes of this divergence. Unlike broader evaluations of the Framework Programmes, our analysis focuses exclusively on the **digitalization instruments**, tracing the policy evolution from the *Leadership in Enabling and Industrial Technologies (LEIT)* pillar in Horizon 2020 to *Cluster 4 (Digital, Industry, and Space)* in Horizon Europe. We argue that the current policy mix effectively funds the *supply* of advanced technology but fails to adequately support the *demand* and *absorption capacity* required for its deployment. By treating research and deployment as separate silos, the EU risks deepening regional digital divides. Consequently, we propose that the next Multiannual Financial Framework (2028–2034) must recalibrate its approach: shifting from a primary focus on research excellence to explicitly engineering the bridge between innovation and market adoption.

The rest of report is structured as follows: **Section 2** evaluates the legacy of Horizon 2020, assessing its role in laying the technological foundations of the Digital Single Market through the *Industrial Leadership* pillar. **Section 3** analyzes the strategic realignment of Horizon Europe, focusing on *Cluster 4* and the *EIC* in the context of strategic autonomy. **Section 4** provides an empirical analysis of the "deployment gap," contrasting funding participation with digital adoption rates across Member States to highlight regional disparities. Finally, **Section 5** concludes with targeted policy recommendations for the next Multiannual Financial Framework (MFF), proposing specific mechanisms to bridge the divide between research excellence and inclusive market adoption.

4.2 Horizon 2020 (2014–2020): The Era of "Industrial Leadership"

To understand the current deployment gap, we must first examine the architectural legacy of Horizon 2020. Operating from 2014 to 2020 with a budget of nearly €77 billion (European Parliament & Council, 2013), it marked a significant departure from previous Framework Programmes by explicitly prioritizing innovation over pure research. Digitalization was embedded primarily within its second pillar, **"Industrial Leadership,"** which aimed to accelerate the development of technologies that would underpin future businesses.

4.2.1 The Architecture of Digital Funding: LEIT and KETs

The core engine for digital funding was the *Leadership in Enabling and Industrial Technologies (LEIT)* programme. Specifically, the Information and Communication Technologies (ICT) component of LEIT commanded a budget of approximately €4.2 billion (European Commission, 2019). The strategic logic was clear: by mastering "Key Enabling Technologies" (KETs) such as micro-nanoelectronics, photonics, and advanced computing, Europe would secure its industrial future (European Commission, 2012).

This approach was highly successful in strengthening the **supply side** of digital innovation. The *Horizon 2020 Ex-Post Evaluation* (European Commission, 2024b) confirms that the programme was pivotal in maintaining Europe's scientific relevance, producing over 276,000 peer-reviewed publications and supporting 33 Nobel Prize winners. This effectively prevented Europe from losing its foothold in global hardware and infrastructure research against US and Asian competitors. However, the structure was inherently "technology-push." As identified by the *High-Level Expert Group on Key Enabling Technologies* (HLG-KET, 2015), the policy was heavily weighted towards **Technology Readiness Levels (TRL) 3 to 6**, moving from proof of concept to technology demonstration. It lacked robust instruments to push these technologies to TRL 8–9 (system complete and qualified), creating a "Valley of Death" where successful prototypes failed to cross into market deployment for non-specialized SMEs.

4.2.2 The "Champion" Model: Public-Private Partnerships (cPPPs)

A defining feature of the Horizon 2020 digital strategy was its reliance on contractual Public-Private Partnerships (cPPPs) (European Commission, 2013). These partnerships were designed to align the R&I agendas of large industrial players with the European Commission's strategic goals. While effective at setting standards, our analysis suggests they inadvertently contributed to the centralization of innovation, often sidelining Southern European SMEs in favor of established Northern industrial value chains.

A. The 5G-PPP: Infrastructure Over Inclusion

The **5G Infrastructure Public-Private Partnership (5G-PPP)**, with a budget of €700 million, was tasked with securing Europe's leadership in the next generation of network infrastructure.

- **Structural Concentration:** Participation was heavily skewed towards large vendors (e.g., Nokia, Ericsson) and major research institutes. While the partnership successfully delivered the technological foundations for 5G, the benefits were concentrated. According to the *5G PPP Progress Monitoring Report* (2020), while SME participation eventually reached 21.95% of funding in Phase 3, these were primarily highly specialized deep-tech firms integrated into the supply chains of the telecom giants.

- **The Southern European Context:** Southern European participation – notably from Greece and Spain – was statistically significant but structurally distinct. Entities like the Institute of Communication and Computer Systems (ICCS) at the National Technical University of Athens (NTUA) in Greece became key research players (5G-PPP, 2021), yet this success remained largely academic. The *industrial* spillover to the broader local economy was limited. We argue that for Southern Europe, the 5G-PPP functioned as a "research subsidy" for universities and institutes, rather than a catalyst for industrial digital transformation.

B. ECSEL JU: The "Closed Club" of Microelectronics

The **ECSEL Joint Undertaking** (Electronic Components and Systems for European Leadership) mobilized €1.2 billion in EU funding to support the semiconductor industry.

- **Value Chain Dominance:** ECSEL's funding logic heavily favored regions with existing semiconductor fabrication capacity ("fabs"), naturally benefiting Germany (Infineon, Bosch), France (STMicroelectronics, CEA-Leti), and the Netherlands (ASML, NXP).

- **Barriers for the South:** For Southern European countries without major fabrication facilities (excluding Italy's STMicroelectronics presence), entry barriers were high. SMEs in Portugal or Greece found it difficult to join these capital-intensive consortia. The *ECSEL Annual Activity Reports* consistently show a geographical imbalance, where the "Innovation Leaders" absorbed the lion's share of funding, reinforcing their industrial ecosystems while leaving the "Moderate Innovators" on the periphery (ECSEL JU, 2020). This dynamic exacerbated the deployment gap: the technology was developed in the North, while the South remained a passive consumer rather than a co-creator.

4.2.3 The SME Instrument: An Accelerator, but not a Diffuser

Horizon 2020 attempted to address the firm-level gap through the dedicated **SME Instrument** (now the EIC Accelerator). This was a highly competitive scheme designed to fund high-risk, high-potential innovators.
While the SME Instrument was celebrated for nurturing European "unicorns," it did not solve the *digitalization* problem for the broader economy, creating an imbalance that can be grouped in three dimensions:

1. **Selection Bias:** The instrument favored disrupting startups developing new deep-tech solutions. It was not designed for "adopters", the traditional SMEs seeking funding to *integrate* existing digital tools.

2. **Geographical Concentration:** Data indicates that nearly 50% of the SME Instrument budget went to companies in just four countries (UK, Spain, Germany, France) (ECA, 2020). From a Southern Europe perspective, while Spain performed exceptionally well, often ranking second in beneficiaries, this success was driven by a specific subset of high-tech startups in Madrid and Barcelona, masking the severe digital lag of the broader Spanish SME base.

3. **The Missing Middle:** The instrument created a stark imbalance: it supported a tiny elite of high-growth digital champions while offering little to the vast "middle" of European SMEs needing basic digital upgrading.

4.2.4 Horizon 2020 legacy: Excellence without Reach

In retrospect, Horizon 2020 succeeded in its primary mission. It built a robust foundation of digital research excellence. It kept Europe competitive in 5G standards and maintained a foothold in high-performance computing. Yet, it left a critical legacy challenge. By focusing so heavily on *industrial leadership* (defined as technological sovereignty for large players) and *radical innovation* (for startups), it neglected the **diffusion machinery** required to transmit these technologies to the wider market. The programme produced excellent "lab-ware," but as we transitioned to Horizon Europe, the pipeline to turn this lab-ware into widespread economic value remained broken.

4.3 Horizon Europe (2021–2027): Strategic Autonomy & Cluster 4

The launch of **Horizon Europe** in 2021 marked a pivotal shift in the Union's policy narrative. Moving beyond the "Industrial Leadership" logic of its predecessor, the new Framework Programme was explicitly designed to secure Europe's **"Strategic Autonomy"** (European Commission, 2021a). Against the backdrop of the COVID-19 pandemic and rising geopolitical instability, digitalization was reframed not merely as an efficiency tool, but as a pillar of sovereignty through the "Twin Transition" of Green and Digital transformations.

4.3.1 Cluster 4: Digital, Industry, and Space

The operational heart of this new ambition is Cluster 4: Digital, Industry, and Space. With a budget of €15.3 billion (European Commission, 2021a), it integrates three previously distinct domains to foster cross-sectoral innovation.

We argue that this integration is strategically sound and represents a necessary evolution in EU policy. As highlighted by Bruegel's analysis of the "Green Industrial Policy," modern industrial competitiveness is inherently tied to digital capacity; industries cannot decarbonize without digital tools (AI, Cloud), and digital sectors require a robust industrial base to scale (Tagliapietra & Veugelers, 2020). The Horizon Europe Strategic Plan reinforces this, noting that "strategic autonomy" requires mastering the entire technological stack: from raw materials and semiconductors (Industry) to the space-based data infrastructure (Space) and the algorithms that process it (Digital) (European Commission, 2021a). By breaking down these silos, Cluster 4 theoretically enables cross-fertilization – where space data feeds industrial logistics, and digital twins optimize manufacturing processes.

However, while conceptually robust, this integration reinforces the "deep tech" bias observed in Horizon 2020. The Cluster's destinations – focusing on Key Digital Technologies (KDT), Artificial Intelligence, and Cloud-to-Edge Computing – prioritize technological breakthroughs intended to reduce Europe's dependency on non-EU suppliers. While essential for sovereignty, calls under Cluster 4 remain highly complex and R&D-intensive. They continue to attract the same "usual suspects", large Research and Technology Organizations (RTOs) and industrial incumbents, leaving the "deployment gap" for standard SMEs unaddressed.

4.3.2 The European Innovation Council (EIC): Scaling the Elite

Horizon Europe formalized the pilot actions of the previous programme into the **European Innovation Council (EIC)**, endowed with a budget of approximately €10 billion. The EIC Accelerator serves as the flagship instrument for SMEs, offering blended finance (grants plus equity) to help high-risk startups scale.

However, the EIC's mandate explicitly targets "market-creating" innovation (EIC Work Programme, 2021). It seeks to identify potential unicorns – companies that can radically disrupt markets. This focus has drawn criticism for neglecting the "missing middle." As noted by Winnovart (2025) and the European Parliament's own assessment, the EIC is designed for "deep tech" ventures (TRL 5-9) with high risk profiles. It effectively abandons the vast majority of European SMEs that are "market-followers" rather than "market-creators." For a textile manufacturer in Portugal or a logistics firm in Greece needing to digitize their operations, the EIC offers no support. Thus, the programme widens the gap between the "innovation elite" and the "digital laggards."

4.3.3 The Missing Link: The Digital Europe Programme (DEP)

Recognizing that Horizon Europe was not designed for broad deployment, the Commission launched the **Digital Europe Programme (DEP)** as a complementary instrument. With a budget of €7.5 billion,

DEP is theoretically the missing link: it is tasked with building the *strategic capacity* to deploy digital technologies across the economy (European Commission, 2021b).

In practice, however, we observe a "plug-in" problem. The synergy between Horizon Europe (research) and DEP (deployment) remains cumbersome:

- **Siloed Governance:** Horizon is managed by DG RTD, while DEP falls under DG CNECT. The European Court of Auditors (Special Report 23/2022) found that synergies between Horizon and structural funds are "not yet used to their full potential" due to administrative barriers and misaligned timing.
- **The Implementation Gap:** Recent analysis by the European Parliament confirms that despite regulatory improvements, the uptake of synergy mechanisms "remains slow" with "significant persisting strategic and operational gaps" (European Parliament, 2025). National managing authorities often lack the administrative capacity or budget to fund the "downstream" deployment of Horizon projects. Consequently, the pipeline from "Horizon invention" to "DEP adoption" is frequently blocked.

4.3.4 An Assessment of Horizon Europe's Trajectory

Horizon Europe has successfully aligned R&I funding with the geopolitical goal of strategic autonomy. Yet, midway through its lifecycle, it risks replicating the structural flaw of Horizon 2020: creating islands of digital excellence in a sea of stagnation. The specialized "Widening Participation" actions (e.g., Teaming, Twinning) attempt to address regional disparities, but they primarily target research institutes, not the industrial fabric. Without a dedicated mechanism to actively *transfer* and *implement* the deep-tech solutions of Cluster 4 into the daily operations of Southern and Eastern SMEs, the Digital Decade targets for business adoption will likely be missed.

4.4 The Deployment Gap: A Comparative Analysis

This section synthesizes insights and data from Eurostat, the *Digital Economy and Society Index (DESI)*, and the *European Innovation Scoreboard (EIS)* to empirically demonstrate the "deployment gap" argument. By contrasting R&I inputs (funding participation) with digital outputs (SME intensity and deep tech adoption), we reveal a persistent structural dichotomy in the Single Market.

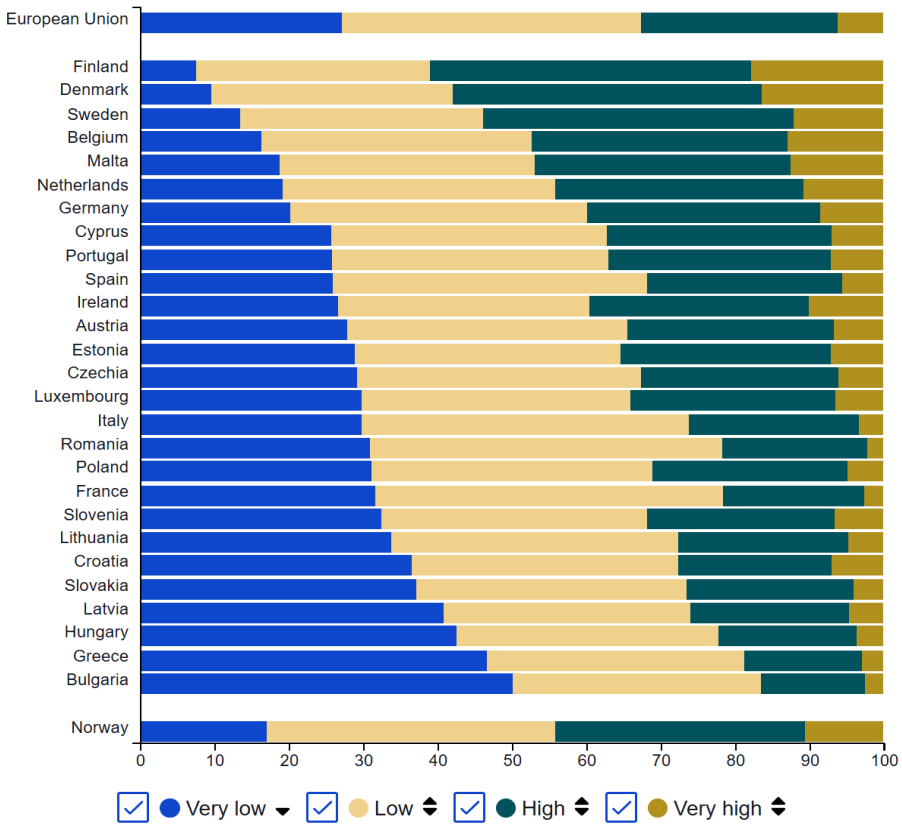
4.4.1 The Digital Divide in 2025: From Basic Access to Advanced Exclusion

Despite a decade of unified digital policy, the landscape of European SME digitalization remains strikingly fragmented. While gaps in "basic" digital intensity (e.g., having a website or broadband) are slowly closing, a new, more dangerous divide is opening in **advanced technologies**:

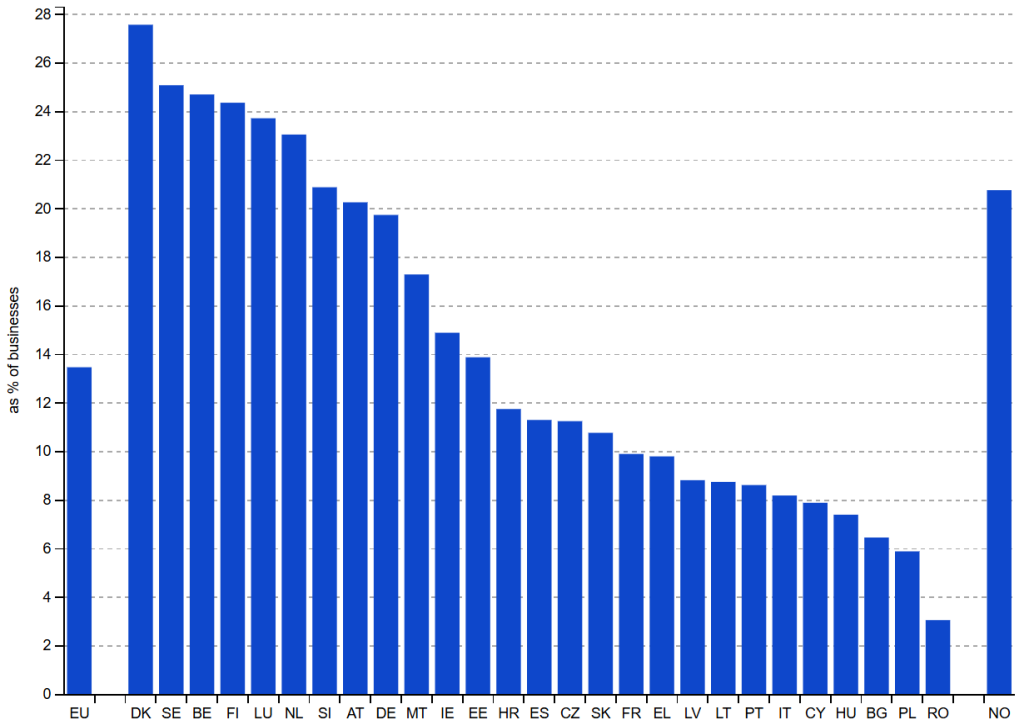
- **The Basic Digital Intensity Gap:** According to the **2024 SME Digital Intensity Index** (Eurostat, 2025a), a distinct "North-South" divide persists. **Finland**, **Netherlands**, and **Sweden** lead with over 75% of SMEs reaching basic digital intensity (i.e., above the *"Very Low"* category) (Fig.1a).

In contrast, Southern economies present a mixed pattern. While **Portugal (74.3%)** and **Spain (74.1%)** present high digital maturity levels above the **EU average (72.9%)**, **Italy** and **Greece** record underperforming rates of **70.2%** and **53.4%(!)** respectively, both placed below the EU average and demonstrating a failure to digitalize their broader industrial base, especially for Greece.

- **The AI Divide:** The gap becomes starker when examining the "quality" of digitalization. Eurostat data concerning 2024 (Eurostat, 2025b) shows that the adoption of **Artificial Intelligence (AI)** technologies (Fig.1b) – a core priority of Cluster 4 – is highly concentrated in the North. In **Denmark**, **27.6%** of enterprises use AI; **Sweden** follows with **25.1%** and then **Belgium** with **24.7%**. Conversely, Southern Europe economies remain below the **EU average (13.5%)**. **Spain** leads the European South with a **11.3%** adoption rate, followed by **Greece** with **9.8%**. **Portugal's** and **Italy's** adoption rates are even lower (**8.6%** and **8.2%**, respectively). This proves that the high-end technologies – which are pivotal in Horizon projects – are failing to diffuse in *"Moderate Innovator"* countries of the South, creating a two-tier industrial base.



(a) Digital intensity level in SMEs (% of SMEs in different levels). Source: Eurostat [isoc_e_dii]



(b) Businesses using AI (% of total businesses). Source: Eurostat [isoc_eb_ai]

Figure 4.1 – Basic digital (a) and advanced technology (b) intensity of firms in the EU. Sources: Eurostat (2025a,b)

4.4.2 An uneven Geography of Scale-Up Funding

The failure to diffuse technology is mirrored by a failure to finance its scaling in the periphery. The distribution of **EIC Accelerator** funding, which can be considered as the EU's primary vehicle for creating "unicorns", reveals a structural bias towards established innovation hubs in terms of Accelerator beneficiaries and capital concentration:

- **EIC Beneficiaries:** According to the *EIC Accelerator October 2024 results* analysis, **Germany** (15 companies) and the **Netherlands** (11) secured the highest number of winners. **Spain** performed respectably with 6, but **Portugal** saw only **1** winner (Euro Funding, 2024).
- **Deep Tech Capital Concentration:** This public funding disparity is exacerbated by private capital flows. Venture Capital investment in European "Deep Tech" in 2023 was heavily skewed towards France and Germany. Reports from Atomico (2023) and Dealroom & Lakestar (2023) reports highlight that French startups, for instance, raised significantly more blended finance (grant + equity) than their Southern peers. This lack of local follow-on capital means that even if a Southern SME develops a Horizon prototype, it faces a "financial Valley of Death" that its Northern counterpart does not.

4.4.3 A Paradox of Participation: Funding vs. Adoption in Southern Europe

A critical dimension that should be highlighted next is the lack of linear correlation between *participation* in EU R&I programmes and *industrial adoption* of digital technologies in lagging regions. We term this the **"Paradox of Participation."**

Data from the Horizon Dashboard (European Commission, 2024d) indicates that **Southern European** countries have **performed relatively well in securing Horizon 2020 and Horizon Europe funding**. Greek entities, for example, are frequent partners in *5G-PPP* and *Cluster 4* consortia. However, this participation is often driven by universities and research centers. When contrasted with Eurostat's SME Digital Intensity scores (Fig.1), it becomes clear that the local industrial ecosystem, which is dominated by micro-enterprises, fails to absorb these R&I results. The funding effectively acts as a subsidy for the academic sector but does not trickle down to the real economy. This phenomenon is starkly visible across the "Moderate Innovator" group:

- **Greece:** Demonstrates a classic *"academic bubble"*. While Greek research entities are highly successful in winning Horizon grants (ranking 8th in total participations for *Widening* countries), the spillover to the local economy is negligible. In 2024, only **53.4% of Greek SMEs** had reached **basic digital intensity**, and **adoption of AI was a mere 9.8%**, highlighting a disconnect between the high-tech research produced in Athens or Thessaloniki and the low-tech reality of the broader SME base (European Commission, 2024c).

- **Italy:** Despite a strong industrial manufacturing base, **Italy faces a significant skills gap**. Italian SMEs show decent "basic" digital intensity (70.2%, though still trailing the 72.9% EU average), but struggle with advanced adoption. Only **8.2% of Italian enterprises used AI in 2024**, far below the Northern leaders. The *Italy 2025 Digital Decade Report* attributes this to a severe shortage of ICT specialists (only 4% of employment), meaning that even when funds are available, firms lack the human capital to implement Horizon-level innovations (European Commission, 2025).

- **Portugal:** Mirrors the Greek paradox but with a stronger emphasis on *"start-up rhetoric"* that hasn't fully matured into industrial scaling. **Portugal ranks 13th in attracting Horizon 2020 funds**, yet relies heavily on Cohesion Policy (Structural Funds) rather than competitive R&I funds for actual business R&D. In addition, the data further reveals a sharp structural disconnect: while Portugal boasts a healthy 74.3% basic digital intensity (surpassing the EU average), AI adoption remains low at 8.6%. In the 2024 EIC Accelerator cut-off, Portugal secured only **1** winner, underscoring the difficulty its deep-tech ecosystem faces in competing for "excellence-based" scaling finance compared to the EU average (JRC, 2024).

- **Spain:** Presents a more complex picture. **Spain is a top performer in securing EU funding**, often ranking 3rd or 4th in Horizon Europe participation and leading in "Twin Transition" projects. Yet, its **SME ecosystem remains fragmented**. While a cluster of high-growth startups in Madrid and Barcelona successfully access EIC funding (6 winners in Oct 2024 (Euro Funding, 2024), the

vast majority of Spanish SMEs (99% of the country's fabric) lag in advanced digital adoption; despite a strong 74.1% basic digital intensity, AI adoption halts at 11.3%, falling short of the 13.5% EU average.

4.4.4 Structural Barriers: Why the Gap Persists

The persistence of this gap, despite massive investment, points to structural barriers that Horizon Europe's current design fails to address:

1. **The "Valley of Death" for Adoption:** As identified in the *Draghi Report* (2024), the EU lacks instruments for the "scale-up" phase. Horizon grants stop at the prototype stage. In the South, where private venture capital is scarce, there is no follow-on funding to turn these prototypes into market-ready products for SMEs.
2. **Ecosystem Maturity:** While the network of **European Digital Innovation Hubs (EDIHs)** has expanded to cover most regions, their maturity varies significantly. Hubs in the North often specialize in high-value services like HPC and AI testing, matching the advanced needs of their ecosystem. In the South, many hubs are still focused on basic digitization (cloud, web presence), reflecting the lower digital maturity of their client SMEs (JRC, 2023). Furthermore, these newer hubs often lack the operational capacity to effectively manage complex synergy projects (European Parliament, 2025).
3. **Skills Mismatch:** Digital intensity requires digital skills. The *DESI 2024* data shows that countries with low SME digitalization also suffer from a severe shortage of ICT specialists. Horizon Europe funds the *development* of technology, but not the *training* of the workforce needed to use it, leaving this critical enabler to national policies that vary wildly in effectiveness.

GENERAL CONCLUSIONS

1.Comparing the Multiannual Financial Frameworks 2021-27 and 2028-34

To ensure that the next MFF delivers on its strategic objectives while remaining politically viable and administratively implementable, several conclusions emerge. **For Southern European Member States, the path forward must build on demonstrated strengths while addressing persistent vulnerabilities**. Greece, Italy, Portugal and Spain are managing the EU's largest and most structurally complex reform portfolios under the Recovery and Resilience Facility, with allocations representing transformation scales far above the EU average. Their milestone fulfilment rates, when adjusted for portfolio size, confirm substantial implementation capability. This track record must be converted into negotiating leverage to secure NRPP milestone definitions that reflect regional implementation realities rather than uniform timelines, adequate technical assistance embedded in the framework, and performance requirements that reward execution capacity rather than penalise structural disadvantages.

Effective advocacy must be supported by flexible, issue-specific coalitions. Member States should form **variable-geometry alliances**: coordinating with federal or regionalised countries to safeguard multi-level governance; partnering with widening countries to secure geographical balance mechanisms within the ECF; aligning with Eastern Europe on administrative-capacity support; and cooperating broadly on flexibility instruments given shared vulnerability to consecutive crises.

For this to happen, the absorption deficit must also be addressed before extending performance-based mechanisms across all NRPPs. The experience of Portugal's *1.º Direito* programme, delivering only 27% of planned units due to verification bottlenecks, illustrates the risks of overlaying RRF-style conditionality onto systems struggling with absorption. Resolving these bottlenecks before 2028 is essential. This requires immediate investment in monitoring systems and administrative capacity, supported by a dedicated, ring-fenced EU technical assistance programme focused on capacity diagnostics, standardised verification protocols, milestone-based implementation training, and digitalised reporting tools.

For EU institutions, the core requirement is **establishing performance accountability commensurate with performance-based conditionality**. The current fragmentation of reporting across AMPR Volumes I-III makes it challenging to answer the fundamental question: 'Did we achieve what we set out to accomplish?' A unified performance dashboard consolidating NGEU and MFF outcomes against initial objectives, organised thematically rather than by national plans, would enable greater accountability. This requires summary indicators tracking progress toward aggregate headline priorities, comparative milestone data identifying bottlenecks, and mandatory ex-post evaluation of performance-based mechanisms.

Multi-level governance should be preserved through binding provisions that supersede Commission assurances. The NRPP framework's concentration of authority at national levels threatens to marginalise regional governments that have traditionally provided the contextual knowledge and

implementation capacity essential to cohesion policy success. Mandatory regional participation with protected allocations and autonomous implementation authority for regional managing authorities with substantive control over project selection and milestone definition should be required. Performance requirements must be calibrated to the long-term investment logic of the Cohesion Policy: Infrastructure and human capital investments generating returns over decades require milestone definitions that accommodate this temporal dimension, avoiding perverse incentives that favour easily measurable but less transformative interventions over genuinely structural projects.

The 2028-2034 MFF is a high-stakes test: it will either successfully transform EU budgetary governance into a strategic competitiveness tool or create institutional paralysis that weakens both European ambitions and regional cohesion. Success requires resolving fundamental tensions between performance and implementation capacity, centralisation and multi-level governance, and excellence-based versus equity-based funding. The institutional conflicts surrounding NRPPs and the ECF suggest these tensions remain unresolved. Ultimately, the success of the next MFF will depend on aligning ambition with implementation reality, ensuring that strategic reform does not come at the expense of cohesion, and that cohesion does not dilute Europe's capacity to act.

2. The European Competitiveness Fund: a highly anticipated novelty with a few significant ambiguities yet to be clarified

This chapter's analysis of the **European Competitiveness Fund (ECF)** highlights both the scale of the Commission's ambition and the structural challenges that will determine the Fund's effectiveness. **The ECF represents the EU's principal response to long-standing concerns regarding competitiveness, strategic autonomy and innovation capacity**. By replacing fourteen separate programmes with a single instrument and organising priorities across four policy windows, the Fund aims to reshape the EU's investment landscape for the next MFF. However, the analysis shows that simplification alone is insufficient without adequate resources, clear prioritisation mechanisms and strong horizontal enablers.

The chapter identifies clear advantages in consolidating existing programmes. A unified framework enhances transparency, facilitates monitoring of EU spending and provides a clearer interface for businesses and public authorities. The ECF's open-architecture model introduces adjustable budgets, enabling the EU to reallocate resources when geopolitical or technological conditions change. However, such flexibility also creates governance challenges: without transparent prioritisation criteria, decision-making risks becoming slow, disputed or inconsistent, making predictable resource allocation more difficult.

Resource adequacy is another major concern. Despite consolidating programmes and adding financial capacity, the ECF's overall budget remains far below the level deemed necessary for the EU to close its competitiveness gap with the United States and China. This is especially evident in the **Clean Transition and Decarbonisation** window, whose limited resources may hinder progress

on energy efficiency, clean-tech deployment and climate adaptation – areas already facing an investment shortfall of 2.7–3.7% of EU GDP, according to ECB estimates. Continued underinvestment in energy infrastructure could, in turn, undermine the EU's digital transition, including the deployment of energy-intensive technologies such as AI.

By contrast, the **Defence Industry and Space** window receives a substantial increase in resources, reflecting a strategic shift. With €125 billion, it becomes the central pillar of the ECF and could enhance Europe's technological leadership in dual-use capabilities and critical supply chains. If translated into effective projects, investments in defence production, space infrastructure and supply-chain resilience could strengthen Europe's economic security. Nonetheless, the chapter warns that excessive focus on narrow defence-industrial outputs – without prioritising dual-use innovation – may limit spillover benefits to the wider economy.

Access to finance is not the principal constraint facing European firms. Evidence from ECB and Commission surveys indicates that labour shortages, production costs and regulatory burdens are more pressing challenges. For this reason, the ECF's horizontal enablers – skills initiatives, advisory services, innovation hubs, business acceleration and targeted SME measures – are essential. If well designed, they could improve firms' ability to adopt new technologies, scale within the Single Market and navigate regulatory requirements. Insights from the U.S. CHIPS and Science Act and China's innovation-chain strategies underscore the importance of skills development and regional innovation capacity.

The chapter concludes that, while the ECF represents a crucial evolution in the EU's investment governance, it is insufficient on its own to bridge Europe's competitiveness gap. Its success will depend on clear prioritisation criteria within policy windows, effective coordination with Horizon Europe, cohesion policy and national initiatives, the ability to crowd in private investment, and the strength of its horizontal enablers in creating a genuinely level playing field across the Union.

3. Policy approaches to effectively build digital leadership in the Multiannual Financial Framework and European Competitiveness Fund

A forward-looking approach to **digital leadership** requires choices that are sharper and more intentional than the ones made in previous funding cycles.

At this point, there are several ways to understand Europe's digital leadership ambitions. Leadership across the stack focuses on continuity from hardware to services. Leadership in bottlenecks focuses on control of strategic points whose disruption would affect the whole system. Leadership as sovereignty focuses on keeping essential capabilities free from external pressure. Leadership as disruptive innovation ties leadership to acting first in new technological domains. Leadership as adoption means the ability of companies, public administrations and citizens to integrate digital tools in everyday practice. Each path implies a different distribution of resources and a different role for public funding from Brussels. The next cycle must be explicit about which combination

Europe wants to prioritise, because ambiguity could create mismatched expectations between institutions, Member States and industry.

The next MFF should use the flexibility of **Article 20** to move faster in areas where delays would weaken Europe's position, while applying **Article 10** in a way that strengthens European capabilities without creating unnecessary barriers for collaboration with trusted partners. The EU should act quickly in domains like **compute, semiconductor supply, AI infrastructure and cybersecurity**.

A stronger focus on enabling infrastructure would help anchor these decisions. Enabling infrastructure refers to the shared systems that allow Europe's digital economy to evolve as one: connectivity networks, cloud–edge capacity, data environments, testing and certification facilities, and secure channels for high-performance computing. It also includes long-term funding mechanisms, predictable procurement frameworks and institutional continuity that reduce risk for private investors and research organisations. When these elements form a coherent base, the incentives created by the ECF have a much higher chance of producing technological depth that survives several technological cycles. This base should also include support for skills and research ecosystems that can absorb investment and turn it into sustainable capacity.

Southern Europe has the potential to reinforce this direction through its research networks, industrial fabric, talent pool and linguistic reach. Yet this potential remains unevenly connected. The region would benefit from EU programmes that reward integration into shared infrastructure rather than isolated national projects. A funding cycle that links these assets to the wider European system would help transform regional strengths into European advantages. This requires viewing enabling infrastructure as a territorial system.

The next MFF could give Europe a more stable footing in the global technology race by combining speed and territorial coherence.

4. Digital Horizons or Policy Gaps? Rethinking How EU R&I Policy Shapes the Digital Decade

Our analysis reveals that the EU's digital policy architecture suffers from a fundamental structural asymmetry**. While Horizon 2020 and Horizon Europe have proven to be formidable engines for *generating* technological sovereignty, successfully positioning Europe as a global leader in scientific output and deep-tech research. But, at the same time, they have structurally underperformed as engines of *economic cohesion***. Data shows that the benefits of this public investment are being captured primarily by the mature innovative ecosystems of the North and West, creating a "closed loop" of excellence that excludes the vast majority of Southern SMEs. This reflects a systemic failure of the transmission mechanisms intended to bridge the gap between the laboratory and the market. The famous "Valley of Death" has become a geographic reality for entire regions that lack the absorptive capacity, financial depth, and intermediary infrastructure to deploy the advanced technologies that European taxpayers are collectively funding. Consequently, if the

next MFF continues to treat research excellence and industrial deployment as separate policy silos, the Digital Decade targets will remain out of reach for a significant portion of the Union.
The forthcoming MFF (2028–2034) offers a window to address this gap**. To meet the Digital Decade 2030 targets, the EU must move beyond the dichotomy of "Excellence" versus "Cohesion" and design a policy mix where diffusion is as prioritized as invention.** Drawing on Heitor et al. (2024) report on the interim evaluation of Horizon Europe and the *Draghi Report* (2024), we propose the following digital policy recalibrations for the upcoming 10th Framework Programme (FP10):

a) From "Technology-Push" to "Diffusion-First": The current bias towards early-stage research (TRL 1–6) must be rebalanced with a mandate for market deployment (TRL 7–9). FP10 could introduce a mandatory **"Diffusion Component"** within all Cluster 4-like collaborative projects, requiring consortia to allocate a specific part of their budget (e.g., 10%) to transfer activities targeting SMEs in lagging regions. By funding active tech-transfer workshops and pilot implementations rather than passive dissemination, this mechanism would operationalize Enrico Letta's (2024) "Fifth Freedom," ensuring that knowledge created in Northern hubs flows freely to industrial users in the South.

b) Fixing the "Plug-in" Mechanism: We propose automating the **"Seal of Excellence"** pipeline, making successful Horizon prototypes *automatically* eligible for fast-track deployment grants from the Structural Funds. The current uptake of synergies is too slow; a centralized "plug-in" mechanism would bypass national administrative bottlenecks, providing the "patient capital" needed to cross the Valley of Death without re-evaluation.

c) A Place-Based "Industrial Competitiveness" Pillar: We recommend reforming the *Widening Participation* programme to prioritize **industrial** rather than just *academic* excellence through a "Regional EIC" pilot scheme. This proposed instrument would offer smaller, non-dilutive grants (e.g., €50k–€150k) specifically for traditional SMEs to adopt *existing* digital technologies like AI and cloud tools. This strategy directly targets the "missing middle," raising the baseline digital intensity of "Moderate Innovator" countries without requiring them to compete for unicorn-level deep-tech funding.

d) Strengthening Intermediaries (EDIHs 2.0): European **Digital Innovation Hubs (EDIHs)** are the critical "last mile" infrastructure for technology transfer, yet they remain under-resourced. FP10 should provide direct, operational funding to high-performing EDIHs in "Widening" countries, tied explicitly to their success in facilitating the transfer of Horizon technology to local firms. This performance-based funding would incentivize hubs to actively scout Horizon results and broker them to local SMEs, transforming them from passive service providers into active agents of innovation diffusion (JRC, 2023).

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