

INNOVATION POLICY

Enhancing Europe's competitiveness by empowering researchers as innovators

Overlooked opportunities can help turn academic research into socioeconomic impact across Europe

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The 2024 report *The Future of European Competitiveness*, commissioned by European Commission (EC) President Ursula von der Leyen and led by former prime minister of Italy and president of the European Central Bank Mario Draghi, highlighted that fostering breakthrough innovation is crucial to reigniting productivity and sustaining growth across Europe (1). Building on the report, the EC presented the strategic framework of the Competitiveness Compass (2), together with initiatives to restore Europe's innovation ecosystem and boost industrial dynamics and economic growth. Europe has long recognized this link; the central issue is implementation, including frictions that prevent scientific strength from translating into products, firms, and markets. We outline overlooked opportunities that can help enable the translation of academic research into breakthrough, commercially exploitable innovation with direct or indirect socioeconomic benefits in Europe, with particular focus on the Framework Program for research and innovation of the EC, known as Horizon Europe (HE).

We focus on HE because it plays a strategic role in funding breakthrough innovation. HE alone is unlikely to solve Europe's competitiveness problem, but being the EU's largest research and innovation instrument, it is among the most important places to begin. Although HE accounts for only 10% of publicly funded research and development (R&D) in Europe, the rest being accounted for by national funds, the latter are largely administered through top-down programs with rigid agendas. HE therefore represents a crucial instrument to support investigator-driven research and small firms while complementing bottom-up discovery with more directed, actively managed mechanisms that help promising ideas move toward application (3). Moreover, EU-level programs often set the template for national schemes—for example, the diffusion of European Research Council (ERC)-style investigator-driven grants into national research councils—so improvements in HE can propagate to national funding systems.

The EC and stakeholders began discussions on the next Framework Program for research and innovation in summer 2025, to be implemented in 2028–2034. Because framework programs are defined on a 7-year cycle, now is the key moment to advance reforms and address overlooked issues—changes are more likely to be adopted before design and legislation are finalized.

RETHINK BUDGET AND GOVERNANCE OF KEY PROGRAMS

HE allocates €95 billion to research and innovation between 2021 and 2027, or €13.5 billion annually. About 25% of the HE budget supports

fundamental research (ERC, Marie Skłodowska-Curie Actions). Although evaluations of these programs are generally positive (4–6), particularly with regard to their long-term impact on the scientific productivity of grantees, evidence based on patent citations shows that ERC-funded research is disproportionately cited in patents filed by US rather than European start-ups (6). This pattern is consistent with weaknesses in Europe's research-to-market pipeline, although other factors, including venture capital, entrepreneurial incentives, scale-up capacity, and demand-side conditions, may also contribute. ERC Proof of Concept (PoC) grants have shown promise—grantees benefiting from PoC funding report higher patent utilization rates than those without (7)—yet only about 1 to 2% of the ERC's €16 billion budget is dedicated to PoC activities.

HE devotes about €10.1 billion (2021–2027), or 10% of its budget, to the European Innovation Council (EIC), designed to foster breakthrough innovation. Within it, the Pathfinder and Transition programs specifically support the development of early-stage science-based technologies and draw on selected features of the US Advanced Research Projects Agencies (ARPA); the Accelerator program focuses on scaling up innovative companies. The US instruments are useful design references because unlike for other strong innovation ecosystems, such as China, their mechanisms are transparent and well documented. Yet, while ARPAs operate with budgets exceeding €7 billion per year (8), Pathfinder and Transition together receive only about one-third of the EIC's annual budget—roughly €500 million. The difference is large even after accounting for the greater size of the US economy: The US and EU economies are of the same broad order of magnitude, and public R&D expenditure represents a similar share of GDP in both, at roughly 0.7% (8). Differences in program funding may partly reflect differences in demand—for example, if Europe has fewer innovative start-ups—but addressing such differences is itself an important objective of industrial and innovation policy. In particular, reallocating public resources from support for mature activities toward innovative entry and scale-up can help expand both the supply of and demand for frontier innovation funding.

Support innovation from ideas to the market

We argue that ERC PoC could be moved under EIC governance. Although it is possible to access EIC Transition grants after an ERC PoC grant (thus skipping Pathfinder for ERC PoC grantees), the two programs mostly operate as separate silos, creating administrative gaps and potential duplication that disrupt promising innovation tra-

jectories. Integrating them would ensure continuity—allowing ERC discoveries with commercial potential to advance smoothly through Transition and Accelerator stages—while reducing delays and redundant evaluations (8, 9). A unified structure would also facilitate thematic clustering, joint monitoring, and knowledge spillovers between ERC-funded researchers and EIC innovators.

Financially, an integrated pipeline would improve the quality and predictability of deal flow for investors and strengthen Europe's capacity to scale up science-based ventures. It would also yield economies of scale by streamlining evaluations, pooling expertise, and enhancing risk management. The current shortage of program managers limits project oversight and breadth of expertise (8). A unified system would address this by sharing administrative resources across stages.

Boost programs for breakthrough innovation

Opportunities exist to reallocate funding from programs with limited innovation potential. Here, breakthrough innovation refers to substantial scientific or engineering advances that can create new products, markets, or production processes but involve high uncertainty, long development timelines, and large upfront costs. The case for public support rests on market failures, spillovers, and coordination problems, not on a claim that every supported project will generate benefits exceeding costs. Over 50% of HE's budget supports the Global Challenges and European Industrial Competitiveness (GCIC) program, which often targets mature technologies in traditional sectors with limited breakthrough potential (3, 8). Unlike ERC and EIC, GCIC lacks any evidence of a substantial impact on recipients' measurable outcomes such as revenues or patents (3). Similarly, concerns have been raised about the added value of the European Institute of Innovation and Technology (EIT) and the European Innovation Ecosystems (EIE), which together account for around €3.4 billion, or 3.5%, of HE (8).

Redirecting even a small portion of these funds could have a substantial impact on the budgets of ERC PoC and EIC Pathfinder and Transition. Policy-makers might also explore alternative instruments such as social impact bonds for innovation financing (10) or incentives for private investment in early-stage research through tax credits and matched funding (11, 12). According to the EC, nearly 70% of high-quality proposals submitted under HE remain unfunded, and an additional €82 billion would have been required to support all proposals that passed the excellence threshold.

Concrete benefits to society

Socioeconomic impact is now a central objective for grants beyond fundamental science in Europe (13). EIC funding should prioritize research capable of generating tangible societal and economic outcomes. Grants should demonstrate clear potential for translation, yet the current process often rewards lengthy, polished applications over real innovation. Studies estimate that preparing an EIC proposal requires 36 to 45 person-days, and applicants may rely on consulting agencies, whose fees can absorb around 15% of the funding received (3, 14). By contrast, ARPA applications rely on the concise "Heilmeyer Catechism"—a series of eight questions to help researchers clearly and concisely communicate their research, demonstrating that effective evaluation does not require excessive bureaucracy. Simplifying the process would reallocate resources to research and increase accessibility, especially for smaller institutions lacking grant-writing support.

ACT LOCALLY, ALIGN AT THE EU LEVEL

Bridging Europe's innovation gap also requires institutional reform within universities, Research and Technology Organizations

(RTOs), and Technology Transfer Offices (TTOs), aligned with EU-level initiatives. RTOs are typically public or nonprofit research institutions, distinct from universities and private firms, that specialize in applied research, technology development, testing, and the translation of scientific knowledge into industrial applications. Beyond funding and governance, attention must be given to training, mentoring, technology transfer management, and researcher recognition. Evidence is stronger for funding continuity, ERC PoC support, and application simplification; measures such as entrepreneurship training, entrepreneur-in-residence programs, and dissertation-format changes are framed as low-cost steps to reduce plausible frictions rather than as interventions with fully established causal effects.

Increase matching funds from Member States

In programs such as EIC Accelerator, only ~3.5% of proposals are funded out of 7.2% that meet its rigorous evaluation thresholds. The 3.7% of proposals that are judged excellent but cannot be funded because of budget constraints receive a "Seal of Excellence," signaling to Member States that these projects have passed the EU-level evaluation and are considered strategically valuable and investable. Some national funding agencies already use this signal to finance such projects directly. We propose formalizing and expanding this practice by securing multiyear commitments from national funding agencies to provide matching or complementary funding for highly ranked but unfunded projects under the ERC PoC and the EIC Transition and Accelerator programs. National agencies would retain and deploy their own resources, rather than transferring them to the EU budget, while relying on the EU evaluation process to identify projects eligible for support.

Incentives for entrepreneurial activities in academia

Across Europe, researcher-innovators often face limited recognition and career progression opportunities. Academic advancement depends mainly on research funding, publications, and teaching, leaving little time for entrepreneurial pursuits, which are often actively discouraged. In some cases, universities and RTOs see start-ups as cash cows and want to reap the fruits too early.

In some universities and RTOs, staff must leave academic posts to found a spin-off, forcing researchers to choose between job security and entrepreneurship. Overcoming these barriers requires a cultural shift that values entrepreneurship as an integral part of academic excellence, supported by aligned institutional missions and communication explaining, legitimizing, and promoting entrepreneurial career paths within academia.

Several universities already exemplify this shift. The University of Twente brands itself as an "entrepreneurial university," integrating knowledge transfer and start-up creation into its mission. NOVA University of Lisbon follows a similar model, while the Technical University of Munich (TUM) promotes entrepreneurship through its TUM Entrepreneurship Center, offering mentorship, networks, and access to funding. Partnering with national programs such as EXIST (Existenzgründungen aus der Wissenschaft or Business Start-ups from Science), TUM has helped launch over 1000 start-ups, establishing itself as a leading European hub for innovation [see supplementary materials (SM) for further examples].

Other measures could further legitimize entrepreneurship as an academic pathway, such as allowing PhD defenses based on patent applications and including chapters on knowledge transfer in dissertation modules into undergraduate and graduate curricula would foster an entrepreneurial mindset among students and researchers.

Overcoming these barriers requires a cultural shift that values entrepreneurship...

Integrate EU-level funding and host institutions

Providing harmonized institutional starter funding to researchers focused on innovation and societal impact would fill a critical early-stage gap, enabling exploration of applied potential before entering competitive EU programs. Embedding partnerships between ERC grantees and host institution TTOs would strengthen knowledge transfer planning from the project's inception. "Innovation bootcamps," connection to business schools (e.g., Creative Destruction Lab program), and entrepreneur-in-residence programs could allow grantees to pitch ideas to experts for feedback, building confidence and capacity for commercialization (see SM for further examples). Such measures would support proof-of-concept work, partnership formation, and prototype development, reducing the preinnovation funding gap.

Strengthen innovation governance and technology transfer

Reward systems recognizing outstanding TTO performance—measured by successful, timely intellectual property (IP) protection and commercialization—would strengthen incentives. Harmonized rules for IP, liability, and facility use would lower barriers for start-ups and cross-border collaboration. Transparent roadmaps (expected steps, timelines, etc.) for patenting, industrial partnerships, and start-up creation would make the path from discovery to innovation more predictable.

Embedding innovation leadership at all institutional levels would ensure accountability and visibility, while a dynamic, researcher-centered TTO model—allowing choice of officers and access to a shared pool of experienced managers—would professionalize technology transfer. The Association of European Science and Technology Transfer Professionals could provide targeted training of TTO managers. In heavily regulated sectors such as biomedicine, closer coordination between TTOs and clinical centers would streamline access to funding and regulatory compliance. Collectively, these actions would create a more flexible, impact-oriented research ecosystem capable of translating scientific excellence into sustainable economic and societal value.

STRUCTURAL ISSUES AND OBSTACLES TO REFORM

Beyond HE's internal design, structural challenges—such as underdeveloped venture capital markets, rigid labor rules, and fragmented regulatory frameworks—continue to constrain Europe's innovation performance. These weaknesses deter private investment in early-stage technologies and contribute to market failures that hinder the scaling of promising ideas. Public funding must therefore address these systemic failures by targeting high-risk innovation that private capital neglects.

Although the reforms proposed here cannot alone resolve these broader constraints, they would improve the effectiveness of public support by channeling resources toward early-stage innovation and creating a smoother path from research to commercialization. This would enable EU funds to play a corrective role in addressing Europe's structural weaknesses in innovation finance and regulation.

Some Member States may resist increasing the overall EU research and innovation budget, citing fiscal constraints or competing priorities such as cohesion policy—which supports less-developed regions and seeks to reduce economic and social disparities across the EU. Others with well-funded national R&D systems may view an expanded EU role as redundant. For this reason, our proposed reform emphasizes reallocation and governance changes. Yet even this approach may face opposition. Member States with strong national champions in mature sectors—such as automotive and chemicals—may resist diverting funds toward emerging technologies, fearing industrial disruption and job losses. Despite its fiscal neutrality, the reform could therefore encounter political resistance from countries seeking to preserve established advantages.

In addition, owing to the substantial heterogeneity in institutional frameworks and in the maturity levels of innovation systems across EU Member States, the benefits of certain support measures naturally accrue more strongly to countries with larger and more research-intensive institutions. Therefore, regional funds, capacity-building programs, and cohesion-oriented innovation support are examples of complementary policies that might help mitigate disparities and increase the political feasibility of our proposed reforms.

The path to reform is not free of obstacles, but Europe appears more prepared than before to tackle them (see SM). On 16 July 2025, the Commission proposed a nearly €175 billion budget for Horizon Europe for 2028–2034—almost twice the envelope of the current program and an unprecedented commitment to EU-level research and innovation (15). The proposal remains under negotiation as part of the next Multiannual Financial Framework. However, there are ongoing pressures to reduce this envelope during the current negotiation phase. Securing the HE budget and ensuring reforms will be essential to enhancing Europe's competitiveness. Although no single reform can resolve all challenges, the measures proposed here would build on this momentum, contributing to a more coherent, efficient, and impact-driven European innovation ecosystem in which breakthrough ideas flow more easily toward commercialization. This would help bridge the gap between scientific excellence and socioeconomic impact, advancing the vision set out in the Draghi report and embraced by the EC itself. □

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