European Research Policy: Successes, Challenges, and the Competitiveness Dilemma

A Background Note provided by Cercle Européen Renert

1. Introduction

European research policy has long been a cornerstone of the EU's ambition to foster **innovation, economic growth, and global competitiveness**. Frameworks like **Horizon Europe** (€95.5 billion, 2021–2027) and the **European Research Area (ERA)** have driven cross-border collaboration, breakthroughs in health, climate, and digital technologies, and strengthened Europe's position in the global race for excellence.

The EU's 2030 Strategic Autonomy agenda, often framed as **"open strategic autonomy"**, is a central pillar of Europe's effort to remain economically competitive, technologically sovereign, and geopolitical resilient in an increasingly fragmented global order. **Since the adoption of the Strategic Autonomy agenda, the policy discourse has evolved.** The EU is increasingly pursuing the development of sovereign capabilities in strategically important technologies, infrastructures, supply chains and knowledge domains. The objective is not isolation, but the capacity to remain competitive, resilient and capable of acting in a world characterised by technological rivalry, economic coercion and geopolitical fragmentation.

Yet, persistent **structural weaknesses**, fragmented funding, brain drain, and ever-lasting gap between research and commercialization, hinder the translation of excellence into economic impact. Europe is strong in **knowledge production**, but weak in **capital aggregation and risk-taking**. Meanwhile, **European innovations are increasingly marketed and scaled in the US**, raising questions about the EU's ability to retain and capitalize on its intellectual property (IP) and industrial leadership.

For **Luxembourg**, a small but highly innovative ecosystem, these challenges are amplified by its **dependence on cross-border collaboration**, niche specializations (e.g., space, fintech, and green technologies), and the need to punch above its weight in global value chains.

This note outlines **key successes, weaknesses, and questions** to frame the discussion.

2. Successes of European Research Policy

2.1. Excellence in Fundamental Research

- **Global leadership in publications and citations**: The EU accounts for **24% of the world's high-quality scientific publications** (Nature Index, 2023), excelling in fields like **quantum computing, AI, and life sciences**.
- In 2025, the EU ranked **second** globally in patent filings, behind China but ahead of the US, with over **180,000 applications**. The average cost to register a patent via the European Patent Office (EPO) ranges from **€5,000 to €10,000**, being internationally competitive.

- **Flagship programs**: Initiatives like the **Human Brain Project** and **ITER** (fusion energy) alongside projects funded by the **European Research Council**, demonstrate Europe's ability to mobilize resources for **high-risk, high-reward research**.

2.2. Cross-Border Collaboration

- **Horizon Europe's collaborative model**: Over **40% of projects** involve partners from at least 3 countries, fostering **knowledge spillovers** and reducing duplication.
- **ERA and the European Innovation Council (EIC)**: These frameworks support **startups and SMEs**, bridging gaps between research and market (e.g., EIC Accelerator's €1.1 billion funding for deep tech).

2.3. Luxembourg's Niche Strengths

- **Attractiveness for talent**: The **Luxembourg National Research Fund (FNR)** and tax incentives (e.g., **IP box regime**) draw researchers and entrepreneurs.
- **Space and fintech**: Home to **SES (satellite communications)** and a growing **fintech hub**, Luxembourg leverages its **multilingual, multicultural environment** to attract global talent.

3. Key Weaknesses and Challenges

3.1. R&D investment: bridging the gap

- Luxembourg's investment in R&D fell between 2014 and 2024 to now **0.99% of GDP in R&D** (below the EU average), with a focus on **public-private partnerships** (e.g., **Luxembourg Institute of Science and Technology (LIST)** and **SnT**). The key aspect is finding solutions to bridge the current gap between the actual research done and the practical implementation in the real economy.

3.2. The Innovation Paradox: Excellence Without Impact

- **Commercialisation gap**: Only **10% of EU patented inventions** are commercialized in Europe (vs. ~50% in the US). Weak **venture capital (VC) ecosystems** and risk-averse private investment stifle scaling.
- **Brain drain**: Top researchers and startups often **relocate to the US** for better funding, regulatory sandboxes, and access to capital (e.g., **BioNTech's move to Germany but NASDAQ listing**).

3.3. Fragmentation and Bureaucracy

- **National silos**: Despite ERA, **85% of EU R&D funding** still comes from national budgets, leading to **duplication and inefficiencies**.
- **Slow decision-making**: Horizon Europe's **complex application processes** deter SMEs , increasingly universities, and startups, favouring large consortia with administrative capacity.

3.4. Competitiveness and IP Retention

- **US and China outpace EU in deep tech**: The US **Inflation Reduction Act (IRA)** and **CHIPS Act** offer **subsidies and tax credits** that lure European firms (e.g., **Northvolt's US battery plant**).

- **IP leakage**: European startups often **license or sell IP to US firms** (e.g., **ARM's acquisition by NVIDIA**, though blocked, highlighted vulnerabilities).

3.5. Luxembourg-Specific Challenges

- **Scale limitations**: Luxembourg's small domestic market **requires outward orientation**, but **regulatory harmonization** with neighbours (France, Germany, Belgium) remains a hurdle.
- While Luxembourg performs strongly in knowledge creation, it **lacks the means needed to scale and retain innovation domestically**
- **Over-reliance on financial services**: Diversification into **deep tech and green industries** is progressing but faces **skills gaps** and competition from larger EU hubs.

4. Link to European Competitiveness and Innovation

The EU's **2030 Strategic Autonomy** agenda aims to reduce dependencies in **critical technologies** (semiconductors, batteries, hydrogen). However:

- **Industrial policy vs. open markets**: Tensions arise between **state aid** (e.g., **€43 billion for microelectronics**) and **WTO rules**.
- **Standardization battles**: The EU risks **falling behind in setting global standards** (e.g., **6G, AI ethics**), ceding influence to the US and China.
- **Sustainability as a driver**: The **Green Deal Industrial Plan** ties research to **clean tech leadership**, but **implementation lags** behind ambitions.

For Luxembourg, **aligning national priorities** (e.g., **circular economy, space resources**) with EU frameworks seems critical to **avoid marginalization**.

5. Questions for Discussion

The discussion could centre around a forward-looking reflection on "what Europe needs to do next given the direction of travel already underway".

This means that beyond an economic lens, competitiveness could be framed as being about Europe's capacity to act. This encompasses economic strength, technological leadership, resilience, security, democratic values and societal cohesion.

1. **Commercialization Gap**: Europe is moving decisively to strengthen the innovation-to-investment journey through instruments such as the EIC, the Startup and Scaleup Strategy and the Scaleup Europe Fund. What is still needed to ensure these initiatives deliver their full potential? Beyond access to finance, what are the remaining bottlenecks preventing European firms from scaling globally and anchoring value creation, ownership and industrial capacity in Europe?
2. **IP Retention**: How can Europe become the most attractive location to build, scale and retain globally competitive technology firms? Which combination of capital markets, procurement, regulation, talent and industrial ecosystems matters most?
3. **Fragmentation vs. Flexibility**: The proposed Horizon Europe 2028–2034 and the forthcoming ERA Act are already designed precisely to address fragmentation, strengthen critical mass and improve alignment. Yet, what additional steps are needed

to ensure that Europe can mobilise resources, talent and innovation ecosystems at sufficient scale and speed?

4. **Luxembourg's Role**: How can Luxembourg position itself as a strategic experimentation hub for Europe, leveraging its agility, international orientation and niche strengths to pilot approaches that can later be scaled across the Union?
5. How can Luxembourg develop a full innovation cycle allowing it to anchor key segments of the value chain in its domestic ecosystem- from research to scaling and exit? **Talent Strategy**: Beyond funding, what **cultural and structural changes** (e.g., entrepreneurship education, failure tolerance) are needed to retain talent in Europe and Luxembourg? What more should be done beyond initiatives such as Choose Europe to attract, retain and empower the next generation of talent?
6. **Geopolitical Realities**: In a world of US-IRA and Chinese state-backed industrial policy, we notice global innovation landscape being reshaped by intensifying US-China competition, growing economic security measures, export controls, technology restrictions and competition for talent. How should Europe position itself to strengthen its own sovereign capabilities while remaining open to trusted international cooperation?
7. To what extent can the EU move beyond coordination toward genuine integration, particularly in capital markets, innovation ecosystems, and industrial scaling? How can the EU **turn innovation into large-scale economic power and thereby overcome the fragmentation** that continues to constrain its global influence?
8. **Role of AI**: What must Europe do to ensure it strengthens productivity, industrial competitiveness and scientific leadership rather than creating new dependencies?
9. Growing importance of **dual-use**: How can Europe develop stronger civilian-defence innovation ecosystems?
10. A broader reflection for the coming decade what kind of **competitive social market economy** Europe wishes for, would be worth the effort. Can, and if so, how could research and innovation support both competitiveness and societal cohesion?