In God we trust; all others must bring data: *implications for Europe*

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The quote "In God we trust; all others must bring data" by William Edwards Deming (1900-1993), provides a sharp lens to criticize the current tensions surrounding Europe's next Research and Innovation Framework Programme (namely FP10, or Horizon Europe - HE), under discussion together with the negotiations of the upcoming Multiannual Financial Framework, MFF 2028-2034.

The debate centers on a profound disconnect: while European leaders publicly state that closing the "innovation gap" is an existential priority, the Irish Presidency's revised proposal for the MFF, of early October 2026, slashes the research budget to appease "frugal" net-contributor states.

This policy note explores the *Freedom of Research* framework through three distinct lenses. First, it introduces the shifting dynamics of science-society relationships, anchoring the discussion with two practical case studies**.** Second, it examines how these relationships scale, focusing on the essential research and innovation investments needed within Europe's current Multiannual Financial Framework (MFF) negotiations. Finally, it outlines the critical challenges facing European research and innovation governance—a system that fundamentally dictates how science and society interact.

1. *Freedom of Research*: implications of the increasing nonlinearity of the research/innovation landscape in times of knowledge abundance

Research-society relationships are being reshaped by three simultaneous developments: the rapid growth and geographic redistribution of scientific production, the diffusion of artificial intelligence (AI), and an increasingly abundant information environment in which *robust knowledge* must be distinguished from noise, error and misinformation. These changes increase the importance of carefully designing research-societal relationships, together with *expert judgment*, while creating opportunities for carefully designed AI tools to support *peer review* and *research governance*.

The rapid diffusion of AI is changing the way to perform and access science and its outreach, while the proliferation of misinformation is associated with a sharp decrease of the relevance of researchers and academics in policy making[1]. Larson and Bersoff (2025) argue that the scientific community needs to recognize that people focus on information that is emotionally stirring. Table 1 further explores evidence that science and scientists remain highly trusted, while their influence is decreasing. This brings new challenges to understand that quantitative indicators are necessary but insufficient to capture scientific excellence, institutional capacity and, above all, foster science-based real-world impact.

We should note that Herbert Simon, Nobel Laureates 1973[2], combined various scientific disciplines—including political science, psychology, economics, and computer science—and laid the foundations for modern artificial intelligence and cognitive psychology. In contrast to the economic theories prevailing until the 1970s (which

[1] See, for example, Larson, H. and Bersoff, D. (2025), Science's big problem is a loss of influence, not a loss of trust, Nature. 2025 Apr; 640(8058): 314-317.

[2] See, for example, Augier, M. and March, J. (2004), Models of a Man: essays in honor of Herbert Simon, Cambridge, MA: MIT Press.

were based on profit as the sole objective), Simon demonstrated that, when making choices, all individuals deviate from strict rationality. He described organizations as adaptive systems comprising physical, personal, and social components. Through these perspectives, he elaborated on decision-making processes in modern society in a completely new way. Simon summarizes as follows: "The wealth of information creates the poverty of attention".

Table 1. Evidence that science and scientists remain highly trusted, while their influence is decreasing.
Source: https://global-listening.org/societal-preparedness-insights/;

Trust in science is generally high	**Perception on the relatively lack of science independence**
• A survey, conducted in 68 countries between November 2022 and August 2023, found **that 75% of respondents said that they trusted scientists.** • Across 70 countries, conducted by the Global Listening Project between July and September 2023, 71% of respondents said that they had high trust in science (https://global-listening.org/societal-preparedness-insights/). And the 2024 Edelman Trust Barometer, an annual online survey of 28 countries conducted by the Edelman Trust Institute in November 2023, found that **74% of respondents trust scientists to tell the truth about new innovations and technologies**	• By contrast, research revealed concern over the sanctity **and independence of science**, especially for certain topics, such as COVID-19 and climate change. **More than half of Trust Barometer respondents (53%) said that science had become politicized in their country**, and 59% said that governments and other large funding organizations have too much influence on how science is done. One by-product of these perceptions has been an **increase in aggression towards scientists.** • This ideological schism is not defined by a pro-science versus anti-science antipathy but by a '**my science**' versus '**your science**' or a '**my evidence**' versus '**your evidence**' polarization**.**

Case study 1: Community-based *Pirarucu* management in the Amazon: science, communities and territorial capability

Community-based management of Pirarucu in the Brazilian Amazon over the last decade illustrates a capability that combines frontier research to avoid the extinction of Pirarucu (*Arapaima spp.*) with ecological monitoring, locally accumulated knowledge and community surveillance. It represents and illustrates a relevant contemporary case of adaptive resource management and institutional arrangements linking researchers, conservation organisations and riverine communities. Its scientific value is inseparable from the capacity to organize observation and collective action in a complex socio-ecological system.

The pilot initiative has been funded via the *Green Climate Fund* through the *Floresta+ Amazónia Project*, with implementation support from the UNDP[3]. Rodrigues et al. (2025)[4] show that the effects extend well beyond the fishery. In the largest community-based fisheries conservation arrangement analysed in the Amazon, surveillance associated with managed lakes generated a functional protection footprint averaging 11,188 ha—about 36 times the directly protected area—at comparatively low financial cost to local communities. The capability demonstrated here is therefore not captured by publications and citations alone; it resides in the durable integration of scientific and traditional knowledge, local legitimacy, surveillance and conservation governance.

From a research policy perspective, this case clarifies the need to understand the full *translational research and innovation continuum* associated with species preservation and ecological monitoring, together with the exploration of new methodologies for structured, inclusive engagement between scientists, non-scientists, and population at large, including fishery managers, community organizations, rubber tappers and traditional forest-based communities.

It also shows a rather relevant institutional context provided by a collaborative network of local fisher associations, research institutions, non-governmental organizations (NGOs), and government agencies. It included a

[3] https://www.undp.org/.

[4] Rodrigues, A. C. et al. (2025). Community-based management expands ecosystem protection footprint in Amazonian forests. Nature Sustainability, 8, 1304-1313. https://doi.org/10.1038/s41893-025-01633-6.

key role of Mamirauá Sustainable Development Institute (IDSM), a pioneer in participatory pirarucu management since 1999, backed by the Ministry of Science, Technology and Innovation to develop scientific monitoring methods, trains local fishers, and oversees management in the Mamirauá and Amanã reserves. Also, the National Institute for Amazonian Research (INPA), where research initiatives were hosted and serves as a hub for policy and program launches (such as the Pirarucu PSA) in Manaus. In addition, it also included: i) ASPROC (Association of Rural Producers of Carauari), managing trade coordination and collective branding like *Gosto da Amazônia* / *Taste of Amazon* in the Middle Juruá; ii) Instituto Juruá, acting as project manager for regional arapaima export and conservation efforts in the Juruá River basin; iii) Femapan, representing fishery managers and community organizations across the Mamirauá region; and iv) Chico Mendes Memorial, representing and administrating projects on behalf of rubber tappers and traditional forest-based communities.

Case study 2: Cancer research in Europe

Cancer research in Europe provides a governance counterpoint (see, for reference, Heitor et al, 2026[5]). Its challenge has been associated with the difficulty of translating a strong scientific base into coherent mission-level capability when funding and responsibility are fragmented across projects and institutions. The coexistence of different political initiatives illustrates the need for political ownership, cross-domain integration and sustained responsibility for problem solving by dedicated *Comprehensive Cancer Centers*, CCCs.

It is well known that cancer prevention and therapeutics/care exhibit significant disparities between and within countries, and related inequality "gradients" need to be assessed in conjunction with other economic and income gradients. Health gradients need to be better understood because they tend to be associated with different economic gradients (e.g., access to information that decreases risk factors and fosters behaviours to face risk awareness). In other words, cancer inequalities should be understood in a context of increasing uncertainty, with significant political implications in terms of favoring extreme political parties and populist movements at a global level.

We also know that the number of newly diagnosed cancer cases has increased by nearly 60% since 1995 in Europe because of multiple effects, including population growth, population aging (share of 65+ increased from 15% to 21%), risk factors such as obesity, alcohol and UV exposure increased (smoking declined but with a long lag effect), better survival from other diseases, expanded screening programs and improved cancer registration.

In 2021, the European Commission (EC) launched two major initiatives[6] that build on its long-standing cancer research funding: *European Mission on Cancer* (MoC) and *Europe's Beating Cancer Plan* (EBCP). So far, these initiatives have delivered measurable results beyond those funded by other sources, but to fully realize their potential[7]. The European Commission´s *Review of Europe's Beating Cancer Plan* of February 2025 provides a comprehensive mapping of all initiatives implemented over the period 2021-2024 (Table 2), showing a rather long list of different initiatives, but one that should be used to critically assessed the current situation in Europe

[5] Heitor, M., Celis, J. and Ringborg, U. (2026), Revisiting Mission-Oriented Cancer Research to tackle the increasing burden of cancer in Europe–a policy perspective", Molecular Oncology; https://doi.org/10.1002/1878-0261.70249.

[6] European Commission (2025). Review of Europe's Beating Cancer Plan, European Commisssion, Brussels, 4.2.2025 SWD(2025) 39 final. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj, /https://commission.europa.eu/document/download/d3f309c6-bf9e-47a6-b63c-14e4e22b3ebc_en?filename=SWD_2025_39_1_EN_document_travail_service_part1_v3.pdf.

[7] Ringborg, U., von Braun, J., Celis, J.E., Berns, A., Baumann, M., Albreht, T., et al. (2025) Developing evidence-based and cost-effective P4 Cancer Medicine for driving innovation in prevention, therapeutics, care and reducing healthcare inequalities. Proceedings from a conference organised by the Pontifical Academy of Sciences and the European Academy of Cancer Sciences, held in Vatican City, May 22-23, 2025; Mol Oncol; (http://doi.org/10.1002/1878-0261.70179.

to face cancer. There is a need to take concrete actions and policy changes, as well as allocate clear resources to ensure these initiatives' long-term impact and success.

The increase in the overall budget should be acknowledged, but also discussed in terms of its continuous limitations, particularly regarding the strategy of distributing funding over too many projects with very small budgets. The complex mesh of initiatives is clearly missing prioritization, and this is the main tentative contribution of this policy note and of the potential role of philanthropy.

Health spending on cancer care has increased, but productivity losses from cancer have declined due to better outcomes. For example, the economic burden *per new cancer patient* has been rather constant, because the overall growth in the economic burden mirrored the increase in cancer cases (i.e., +60% since 1995 in Europe). Although there is a large variation in spending across European Member States (MS), resources have been shifted from "inpatient" to "outpatient" care in most MS. Also, the number of EMA approvals has increased, from about 1 new medicine per year in 1995-2000, to 14 new medicines per year in 2021-2024. Overall, **it is cheaper to prevent and treat early**.

Overall, Heitor, Celis and Ringborg (2026) have argued that *translational cancer research*, focusing on individuals at risk for cancer and on cure of cancer patients, should be the primary approach for addressing the increasing cancer burden in Europe, as well as worldwide. This contrasts with the current main strategy to convert cancer to a chronic disease.

Table 2. Main Cancer research projects and initiatives selected for funding under Horizon Europe for 2021-2024, for a total amount of EUR 2.574 billion; Source EC (2025).

Major types of projects and initiatives	Number of projects selected for funding
Advanced training (MSCA) and single beneficiary grants for frontier science (ERC) and for entrepreneurs through startups (EIC)	572 projects (64% of cancer-focused projects, corresponding to 32% of the overall budget) were retained for funding under Pillar I, Excellence Science, mostly funded through ERC, but also MSCA;
	171 projects (19% of cancer-focused projects, corresponding to 21% of the overall budget) were retained for funding under Pillar III, Innovative Europe, mostly funded through EIC;
Collaborative research	119 projects (13% of cancer-focused projects, corresponding to 44% of the overall budget) were retained for funding under Pillar II, Global Challenges and European Industrial Competitiveness
	61 projects under the *Cancer Mission*, with a total budget of about EUR 488 million for 2021-2024
Institutional development	36 projects (4% of cancer-focused projects, corresponding to 3% of the overall budget) were retained for funding under the Widening Participation and Strengthening the European Research Area instrument

Note: 959 cancer-focused projects have been selected through calls for proposals, including 61 projects under the Cancer Mission and other 898 projects under other programmes; Source: Heitor, Celis and Ringborg (2026)

From a research policy perspective, the *translational cancer research continuum* should be strengthened through dedicated *Comprehensive Cancer Centers*, CCCs. A *coherent cancer research continuum* will increase

innovation towards early prevention, preparedness and readiness, which should consider cost-effective therapeutics/care and offer relevant tools for prioritization. Sharing resources to develop research on molecularly classified tumours (centralized infrastructures for molecular pathology and omics technologies, treatment of patients where they live) will make advanced clinical research available for more patients and mitigate inequalities.

In the meantime, an important development has been driven by the expansion of the cancer strategy from *Precision Cancer Medicine*, which focuses on personalised treatment, to the broader concept of *P4 Cancer Medicine*, aiming at a comprehensive and more patient-centered strategy to mitigate the growing cancer burden in the current digital age[8] — *Predictive* (early identification of disease and prediction of outcomes), *Preventive* (early intervention), *Personalized* (individualized healthcare) and *Participatory* (active patient engagement). Several European research projects have supported screening for early detection with focus on specific cancer diagnoses - more advanced screening programmes could help prevent, identify, and treat early disseminated diseases, by the development of multicancer detection tests.

Following Heitor, Celis and Ringborg (2026), the existing initiatives should be revisited to prioritise prevention, early detection and improved treatment with focus on increasing cure rates and enhancing patients' quality of life, especially for those with incurable disease. The authors conclude that the *European Cancer Mission* should be strengthened through long-term, sustainable funding of competitively selected *Comprehensive Cancer Centers* (CCCs) integrating cancer care, health care dependent prevention, research and education across Europe to ensure stewardship by problem owners. This is critical to avoid the traditional, fragmented "short-term, project-based funding" structure of the European Commission's collaborative research, which relies on many small projects dispersed across varied institutional contexts. Articulation with frontier research in Europe, supported by the *European Research Council* (ERC), and with critical innovations, including those sponsored by the *European Innovation Council* (EIC), becomes paramount.

The governance implication is that capability-centered assessment must be matched by funding institutions able to act on heterogeneous evidence and learn through experimentation. This motivates the discussion of alternative assessment and funding mechanisms below.

<u>Implications for experimentation of new governance schemes</u>

The cases described in this paper and the analysis above clearly suggest that excellence and capability are related but distinct parts of *Freedom of Research*. Mission-oriented impact requires not only excellent researchers and projects, but also durable infrastructures, organisations able to integrate work across the translational continuum and governance mechanisms that assign responsibility for outcomes.

Professional programme management is one mechanism for providing that integration. The cases of DARPA in United States and SPRIN-D in Germany exemplify different combinations of programme-manager discretion, active portfolio construction and tolerance for technical risk. They are not templates to copy mechanically, but they show why some research challenges require accountable expert-led management in addition to procedural control.

[8] Hood, L., Friend, S.H. (2011) Predictive, personalized, preventive, participatory (P4) cancer medicine. Nat Rev Clin Oncol.; 8(3): 184-7. See also, Braun, M. (2025), How predictive medicine leads to solidarity gaps in health. Nature Digit. Med.; 8: 111. https://doi.org/10.1038/s41746-025-01497-2.

For example, the expert committee assembled by the European Commission in 2024, EC (2024)[9], recommends the establishment of an "Experimental Unit"— to be initially housed within the EIC- *Europena Innovation Council*, and subsequently expanded to the entire *Horizon Europe program* in Europe. The goal drives from the absolute need to ***experiment*** new ways to assess and fund R&D, with decreased time to funding, decreased transaction costs, and increased risk taking. Some examples of diverse soliciting and reviewing procedures currently being tested in many public and private funding agencies, many outside Europe, include:

- High divergent reviewer values – Howard Hughes Foundation, USA
- Targetted solicitation – DARPA; NSF; BARDA - USA
- Heilmeier's catechism – DARPA - USA
- Research with no/little precedent – Israel OCS
- Adversarial collaboration – Templeton Foundation, USA
- Randomized selection/"lotteries" for the selection of high risk/high gain projects. Currently experimenting "distributed peer review" – Volkswagen Foundation, D
- Merit review for excellence followed by independent impact ranking of excellent proposals – Science Foundation Ireland Centers, IR; Research Institutions Assessment - (FCT), Portugal
- Sandpit – Ideas factory EPSRC, UK; Takeda-Techno Entrepreneurship, JP
- Proactive call – BP Venture Research, UK
- Unconstrained creativity – Mac Arthur Fellows, USA
- Target Prize Competition – X Prize Foundation, USA
- Ongoing Target Prize Competition – Methuselah Foundation, USA

In addition to experimentation in assessing and funding research, the case studies presented in this paper clearly show that many regions worldwide has benefited enormously from *Collaborative Research and Innovation*. It is time to further develop, specialize and implement a revised strategic concept of different actions to better differentiate and fund different regimes of collaborative research and innovation.

<u>Towards a new order addressing scientific excellence, institutional capacity and societal impact</u>

Understanding the emerging "uncertainty complex" worldwide is critically important for research governance and Table 3 summarizes lessons learned from the case studies reported above. The problem is often less about a lack of trust, and more about *clashing values and perceptions of elite superiority*. When scientists are viewed as talking down to the public, oppositional identities may flare up.

Table 3. Analysis of the need for a new order addressing scientific excellence, institutional capacity and societal impact

The need	**Lessons learned from the best practices**
• The scientific community, decision makers, and the public need to recognize and accept that science is an *input* into decision-making; it does not determine it. • Academics and scientists must avoid behaving as "*elite superiority"* and *contradict to be* viewed as "talking down" to the public. Recent data suggests they should engage the public at large in the social and economic appropriation of knowledge and deal with people as "equal peers". • Furthermore, because scientific findings naturally change with the progress of research, fostering a cultural understanding of the *scientific method* matters far more than demanding blind faith in specific, point-in-time findings.	Finding a balance between two paradigms of mobilizing science: • Dissemination: Seeking to inform, reframe, or correct beliefs through the distribution of facts. • Participation: Emphasizing engagement to improve public understanding, while equally prioritizing scientists' understanding of the public's actual concerns, needs, and values. Quantitative indicators are necessary but insufficient to assess scientific excellence, institutional capacity, and societal impact. As knowledge becomes more abundant, effective research evaluation will depend on integrating AI with human expertise while reducing unnecessary bureaucracy through continuous experimentation with new funding and assessment processes.

[9] European Commission (2024) - Heitor Report, "Align, Act, Accelerate to boost European Competitiveness", https://op.europa.eu/en/publication-detail/-/publication/2f9fc221-86bb-11ef-a67d-01aa75ed71a1/language-en.

In addition, the answer to science's influence problem is not trust building but rather aiding better-placed confidence and communicating the truth in a more compelling way, one that does not assume a lack of competing sources or that everyone is playing by the same rules of evidence. While the public often assumes scientists merely catalog objective facts, scientists increasingly view their role as actively engaging in solving societal problems. Improving transparency about the scientific process and the role of scientists in society can bridge this divide.

The need for a new order addressing *Freedom of Research* is clarified, among others, by Hochschild (2025)[10]. She argues that all the attempts to understand the state of American politics and the blue/red divide ignored what economic and cultural loss can do to pride. What happens, Hochschild asks, when a proud people in a hard-hit region suffer the deep loss of pride and are confronted with a powerful political appeal that makes it feel "stolen"? Hochschild develops an unusually rich, empirically robust, sociological account of political dynamics and offers a nuanced and subtle understanding of the malaise of 21st century liberal democracies.

In a related way, Mau, Lux and Westheuser (2026)[11] address inequality and political polarization in the German contemporary society, calling for a new order of addressing *Freedom of Research*. The related implications for research budgets and governance are discussed in the paragraphs below.

2. On budget: the "investment gap" in Europe leading to the "innovation gap"

While many European leaders publicly frame the "innovation gap" as an existential threat, this brief contends that the root cause is an underlying "investment gap". This deficit is reinforced by decades of restrictive public finance principles and ongoing delays in finalizing the *Capital Markets Union*.

Applying Deming's data-driven philosophy to the current European budget conflict highlights three critical contradictions in the current debate.

I. **The Rhetoric vs. The Data - The Global Investment Gap**: European leaders frequently cite the landmark 2024 report by former Italian Prime Minister Mario Draghi, which explicitly states that Europe needs €800 billion in additional annual investment to avoid a "slow but irreversible decline" against the US and China.
   - The Data: The official European Commission expert group on the interim evaluation of Horizon Europe, which I chaired in 2023-2024 (the so called "Heitor Group"[12]), did exactly what Deming demanded: we spent months evaluating the system, analyzed the empirical shortfalls of the current framework programme, and **"brought the data"** to justify a precise figure. We argued that a minimum of **€220 billion** is needed for 2028-2034. Nevertheless, the European Commission initially proposed, in July 2025, only **€175 billion** budget for FP10. In the meantime, most of our recommendations were adopted by the European Parliament, arguing that a minimum of **€200 billion** is needed. Recently, in October 2026, the Irish Presidency's negotiating text proposed an 8% cut to the total EU budget, which **caps FP10 at €158.2 billion**—a nearly 10% reduction from the Commission's target. This proposal equates to a **stagnation of investment** in R&I when compared to the previous programme FP9/HE. In fact, **it would mean 14 years of stagnation from 2020 to 2034.**

[10] Hochschild, A. R. (2024), "Stolen Pride – loss, shame and the rise of the right", The New Press, New York.
[11] Mau, S., Lux, T. and Westheuser, L. (2026), "Trigger points – inequality and political polarization in contemporary society", Bristol Univ Press, Bristol; Doi:10.51952/9781529254051.
[12] https://op.europa.eu/en/publication-detail/-/publication/2f9fc221-86bb-11ef-a67d-01aa75ed71a1/language-en.

From a Deming perspective, the frugal countries are trusting in an unproven hypothesis: that Europe can achieve global technological autonomy while actively cutting the empirical baseline of its research funding. The data say otherwise.

Filling the **investment gap** affecting Europe means more investment that generate virtuous, far-reaching impact, with the support by research institutions and industry, while ensuring scientific accountability and enabling paths for valorising knowledge. Investing more in science and engineering not only fosters industrial innovation but, arguably more importantly, creates through collaborations and entrepreneurship the human backbone that will reinforce the success of the European Union project based on solidarity, freedom and democracy.

II. **Misallocating Capital - Agriculture vs. R&I**: Deming championed the idea that data should drive optimization of resources. In the current Irish Presidency compromise proposed, traditional expenditures like the Common Agricultural Policy (CAP) and Cohesion funds, are largely preserved, while the competitiveness and research sectors take the brunt of the cuts.
   - The Data: Single member states can easily fund localized agriculture or local-level infrastructure on their own. However, **no individual country** can replicate the scale, cross-border collaboration, and international impact of a centralized European research framework.

Cutting the European framework to save money is, according to economic data, structurally inefficient and yields a much lower return on investment (ROI) for Europe's GDP in the long-term.

III. **A "False Economy" and Long-term Atrophy**: Leaders of frugal nations (such as Germany, Austria, Sweden, Finland, and the Netherlands) justify the cuts under the banner of fiscal prudence and affordability. Deming, however, warned that optimizing individual components (short-term national budgets) at the expense of the system (long-term European competitiveness) leads to an overall systemic failure.
   - The Data: EU-Life, a coalition of 86 major European business and research groups, has presented data demonstrating that keeping the FP10 budget at a "completely insufficient" level is a **false economy**[13]. Without robust public R&I funding, essential for de-risking early-stage technologies, private venture capital will continue to flow to the US, thereby widening the productivity gap.

If the Irish Presidency and the frugal coalition were forced to "bring data" to prove that a €158.2 billion FP10 budget can successfully reverse Europe's declining competitiveness, they would come up empty-handed. Their proposal relies on political compromise rather than economic reality.

According to Deming's criteria, cutting the very mechanism that generates the data, technology and industries of tomorrow, is not an act of prudence—it is a mathematically verifiable choice to fall behind. The €61.8 billion gap between the data-driven recommendation and political compromise guided by frugality illustrates a severe divergence in political priorities.

In addition, claiming that the current proposal doubles the envelope is far from reality. Official figures (in current prices) show that the H2020 final budget was very close to €95,5 billion, from which approximately €5 billion from Next Generation EU. Today it would mean €122,5 billion (i.e., the equivalent purchasing power of €100 in 2020 equates to €128,15, with 3% inflation between 2020 and 2027). In the meantime, the total number of researchers and lab personnel in Europe will increase from

[13] https://eu-life.eu/newsroom/publications/investing-what-makes-europe-strong.

2.96 million in 2020 (from which 1.99 million researchers) to 3.7 million in 2027 (from which 2.35 million researchers), representing a conservative extrapolation from 2024 figures. It is therefore clear that the per capita investment of the European programme stagnates at around €41.500.

Three additional critical issues should be stressed:

i) **The Factual Deficit vs. "Funding All Excellent Proposals":** The €220 billion figure proposed by the "Heitor Group" was calculated with a specific systemic metric in mind: ensuring that **all excellent research proposals** that pass rigorous peer review receive funding. Under current funding levels, Europe routinely rejects thousands of world-class, "excellent"-rated scientific proposals simply because the budget runs out. The Heitor Group's data proved this is an active waste of intellectual capital. At €158.2 billion, the Irish Presidency text represents a **28% funding deficit** relative to what experts say is necessary to stop this innovation drain.

ii) **Eroding the Foundation**: By cutting the overall budget of HE - Horizon Europe, the frugal countries are choking off the raw data—fundamental, curiosity-driven science and collaborative research, together with ecosystem infrastructures—that feeds the non-linear it is of innovation pipelines/dynamics, which they want to see flourish.

iii) Expert Consensus vs. Political Expediency

The data backing the €220 billion figure is not isolated; it directly aligns with Mario Draghi's macroeconomic analysis calling for a doubling of the R&I framework budget, to at least €200 billion[14].

Deming pointed out that a management system driven by arbitrarily compressed budgets, rather than the data of what the system requires to function, will systematically produce defects. Our 2024 report, *Align, Act, Accelerate*, explicitly built a blueprint for European competitiveness. By ignoring the €220 billion data point in favor of a politically expedient €158.2 billion cap, the Council is building a defect into Europe's economic engine. Or by setting aside the figure of €220 billion in favor of a €158.2 billion cap - a choice dictated by political considerations - the Council deliberately introduces a flaw into Europe's economic engine.

In a recent open letter sent directly to EU leaders, our group warned that the Irish Presidency proposals move in a "totally wrong direction".

3. On governance: revisiting the "Haldane Principle"

The political discussions developed in the last 100 years around the ***Haldane Principle***[15] are important historical sources to address key questions associated with *Freedom of Research* and on how science should be governed in the current context of the massification of AI and a rising uncertainty worldwide. Examples from last century's devastating World Wars show that even science, characterized by its robust methods to ensure adherence to facts, is not immune to malicious propaganda, false pseudo-scientific claims, disinformation, or unethical practices[16].

The historical context of Lord Haldane's 1918 report, in the aftermath of the First World War, is very relevant and its core message should be revisited: "***decisions about what to spend research funds on should be made***

[14] https://commission.europa.eu/topics/competitiveness/draghi-report_en.

[15] https://publications.parliament.uk/pa/cm200809/cmselect/cmdius/168/16807.htm.

[16] See, for example, the Nuremberg Code - a set of ethical research principles for human experimentation created by the court in U.S. v Brandt, one of the Subsequent Nuremberg trials that were held after the Second World War; https://en.wikipedia.org/wiki/Nuremberg_Code.

by researchers rather than politicians"[17]. This was gradually adopted in Europe through the *Framework Program for Research Innovation*, since 1984[18], but with a decreasing level of consideration in the last two decades. Nevertheless, it was strongly considered in 2007 with the creation of the ***European Research Council*, ERC**[19], under the 7th framework program, and should again be used and strongly revisited to promote research and innovation in times of increased uncertainty under the upcoming 10th framework program and the next MFF 2028-2034. Overall, it represents the **best practice** of the "***European way***" **to govern research and innovation**.

A robust democratic governance embeds pluralism in its organization with the **separation of responsibilities**. It defines perimeters of complementary roles of the different stakeholders which together ensure **checks and balances to safeguard democracy and freedom**.

Europe's choice cannot be other than leading the way, as an internationally trusted partner, to defend democracy and freedom, distinguishing itself from autocratic, government-led prescriptive governance of science, like in China, Russia and lately in the US.

Advancement of science requires **intellectual freedom, work ethics and agreed ethical boundaries**. It must be supported by a high-quality base of **well-trained program managers and institutions in continuous dialogue with policy makers, namely through parliamentary committees and government-based decision makers**. Deep tech-based innovation can significantly contribute to economic competitiveness and geopolitical strength, and as such EU research and innovation funders require adequate governance schemes.

Building on lessons learned about innovation-driven economic growth: *impact for EU R&I governance*

Philippe Aghion won the 2025 Nobel Prize in Economics with Peter Howitt and Joel Mokyr for explaining innovation-driven economic growth, with their theory of "sustained growth through creative destruction"[20].

They have modeled how new innovations replace old ones, driving progress but requiring supportive policies to manage the resulting conflicts and encourage new talent. Aghion's work emphasizes innovation's central role in prosperity and the need for flexible, inclusive economies with strong education and competition to foster this process. Their research established **innovation, not just capital accumulation, as the fundamental driver of long-term economic progress**.

One year before, the Nobel laureates in Economics 2024, Daron Acemoglu and Simon Johnson[21], have shown that **choices about incentives, the relative bargaining power of different social actors, and institutions shape how technological innovation either benefits elites while worsening conditions for workers, or can be used for broader shared prosperity and sustainable development**. It challenges the common view that technology alone determines social outcomes, either in positive ways or leading to dystopian futures where humans have no role or, worse, become extinct, as in the discourse around existential risks associated with artificial intelligence (AI).

[17] The Haldane Principle is popularly used to describe the notion that "decisions about what to spend research funds on should be made by researchers rather than politicians". It is supposedly derived from Lord Haldane's 1918 report on the machinery of Government (hereafter called the Haldane Report), which was written against the backdrop of the First World War; https://en.wikipedia.org/wiki/Haldane_principle.

[18] See, for details, Ruberti, A. and Andre, M. (1995), French edition, Un espace européen de la science, PUF, Paris, 1995. Also, Guzzetti, L. (1995), "A brief history of European Union Research Policy", European Commission DG XII, October 1995.

[19] See, for details, Celis, J. and Gago, J.M. (2014), "Shaping science policy in Europe", Mol. Oncology, 8, pp.447–457.

[20] See, for example, Aghion, P., Bunel, S. and Antonin, C. (2023), "The Power Of Creative Destruction Economic Upheaval And The Wealth Of Nations", Harvard Univ. Press, New York.

[21] Acemoglu, D. and Johnson, S. (2024), "Power and Progress", Public affairs, New York.

Governance, broadly understood as the process of using incentives and rules to shape collective action, determines whether and how technological advances benefit society. These challenges are being heightened in the context of rapid changes induced by AI, challenging regulators across multiple jurisdictions to assess the harms and benefits of this rapidly changing technology. It should be noted that the uncertainty associated with the evolution and deployment of AI is superimposed on societies facing increasingly widespread and deepening social and political polarization, resulting in the dangerous gridlock that is making collective action within and across countries more difficult.

In an era of abundance of information, rapid technological advancement and increasing societal inequalities and polarization, fostering the influence of scientists and of scientific institutions on society and ensuring the relevance of science and technology to societal needs are paramount. This includes the fight against fake news.

Europe, with its emphasis on democratic values and public engagement, faces the challenge of demonstrating how scientific and technological progress can contribute to a more secure, sustainable, and inclusive future for all its citizens, addressing concerns about misinformation and ensuring equitable access to innovation[22].

Today's world witnesses the rising of new obstacles to discovery and dissemination of knowledge, threatening basic freedoms. **The same way democracy cannot be taken for granted and we must fight for it; freedom of research is at risk.**

Europe is at a critical and pivotal moment to differentiate from global geopolitical powers, including US and China. Strengthening the **Haldane conclusion of 1918** should guide and stimulate the debate at the European Commission, the European Parliament and the European Council about the definition of the next MFF 2028-2034, as follows[23]:

> […] *we may briefly summarize the main principles to which we have drawn attention as follows:*
>
> *a)* ***Further provision is needed in the sphere of civil government for the continuous acquisition of knowledge and the prosecution of research****, to furnish a proper basis for policy.*
>
> *b) The distribution of business between administrative Departments should be* ***governed by the nature of the service*** *which is assigned to each Department. But close regard should be paid to the necessity for* ***co-operation between Departments*** *in dealing with business of common interest.*
>
> *c) In the organisation of individual Departments special importance should be attached to securing proper consideration of proposals for expenditure, unimpaired Ministerial responsibility, co-operation with advisory bodies in matters which* ***bring Departments into contact with the public****, and the extended* ***employment of qualified women****.*
>
> *d) A more efficient public service may* ***expose the State to the evils of bureaucracy unless the reality of Parliamentary control is so enforced as to keep pace with any improvement in departmental methods****.*
>
> *In making these suggestions we are aware that an efficient departmental system working in satisfactory relations with Parliament cannot be established or maintained on lines laid down in advance by any Committee of enquiry.*
>
> *Whatever validity may attach in the abstract to the principles which we have ventured to suggest, their practical efficacy will* ***depend upon the zeal and discretion with which they are applied from day to day***

[22] https://projects.research-and-innovation.ec.europa.eu/en/horizon-magazine/do-europeans-trust-science-new-survey-says-yes
[23] Ministry of Reconstruction Report of the Machinery. of Government Committee a.k.a Haldane Report, 1918 https://www.civilservant.org.uk/library/1918_Haldane_Report.pdf.

> ***by Parliament, by Ministers, and by the officers of Departments****, the living forces whose spirit is essential to any form of government that is more than a machine*[24]*.*

Effective simplification is required

The request for simplification to overcome complexity and bureaucracy has been discussed every 7 years throughout European Institutions and the research communities, whenever a new framework program is being planned. However, **an effective simplification has never been accomplished**. The attempts to simplify have been merely focused on improving the "processing speed" from the EC perspective, not necessarily from the "proponents" perspective. For example, the EC services have imposed limits to the total number of pages of the proposals but have increased the number and complexity of the forms and, above all, have reduced dramatically the fraction of each proposal devoted to technical questions and technical innovations. This is becoming unacceptable and have had the consequence of increasing the role of consultants in the preparation of applications, with a large increase in transaction costs (on the top of relatively low administrative costs by the EC services).

These processes are the consequence of **outdated governance and gaps in resources** which did not match the increase in funding volumes since the past two framework programmes. There is a need to identify and deepen the understanding of the causes of problems and **design comprehensive approaches** to eliminate (or minimize) the lack of "brain time" dedicated to the essential mutual learning dialogue between the funded and the funder (avoiding consultants and intermediaries). Again, this requires an **increased *role of expertise* in research and innovation programming,** including in the preparation of the "Calls for Applications" and related forms.

A one-size-fits-all approach in governance should not apply

Given its broad range, from fundamental to mature research and innovation, **a one-size-fits-all approach, including any type of a "common rule" would not be effective and should not be implemented across the full Horizon Europe programme.**

A fresh look at the Haldane principle is very timely and pertinent for the preparation of the next R&I framework programme for 2028-2034 (ie, FP10). It should inform the debate about the governance in the context of the lessons learned and experts' advice on how to move to FP10. Following the Haldane report of 1918[25]:

> *[…] Advisory Committees: But the preservation of the full responsibility of Ministers for executive action will not, in our opinion, ensure that the course of administration which they adopt ill secure and retain public confidence, unless it is recognised as an obligation upon Departments to avail themselves of the advice and assistance of advisory bodies so constituted as to make available the knowledge and experience of all sections of the community affected by the activities of the Department.*

[24] The principle has been debated since it was first introduced by Lord Haldane and was inserted in UK law in several moments and recently inserted in the 2017's Higher Education and Research Act (one hundred years from Lord Haldane's report). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/594554/HERB_Lords_report_government_amendments.pdf.

[25] Ministry of Reconstruction Report of the Machinery. of Government Committee a.k.a Haldane Report, 1918 https://www.civilservant.org.uk/library/1918_Haldane_Report.pdf.

Quality of governance must be improved - The experts' views

There are already lessons to be learned from Horizon Europe on what went well and what needs to be improved. The "Heitor report" recommends a structural change of architecture, and governance, looking forward to FP10:

> *[…] improve FP10 means* ***improving the autonomy and the quality of governance*** *through new structures, using lessons learned from previous FPs. It is important to avoid the trend since FP7, and dominant in FP9, to use Horizon Europe just to distribute funding. Critical issues include:*
>
> - ***strengthening the European Research Council (ERC) autonomy, guaranteeing leadership and autonomy*** *[…] ERC program should continue to be* ***entirely "bottom up", science-driven and only governed through a totally independent S&T Board***
>
> - ***strengthening the European Innovation Council (EIC) autonomy and funding, improve assessment methods***[26]
>
> - ***create two new independent Councils (Competitiveness & Technology and Societal Challenges) fostering collaborative research****, using lessons learned from ERC and expand its governance to the full FP10 […] consider funding longer projects, and reduce job insecurity by promoting better research careers in Europe, together with the quality of jobs for young researchers and innovators. The new Councils should include the full autonomous governance of Partnerships and Missions. […]*

These views are well aligned with the *Haldane Principle* on the importance of strong involvement of the research community to share responsibilities on the governance. They follow recommendations issued since 2024 by the ***ERT-European Round Table of Industry***[27], **Science Europe**[28], major **University stakeholders**[29] and, more recently (in November 2025), by ***CEPS – Centre of European Policy Studies***[30]***.***

There is a need to build a fit-for-purpose, adequately resourced (in terms of competence and numbers) system balancing the roles of the actors to involve in the governance through transparent merit-based representative institutions i.e. research and innovation community, industry, funding agencies and governments.

The principle highlights the need to involve the research community in the governance of science, namely in the aspects related to priorities' setting, which relate to budgetary decisions. It entails, inter alia, leading strategic debates on scientific priorities, being a key interlocutor of governments and funders on social and economic aspects (e.g. funding decisions, industrial investments, competitiveness policies).

A renewed governance must overcome the mismatch of competences. Funded and funders, with the support of third-party experts, should engage in substantive dialogue throughout the life cycle of a project. It should consider that:

- researchers are well placed to define general areas for funding (avoiding too narrow focus, to leave room for creative thinking)

[26] See, for example: https://sciencebusiness.net/node/58892/preview/NfXsDHkd2Q3FoZf5wCAeSxkL8wLKk3LHt01bLmDGtfg.
[27] https://ert.eu/documents/ert-recommendations-for-fp10-the-new-european-competitiveness-fund/.
[28] https://www.scienceeurope.org/our-resources/se-statement-on-fp10-and-ecf/.
[29] https://www.europen-packaging.eu/wp-content/uploads/2024/10/Joint-Statement-for-an-Ambitious-FP10-Final.pdf; see also https://www.cesaer.org/news/shared-vision-unified-voice-universities-and-research-institutes-in-europe-propose-joint-fp10-amendments-2076/.
[30] Renda, A. (2025), "DESIGNING HORIZON EUROPE FOR THE POST2028 WORLD HOW SHARPER GOVERNANCE CAN BOOST EUROPE'S IMPACT ", CEPS, November 2025; https://cdn.ceps.eu/2025/11/251030-Operationalising-the-governance-of-Horizon-Europe-formatted-1.pdf.

- government representatives are well placed to define policy priorities (economic, social, regional development) and areas requiring R&I investment
- industry is well placed to define industrial roadmaps requiring R&I investment
- researchers are best placed to evaluate scientific quality of the proposals through "peer review"
- research and innovation funding authorities (competent civil servants with R&I background) are best placed to ensure balanced participation of researchers (knowledge background, geography, gender)

Summary

We live a "***Schuman Moment***" in which Europe need "**creative efforts and solutions that can meet the dangers which threaten them**".

The European Union must leverage on its strengths turning confused uncertainty into clear strategic options. **Research and innovation have a strong role for Europe to create the choices to shape its future**. But if the world is changing and is facing so many challenges with different characteristics – political, economic, technological, environmental, demographic – so is research and innovation in its expectations, processes and governance. New developments affect also the research and innovation communities, such as the use of artificial intelligence, or perspectives for younger generations. This requires an **increased *role of expertise* in research and innovation programming.**