EARTO Position Paper on the Next EU Multiannual Financial Framework: How to Focus EU RD&I Investments to Boost our Technology Leadership, Productivity & Industrial Competitiveness?

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In her Political Guidelines for the next European Commission 2024–2029, President von der Leyen launched two new key proposals: 1) the creation of a new Clean Industrial Deal to be supported by 2) a new European Competitiveness Fund as part of her upcoming proposal for a new and reinforced next EU Multiannual Financial Framework (MFF). In parallel, Draghi's report that President von der Leyen commissioned clearly calls for a doubled budget of the new EU RD&I Framework Programme (FP10) to EUR 200 billion, conditional on reforms.

In the current EU context, the next European Commission will focus on simplifying the European system, on supporting industry to both manage digital and green transitions as well as a new plan for Europe's sustainable prosperity and competitiveness. Knowing that negotiations between the EU Institutions and EU Member States on the next EU MFF will be fierce with an EU budget expected to be under great pressure, EARTO understands that strategic choices will have to be made aiming at increasing the effectiveness and efficiency of Europe's public intervention. Accordingly, EARTO hereby presents its views on how to render future EU RD&I investments more impactful, complementing and supporting the new EU Clean Industrial Deal to effectively boost the EU's productivity and industrial competitiveness.

As stated in Draghi's report, and more recently by Heitor's report, the **rationale behind a stronger action for EU competitiveness based on stronger RD&I investments in critical technologies is clear**, we need to collectively realise and answer the following challenges:

1. **EU is drifting away from the technology frontier with erosion of EU competitiveness in critical technologies**: the technology frontier was once dominated by the US, Japan and Europe; it is now polarised between the US and China.
2. **Scaling up and commercialising RD&I results remain a major challenge for Europe**: many promising technologies struggle to move beyond the so-called "valley of death", i.e. the high-risk high-investment phase where the technology or innovative solution needs to be demonstrated, tested, and scaled up to prove its feasibility in real-world conditions.
3. **Industrial capacity losses**: Europe's ability to innovate has been compromised by the decline of its industrial capacity and reduced RD&I investments from industries, both critical for technological development and innovation.
4. **Adaptation to new geopolitical and security challenges**: Europe must leverage advanced technologies to navigate the new global landscape characterised by increased competition and geopolitical tensions, which now have significant economic consequences. Technological innovation will be key to strengthening Europe's resilience and ensuring its ability to adapt to these evolving challenges.
5. **Economic dependencies and vulnerabilities**: Europe's economic dependencies and supply-chain vulnerabilities, from energy to healthcare (equipment, vaccines), and semiconductors, pose serious risks, as those can be exploited for economic or geopolitical leverage. Strengthening Europe's technological capacity in these areas is essential.
6. **Climate crisis and energy transition**: Simultaneously, Europe must address the accelerating climate crisis and make a just and efficient transition to sustainable energy in a way that supports economic growth while achieving climate targets. President von der Leyen's proposal of a new EU Clean Industrial Deal tries to reconcile our economic growth and meet our climate targets.

EARTO shares President von der Leyen's ambition and wishes to make clear that the main prerequisite to successfully boost EU's competitiveness is for Europe to create a strong, resilient, and leading-edge techno-industrial base. To do so, we need to strengthen EU's current best assets and develop a combined EU Industrial and RD&I policies based on a good understanding of our current EU RD&I ecosystem.

Technology innovation takes time and needs specifically designed instruments that promote collaboration There will not be a one-size-fits-all solution for every industrial sector: the needed policy-mix combination will depend on the nature of technologies and the market in question (e.g. large difference between digital (software) versus energy and decarbonisation technology solutions).

Accordingly, **in the current context and running discussions, EARTO feels the need to express that it would be a missed opportunity for Europe to develop its next EU RD&I policy by focusing mainly on one side on basic research and the other on promoting start-ups without supporting the whole of the continuum of research, development and innovation.**

Our next EU RD&I policy should consider some of the features of the innovation processes as follows:

- **The process of emergence of major newcomers in the *software* digital sector during the first decades of the century, cannot be replicated in all industrial sectors**. Decarbonisation will require deep-tech innovation in cleantech industries, meaning technological breakthroughs (not only disruptive ideas) and heavy experimental tools (not only access to capital investment for start-ups). In these fields, as well as in the key *hardware* digital industries (semiconductors, HPC, quantum, etc.), innovation stems from a capacity to integrate different parameters such as technology, market conditions, and societal demand, that need to be brought to maturity altogether.
- **Accordingly, innovation is not a linear process from a research result published in an academic paper to an industrial product or a service**. Innovation is the result of a continuous process of interactions and feedback loops, where the capacity to understand both the progress of science and technology and the evolution of the markets is a key success factor. This process is not only about technology transfer: it involves the creation of new capabilities and knowledge.
- **Our RD&I policy should also consider our current societal challenges**. Energy and climate, health, security and defence are priorities that will only be met with sustained effort in basic research but also technology research and experimental development over long timeframes (see following graph). Those long-term timeframes are not always compatible with the horizon of start-ups. In addition, deep-tech start-ups often need continuous technology support (e.g. access to open pilot facilities) even after they have introduced innovation on the market.
- **We should not overlook the need for our current industries to transition and renew.** Innovation does not only happen through start-ups. Indeed, even if the emergence of development of high-tech sectors should be encouraged, there are more established companies, large firms or SMEs, that are also investing in innovation and should also be further supported. In addition, public support is required to develop new products and services in case of market failures when private investment alone is then insufficient to drive technological advancement and growth.
- **To optimize the impact of RD&I activities, an innovation-friendly regulatory framework** should be created to encourage investments and innovations. A balanced and cohesive approach between precautionary and innovation principles, encompassing RD&I, procurement, regulation, and standardisation, can strengthen the EU's technological capacity and market attractiveness.

If RD&I is to be prioritised by the new European Commission, RD&I investments must be ringfenced within the next EU MFF. RD&I must also be incorporated in the next MFF by design to boost our European RD&I ecosystem (i.e. by linking RD&I to other policies by design). This will pass by:

1. **EU RD&I investments representing a significant share of the next EU budget**: Draghi's report calls for a doubled budget of FP10 to EUR 200 billion and Heitor's report calls for a EUR 220 billion budget for FP10. EARTO has also been repeatedly calling for a doubled and ring-fenced budget of FP10 to EUR 200 billion.
2. **EU RD&I investments should incentivise private co-investments by design: thanks to public-private partnerships, dialogue with industry, clear commitments, and**
3. **The next EU budget should allow flexibility and stability at the same time**: i.e. ensuring medium-term investments security for industry & RD&I actors to be able to plan investments while allowing for shifts in RD&I programming to adapt to new advances and respond to new challenges/crises.

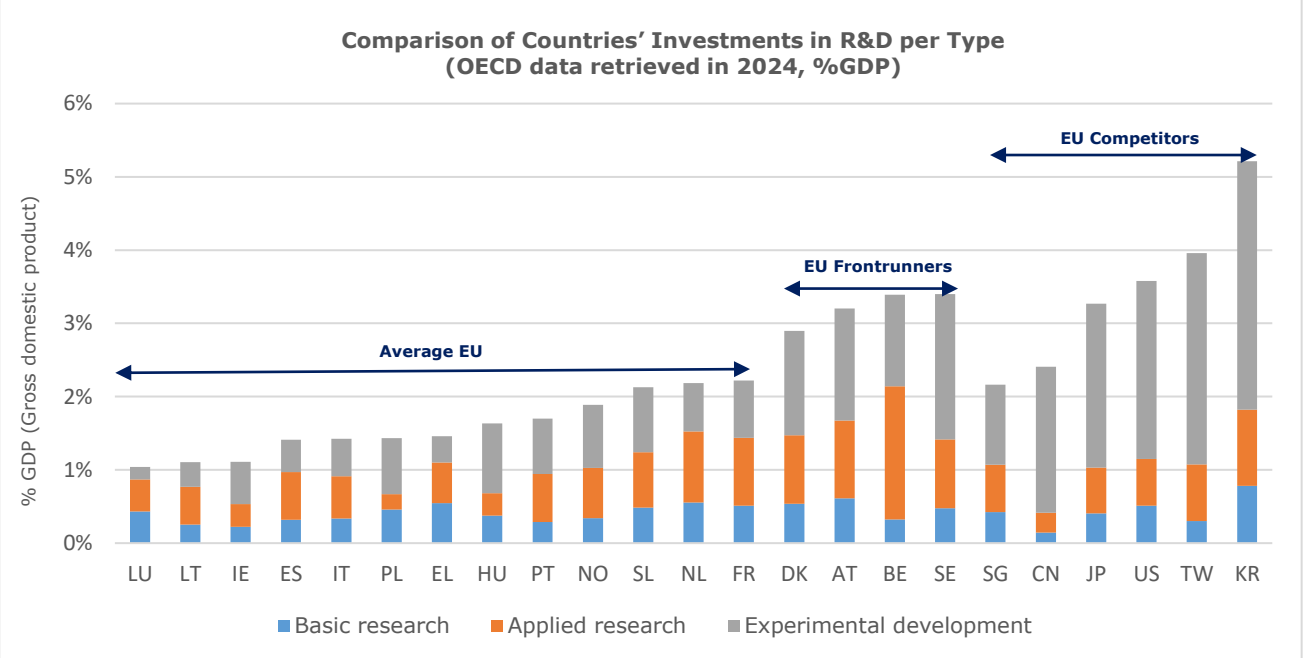
Consequently, EARTO would like to put forward **4 recommendations on how the next EU MFF should focus on financing the most impactful RD&I investments to effectively boost our techno-industrial base** as follows:

Recommendation 1: Strengthen FP10 Investments in Developing Critical Technologies using the FP's Pillar 2

From Draghi's report, EARTO recognises the need to reform the future RD&I investments via FP10 in terms of the FP's focus, budget allocation, governance and financial capacity, the need for FP10 to be refocused on a smaller number of commonly agreed priorities, for FP10 to be streamlined to become more outcome-based and efficient.

Indeed, as well-analysed in Draghi's report, Europe is drastically lagging behind the US and China in investing in its tech capabilities. Europe has the pressing issue of keeping its technology frontier. Today Europe is not catching up with its global competitors because it does not invest enough in its tech capabilities. A more detailed look at the respective situations shows (following the OECD-defined RD&I activities[1], i.e. basic research, applied research and experimental development), a large difference not only in the volume of investments but also in what those investments target.

As stated by the OECD, the EU's share of basic research spending is already higher than the OECD average and higher than the US. In terms of applied research, Europe is quite comparable to its competitors. But when looking at experimental development, meaning "the systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes", Europe is largely lagging behind (See following graph).



%GDP	LU	LT	IE	ES	IT	PL	EL	HU	PT	NO	SL	NL	FR	DK	AT	BE	SE	SG	CN	JP	US	TW	KR
Basic research	0.434	0.253	0.223	0.318	0.335	0.459	0.545	0.377	0.287	0.34	0.485	0.554	0.51	0.539	0.611	0.321	0.477	0.422	0.145	0.407	0.513	0.302	0.783
Applied Research	0.434	0.518	0.310	0.650	0.576	0.207	0.557	0.303	0.656	0.689	0.754	0.969	0.927	0.936	1.064	1.820	0.938	0.650	0.272	0.626	0.636	0.773	1.039
Experimental Development	0.173	0.334	0.577	0.443	0.515	0.765	0.356	0.954	0.758	0.859	0.889	0.661	0.781	1.423	1.528	1.251	1.982	1.090	1.990	2.235	2.432	2.884	3.389
Total	1.041	1.104	1.111	1.411	1.427	1.432	1.458	1.634	1.702	1.888	2.128	2.184	2.218	2.897	3.203	3.392	3.39	2.163	2.407	3.267	3.580	3.959	5.211

See Footnote [2]

[1] According to OECD Frascati Manual, the term R&D covers three types of activity: basic research, applied research and experimental development. Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Applied research is original investigation undertaken to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective. Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

[2] This chart and table present the spending intensities (in percentage of GDP) allocated by a sample of countries to the three types of RD&I activities identified by the OECD: basic research, applied research, and experimental development. By multiplying the spending intensity by each country's GDP, the actual spending amounts can be derived. EU countries invest significantly less in experimental development compared to their competitors outside the EU. For comparison, the US invests five times more in experimental development than in basic research, whereas EU countries representing in this graph invest on average three times less in experimental development than the US. However, a small group of European countries are closer to EU competitors investments ratio between R&D activities. These countries are as well the identified by the European Innovation Scoreboard 2024 as the European Innovation leaders. Overall, EU countries have investment levels in basic research comparable to their global competitors but are falling behind when it comes to investments in applied research and experimental development.

The EU and its Member States lag on investments in applied research and experimental development, which are usually the most expensive segment of RD&I. Investments in basic research are in line with the industrial countries that we consider as our competitors. But besides some of the 'champions' in the EU context, most countries in Europe lag behind in research that translates this knowledge into the actual application in the economy and society.

This is why **Europe needs to not only increase its RD&I investments but also ensure a better continuum of its investments in the different R&D types**. Indeed, if we do not invest further in R&D aimed at translating basic research into applications, our investments in basic research will keep having a limited impact on the economy and society as a whole. Today in Horizon Europe (FP9), Pillar 2 is addressing the investments in these two types of research.

Activities within the FP Pillar 2 allow the collaboration between private and public partners beyond national borders, strengthening the S&T base of the EU in pan-European innovation ecosystems, joining forces to address challenges of a global nature that no single country can tackle alone, reducing the fragmentation of our EU RD&I system. Over the last decades, the FPs thanks to their pan-European public-private partnerships and technology platforms/networks have developed the capacity to design and implement strategic research and innovation agendas, with all stakeholders in RD&I value chains (large and small companies, RTOs, academics, public actors such as regions, etc.), ensuring coherence and directionality for the most strategic and critical sectors or challenges. The implementation of collaborative research within Pillar 2 allows us to share risks and optimise efforts and resources. Collaborative applied research funding is vital to support medium to long-term research and development that would be a risky investment for businesses. The FP offers a collaboration arena that no single country, entity or a single RD&I actor can provide to companies and their suppliers.

The past FPs have managed to develop key networks of industrial and RD&I stakeholders working together in pan-European collaborative applied research projects/programmes around key industrial sectors. This effort is a recurrent one requiring time and dedication to orchestrate our European capabilities: unfortunately, it is not that once those pan-European public-private networks and partnerships are created that they do not need curating and care to ensure that they are continuously aiming at the right priorities in accordance with markets developments, industrial supply chain issues and technology developments.

Accordingly, FP10 should focus on excellent cross-border collaborative RD&I, with strong industrial participation. To do so, the focus on competitiveness must be reinforced in Pillar II, and should similarly be a key driver for activities in Pillar I and Pillar III.

Enlarging while streamlining and focussing today's Horizon Europe's Pillar 2 in the future FP10 will be the key to keeping the EU in the technological race with its global competitors. This will require:

- **For the next MFF to give priority to further RD&I investments and pan-European coordination of public & private investments using FP10 and its public-private partnerships to do so.**
- **FP10 will be the main European instrument available to finance EU's technology capabilities on critical technologies, industrial renewal and resilience, preparing the next phase of industrial development (e.g. via industrial alliances, IPCEIs). As set in article 182 of Treaty on the functioning of the European Union, all the activities of the Union in research and technological development are set out in an MFF. We therefore expect the forthcoming FP10 to include the entire scope of EU support to R&D, with a clear budget and priorities.**
- **To focus future FP10 investments on the already identified EU critical technologies. We already have three target lists that require combining: the NZIA list, the critical technologies list published in the EC Communication on Economic Security and the technology target areas within the Strategic Technologies for Europe Platform (STEP).** Here the US are already clearly in advance with a clear industrial policy explicitly aiming at US leadership in critical technologies (See Jake Sullivan speech): we need to speed up our efforts.
- **Streamline and strengthen current EU RD&I public-private partnerships (i.e. the co-programmed or institutionalised partnerships' models) with simpler and faster funding procedures to boost participation of large companies and their suppliers (See RTOs-Industry Joint Statement on FP10 with 115 signatories).**

Recommendation 2: Make the new Competitiveness Fund a catalyst for additional private RD&I investments by creating a new RD&I investments conditionality for EU Financial Instruments

The setting up of a new Competitiveness Fund, as relevant as it may be, cannot be done at the expense of a strong technology research programme based on RD&I grants such as FP10. The new Competitiveness Fund could leverage additional private RD&I investments: by creating a stronger FP10 combined with smart conditions in other EU financial instruments used.

First, the setting up of the NZIA strategy without planning a proper supporting RD&I chapter should not be repeated. For most of the EU countries, investments in RD&I (and education) are the only and most effective **coherence and articulation between the EU RD&I and industrial policies and their programmes. The Competitiveness fund should be linked to the renewal of our economy and industry. In that regard, the strategic industrial sectors to be targeted by the new Competitiveness Fund and the future FP10's technology priorities should be aligned to ensure that Europe RD&I efforts are targeting EU industrial competitiveness.**

Secondly, the new Competitiveness Fund should ensure that the support given to EU companies is linked with their effort in innovation. To do so, **EARTO recommends introducing a new incentive to RD&I investments for companies applying to future EU financial instruments based on loans and guarantees (via the EIB/EIF) which may be used in the new Competitiveness Fund**. The existence or setting up of an R&D partnership with a public research organisation could be introduced in the selection criteria for access to EU lending instruments by companies. This would encourage private R&D spending, which has been identified as the main reason why the EU is lagging behind in terms of R&D intensity.

Recommendation 3: Launch a major new EU programme in support of Technology Infrastructures within FP10 to coordinate investments across Europe

Technology Infrastructures are the backbone of dynamic RD&I ecosystems and innovation-driven value chains. Technology Infrastructures are required to develop, test, upscale and validate technology, thereby fostering industrial competitiveness and accelerating societal/market adoption of technological innovations. Members States and the EC have developed the so-called European Research Area (ERA) Action Plan in which the ERA Action 12 is looking at setting up a new EU strategy on Technology Infrastructures. This action stemmed from an EC work since 2019: see the recently published and extensive EC report Policy landscape supporting technology infrastructures in Europe. Key advances by the EC expert group on Technology Infrastructures are expected this year with the elaboration by the EC services of a new Communication on Technology Infrastructures in early 2025. This exercise is viewed as crucial for the RTOs' sector to plan strategically across Europe further investments on their infrastructures based on the needs of our EU industry.

EARTO is calling for a specific instrument for Technology Infrastructures under the next EU MFF of €10 billion to support future investments and bridge the gap in capabilities compared to Europe's global competitors. Such a specific instrument would encourage the systematic transfer of RD&I results into key EU industrial ecosystems via the development of an appropriate Technology Infrastructure landscape.

Recommendation 4: Mobilise and strengthen European RTOs capabilities across Europe

EARTO represents more than 350 Research and Technology Organisations (RTOs) from all over Europe and beyond. Enhancing the economic performance and resilience of industry is at the core of RTOs' mission. Accordingly, RTOs conduct applied research and development to support innovation in various sectors and domains. The OECD study on The contribution of RTOs to socio-economic recovery, resilience and transitions highlights the key role of RTOs in fostering economic diversification. EARTO has commissioned several studies on the impact of RTOs over the years that highlight the significant contributions of RTOs to Europe's competitiveness (See Review of impact assessment studies of RTOs).

Future EU policy developments aimed at boosting competitiveness should 1) further utilise RTOs' capabilities to define further industrial needs for technology development across Europe, and 2) support RTOs in continuously developing and expanding their range of capabilities.

For more details on certain aspects of this paper, please see our recently published EARTO policy recommendations on how to boost EU competitiveness by enhancing EU innovation. EARTO and its members reaffirm their commitment to supporting the European institutions and Member States in shaping policies that will further boost Europe's competitiveness.