

Brussels, 24 April 2024

## **New EU Research Framework Programme The foundation for Europe's industrial competitiveness and technological leadership**

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### **Executive summary**

The next EU Research and Innovation Framework Programme (FP10) will have a deep and long-lasting impact on Europe's competitiveness and technological leadership. To build a strong future for our society and our economy, we need to make Europe the most attractive place for RD&I, where new leading technologies are created and investments are made. The Framework Programme must focus on Europe's strengths and on the technologies which are most promising with a view to future competitiveness and sustainability.

Orgalim, representing Europe's technology industries, supports an FP10 that maintains the focus on applied research, innovation and implementation – preserving, focusing and expanding Pillar II and maintaining the three pillar structure with the excellence principle at its core. This requires adequate funding in the European budget as well as a more balanced distribution, as the share of industry should be increased in order to meet goals on competitiveness and technological leadership. Moreover, it requires a rethinking of Pillar II to clearly place concrete research and innovative technology at the heart of solving societal challenges as well strengthening links between Pillar I and Pillar II to encourage the uptake of new, emerging scientific results in applied research. We also believe that we need to better balance the innovation and policy-driven initiatives to clearly set a course for the future and we call for a business-friendly FP10 to improve the impact of projects through better alignment on industry needs and more transparency and simplification of processes. We see many benefits in the Public-Private Partnership (PPP) model, but it would need to be updated in order to avoid fragmentation of these projects. Finally, FP10 must be open and attract cooperation with researchers and organisations from third countries.

Research security measures are very much needed in times of increased geopolitical tensions, but must not lead to further bureaucratic burdens and should be limited to technological areas which are considered critical.

## Global competitiveness starts with research and innovation

The EU-Framework Programmes for Research and Innovation are critical for reaching the EU targets for the green and digital transitions as well as for future technological leadership and competitiveness. The next Framework Programme will also be an essential element for Open Strategic Autonomy, economic security and for the EU's place in the world.

Technological progress is not only key to economic growth and development but is a geopolitical factor: mastering essential future technologies will be crucial to the command of strategic nodes as control points and to establish mutual strategic dependencies within international value chains. In essence, an integrated research, innovation, and industrial policy is required if Europe's future is to remain in our own hands.

Yet today, other regions of the world appear to have a greater recognition of the significance of R&D expenditure compared to the EU. The US and China are investing more in research and development (R&D) than the EU. The US spends 3.46% of its GDP on R&D, while China's percentage has risen from 1.91% in 2012 to 2.41% in 2022<sup>1</sup>. The EU is lagging behind, as its R&D expenditure relative to GDP stood at 2.22% in 2022. The ambitious "Lisbon R&D goal" agreed on in 2000 – to invest 3% of the EU's GDP in R&D in 2010 – is therefore far from being achieved. Over the past 20 years, the EU has not caught up in the international competition for the best conditions for research and innovation but has instead fallen further behind. Furthermore, Europe's share of global industry gross value added declined from almost 25% in 2000 to 16.3% in 2020<sup>2</sup>, while industry is the accelerator of R&D in modern economies. The US is traditionally a bigger R&D spender and China recently surpassed the EU in R&D spending<sup>3</sup>.

Statistics on patents, which play an increasingly important role in innovation and economic performance, also reveal the serious challenge the EU is facing. Innovators from around the world submitted 3.46 million patent applications in 2022, marking a third consecutive year of growth. While innovators from China continue to file nearly half of all global patent applications (the US filed 17.2 %), the European Patent Office granted only 5.6% of all patents globally. Even the slight increase in patent activities of 2.6% in the EU cannot hide the fact that the EU lags far behind.<sup>4</sup>

**In a geopolitical landscape marked by both tensions and interconnected international value chains and competition, it is crucial to establish strategic technological ecosystems where the EU takes the lead.** Currently, China is leading globally in 37 out of 44 critical technologies, while Europe lags behind. A McKinsey report highlights that Europe is only leading on two out of ten transversal technologies, calling this the European technology gap.<sup>5</sup> In some cases this leads to undesirable technology monopolies, which endanger the future success of the twin transitions as well as our geopolitical position.<sup>6</sup> We therefore need to take command of control points in (new) value chains to create mutual dependencies which will strengthen our technological leadership and our strategic position. In this way, Europe can both export products in areas where we are leading, and also ensure the availability of products that Europe cannot efficiently produce on its own.

To achieve this, RD&I policy must act strategically, focusing on the strengths of Europe on the one hand, and exploring future opportunities on the other hand. It is crucial to focus the next European Framework Programme for Research and Technological Development, also known as the 10<sup>th</sup> Framework Programme (FP10), on areas where Europe has the opportunity to gain technological leadership, which will require a strong, highly productive industrial base. **In short, the EU needs to be the world's most attractive place for RD&I, where new leading technologies are created and investments are made.** If Europe is to deliver technological leadership the needs of the industry must be the core focus when designing the next Framework Programme. FP10 must make sure that the EU can deliver techno-economic competitiveness by putting, for example, smart manufacturing, high tech new materials, and industrial digitalisation at

<sup>1</sup> Eurostat, [GDP expenditure on research & development](#), 2022

<sup>2</sup> ERT, [European Competitiveness and Industry Benchmarking report 2022](#)

<sup>3</sup> Science Business, [EU R&D intensity falls in 2022 – despite increased spending](#), 7 December 2023

<sup>4</sup> [World Intellectual Property Indicators 2023](#)

<sup>5</sup> McKinsey Global Institute, [Addressing the European technology gap](#), September 2022.

<sup>6</sup> ASPI's critical technology tracker. <https://www.aspi.org.au/report/critical-technology-tracker>

the centre. To strengthen productivity and international competitiveness, and to deliver the solutions to the challenges, it is essential that industry is in the driving seat and is involved in shaping the strategic directions.

**EU research is therefore crucial for the EU's technology industries, as it makes the industrial base and the future building blocks competitive enough to strengthen technological leadership and a strong global market position.**

Horizon Europe helps Orgalim members to build, shape, and produce a better world in a context where we are confronted with the steep challenge of reaching climate neutrality by 2050 and protecting our natural capital.

Therefore, Orgalim is advocating for a strong, ambitious EU R&I programme fully aligned with EU industry's competitiveness needs.

## Our recommendations

### Adequate funding for research and innovation in the next Multinational Financial Framework (MFF)

We should at least double the budget for Europe's next Research Framework Programme (FP10) to €200 billion in order to stimulate our competitiveness. In 2022, Europe spent €352 billion on R&D, which is 2.22% of our GDP. If we want to keep pace with increased R&D investments by the US and China, reaching the 3% target is the bare minimum. €124 billion would be needed every year to fill the gap to attain 3% (measured with the 2022 price level). An increased budget of €200 billion will help – this covers around 10% of needed R&D-investments<sup>7</sup> – but will not be enough. Both national public investments as well as private R&D investments should be mobilised to reach the 3% target. In our view, the role of FP10 is to focus on areas and activities with clear added value provided by a European approach. There should be an assessment of which R&D activities are better placed at European level and which are better placed at national level. By no means should more spending on EU R&D budget lead to a decrease of national research funds or vice-versa. Both levels have their specific logic which should be defined by the principles of subsidiarity and complementarity.

The EU must also design the next Framework Programme with the clear intention of stimulating industry to make their R&D investments in Europe. The global competition for R&D investments from industry is exceptionally fierce, with numerous regions employing aggressive strategies to persuade companies to establish R&D operations within their borders. **To ensure research-intensive companies stay and develop their technologies in Europe, its research funding system must offer predictability and long-term stability.** Furthermore, FP10 funding should prioritise industrial needs to attract external investments.

Besides increasing the budget of FP10, the focus should be on increasing the participation of industry in FP10. With the current geopolitical situation and focus on competitiveness, industry-focused funding should increase to at least one third of the budget to achieve Europe's technological leadership ambitions. Technology should not only be researched, but also developed, produced and scaled up in Europe.

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<sup>7</sup> An increase of €105 billion of the FP10 budget delivers €15 billion extra R&D investments per year, measured with the 2022 price level, inflation not taken into account

## Research and innovation for technological leadership

The industrial perspective is relevant throughout the research cycle because industry needs the results and knowledge which form basic research as well as support for innovation. For the technology industries, however, applied, collaborative research is a truly essential part of European research programmes. Here, manufacturers, SMEs, research institutes and universities collaborate across borders on a pre-competitive level, developing the solutions needed for sustainability and competitiveness. Therefore, **the next Framework Programme must include a strong, dedicated scheme for technological leadership for the transition towards a net-zero and circular industry**, giving appropriate weight to the industrial technologies which determine the competitiveness and sustainability of the EU's industries, such as advanced manufacturing technologies, robotics/autonomous systems, and new materials.

**The next Framework Programme must focus on Europe's strengths and on the technologies which are most promising with a view to future competitiveness and sustainability.** This does not mean, however, that technological solutions should be prescribed in detail or the choice of technologies set in stone. Technological change is anything but strategic and smooth. The capability of an industry to innovate depends on its capacity to recognise a technological opportunity and to enact creative improvement where it is needed. **FP10 is not in a position to foresee novel technologies and new needs, but it can create a framework to discover such advances and new priorities and to direct the interplay between European Industrial Policy objectives, business realities and societal needs.** An agile and flexible FP10 is needed so that it is able to keep pace with new technologies or changing (geo-)political conditions and technological needs while providing direction and predictable resource allocation on a strategic level.

Therefore, **FP10 must strike a balance between elements which are supporting technologies of the future – e.g. robotics, advanced manufacturing, quantum technologies – and bottom-up, and more mission-driven elements which are technologically open – similar to the Innovation Fund.** On all levels, from strategy to drafting call topics, setting priorities must be a transparent process which involves stakeholders and leaves room for adaptations.

## Strengthen the excellence principle

Over time, we have seen the principle of research excellence being compromised to accommodate other policy priorities. However, **to stay inspiring and relevant as well as to ensure added value for society and industry, the EU's research funding must be based on excellence and competitive selection of projects**, using objective criteria and the excellence principle. To ensure an EU-wide balanced and expanded participation, resources from the Cohesion Funds could be used to increase the capabilities of EU regions to successfully compete in excellence-driven programmes.

The current Horizon Europe Missions represent other policy priorities, which are not solely based on excellence. The Missions do not have an adequate R&I content – and they cannot be realised solely as R&I missions. The implementation of these Missions – which goes far beyond RD&I measures and needs more budget than any research framework can provide – has to be organised outside of FP10. Moreover, the involvement of industry is relatively low in the Missions, while industry is clearly needed to develop, produce and scale up solutions for societal challenges. Thus, if Missions are to be relevant for securing Europe's need for new technological solutions and solving societal challenges, they need to be based on enabling technology ecosystems and industrial needs to research, develop and produce these technologies, as the technological performance of industry plays a key role in these areas.

The rules concerning the impact and implementation of EU Missions so far remain somewhat unclear. The added value of Missions should lie in the fact that the scope of a Mission should not be limited to EU-funded research and development. At the heart of a Mission should be technological challenges, where research and innovation play the main role in overcoming them. To leverage these, EU Missions should also include other policy tools such as regulation or, more generally, legislation. Broader policy goals and legislation, however, should therefore be addressed elsewhere.

Missions are directly aimed at EU countries, regions and cities, which are the key agents of change in deploying new technologies and experimental innovative solutions that address regional and local needs. They need to stimulate ecosystems and involve Research and Technology Organisations (RTOs) and industrial beneficiaries for the required supporting tasks.

## FP10 structure: Put competitiveness and technological leadership for sustainability at the centre of Pillar II

Europe performs well in fundamental research, but we are lagging behind in industrial application of this research compared to China and the US. **To improve research's impact on the economy, a focus on value creation/technology promotion is important to reinforce links between research funding and market application.** In addition to excellence in research, we need excellence in industrial implementation more than ever. Only if Europe is successful here will we be able to invest more money into new research in the long term – in a kind of "R&D cycle booster". In addition, basic research, applied, purpose-driven research and innovation support follow different logics. **Therefore, it is crucial that FP10 maintains the focus on applied research, innovation and implementation, preserving, focusing and expanding Pillar II and maintaining the three pillar structure.**

**We are of the opinion, however, that Pillar II needs a different structure.** We fully support the European Commission's endeavours in tackling major societal challenges and addressing Sustainable Development Goals to improve people's lives in the EU and globally. The innovation of green and digital technologies is a key driver to achieve these goals, and tackling both industrial and societal challenges are two sides of the same coin and must therefore be considered together. However, **a clear delineation is needed on the level of concrete research and innovation technology projects.** From our experience with Horizon Europe, combining calls under Pillar II to tackle societal challenges with calls to address Europe's industrial competitiveness has not led to the desired results. On the contrary, this has increased the complexity of call topics, created new barriers to participation and reduced the effectiveness and efficiency of the money spent. We therefore call for dedicated, separate, mission-driven programmes for societal challenges – and technological leadership, driven by technological opportunities and competitiveness.

With a view to the connection of the pillars, we think that the links between Pillar I and Pillar II should be strengthened, to encourage the uptake of new, emerging scientific results in applied research. We also need to increase interactions between Pillar II and Pillar III. The European Innovation Council (EIC) must be further strengthened, opening it more to industry-relevant transfer and innovation support. The EIC has proved to be a successful instrument for identifying, developing, and deploying high-risk innovations, and it should be strengthened in order to stimulate the development and scale up of key enabling technologies. This is essential for a vibrant start- and scale-up climate, so that innovations – especially in the field of deep tech – are not only emerging, but are also able to scale up, and industrialise, in Europe. To this end we advise bringing the EIC closer to start ups/scale ups, through less bureaucracy and better national information points and to present it as more of an investment instrument than a source of subsidies.

## Balance innovation-driven and policy-driven priority setting

FP10 will play an important role in addressing the challenges the EU is facing and must be strategically oriented towards the long-term policy objectives of the EU. It must, however, also be open for bottom-up, innovation-driven and needs-driven research.

In this regard, **we must find a better balance than in Horizon Europe, where programmes and call topics are often overloaded with too prescriptive policy-related requirements.** This constrains the freedom of research and creates access barriers for SMEs and mid-sized companies.

In addition, Horizon Europe calls do not adequately match budgets and prescribed outcomes, resulting in low grade innovation output and additional delays in the roll-out of scientific results. FP10 needs to closely align budgets with expected results.

In particular, it must be avoided that FP10 focuses primarily on very topical policy initiatives such as the Net-Zero Industry Act or Critical Raw Materials Act. **FP10 needs a long-term approach led by technological opportunities, societal and scientific goals, and based on excellence. To this end, industry stakeholders must be actively involved to identify the next major challenges of the future.**

## Improving impact with a business-friendly FP10

Industry is funding two thirds of research in Europe (source: Business Europe) and private research and innovation investments are crucial when aiming at increasing the EU's research budget to 3% of our GDP.

Industry also plays a crucial role in the uptake of research results in products, services or processes. **To achieve this impact, research projects need to align with industry needs to be relevant and to be eventually taken up in value chains.** To ensure this, industry involvement in strategies, roadmaps, and priority definition is key. It is equally important to facilitate the access of industrial companies to the programmes and to the results.

**To attract more companies to European R&I project initiatives, FP10 must be more business-friendly and SME-friendly** than the current Framework Programme. We support lowering the barriers for business and SMEs participation in all three pillars. This includes the transparency of the programmes – including understandable call topics as well as application time and payout deadlines, streamlined application procedures with simplified processes for SMEs, more flexibility in the choice of cooperation partners, and an efficient transfer of results that gives all companies access to new knowledge. In Pillar II, procedures must be adapted to the current requirements of agile and shortened R&D processes, e.g. through open, bottom-up, technology-neutral and accelerated calls for proposals. However, at the same time, FP10 should also recognise the declining participation of enterprises – both large and mid-sized. FP10 needs to re-ignite the interest of innovative and leading companies to co-lead scientific endeavours and thus help SMEs to mature by sharing project coordination know-how while providing insights into the international technology competitiveness landscape.

**In general, the Public-Private-Partnership instrument (PPP) has shown its value and is an appropriate tool to ensure dialogue and involvement of industry.** We need to continue improving the model with business-led PPPs in order to strengthen the impact of research on economic growth. Identifying priorities together with industry leads to work programmes which are better aligned with actual industrial needs – which increases the probability of uptake of results as well as efficient budget use. We want to mention here the [Made in Europe](#) Partnership (and its predecessor [Factories of the Future](#)) which closely involves the mechanical and engineering industry sector in identifying challenges and opportunities, ensuring that the project responds concretely and pragmatically to industry's needs and contributes to strengthening Europe's manufacturing base. The Made in Europe Partnership needs to continue and develop further.

Due to the increasing number of PPPs, there is a risk of fragmentation of Pillar II in too many small initiatives, which are more focused on the needs of specific research communities. For example, several of the newly established PPPs show overlaps with already existing PPPs. Therefore, the PPP model requires an update, merging thematically close PPPs and reducing the increased administrative burden.

## Ensuring research security in an open world

In general, FP10 must be part of global R&I networks and facilitate the exchange of research, ideas and inspiration. It must be open for cooperation with researchers and organisations from third countries. However, against the background of geopolitical tensions and fierce global competition, the risks of international collaboration, for example in terms of uncontrolled transfer of knowledge, must be managed.

**It is therefore essential to strike a balance by applying the principle of “open where possible, closed where necessary”. “Reciprocity”, and the participation of EU companies in programmes of third countries, could be one principle.** In times of increasing geopolitical global competition for technological leadership, investments in technological progress and research results must be protected and certain areas might require restrictions in terms of participation and dissemination. However, **research security measures must not lead to a further bureaucratic burden, and should be limited to clearly defined technological areas which are considered critical.** Further criteria for the application of stricter research security might be criticality of disciplines (technology and engineering R&D present higher risks, than, for example, social science and humanities), maturity level, and differentiation between partner countries in case of cooperations (cooperation should actively be sought with like-minded third countries, for which the association with the UK serves as a good example). Including dual-use R&D under FP10 should not compromise the open innovation nature of the Framework Programme, nor should it unfairly hinder associated countries (or those aspiring to be) from contributing to Horizon.

Also, a new approach is needed for the open science paradigm. We acknowledge the potential of open science, which should not be an end in itself but rather a way to enhance Europe’s values, economic competitiveness and interests. However, the business and innovation perspective has been missing when developing policies around open science in Horizon Europe, in particular with a view to the role of open data in the realm of geopolitics and the repercussions for the EU’s economic competitiveness. The implementation of an open science policy in Horizon Europe has led to an adverse effect and does not contribute to strengthening the impact of European research and innovation in a global context. **Therefore, we ask to refrain from an overall obligation of open access to research data in Research & Innovation Actions (RIA) and Innovation Actions (IA) funding and to reopen the discussion about the exact meaning of research data being shared and the degree of sharing.** Regulators should provide a framework that ensures flexibility according to the type of research data considered, building upon the “open where possible, closed where necessary” principle.



## Horizon Europe success: Research projects that make a difference

Orgalim members are involved in diverse and promising EU-funded projects where collaboration between industry, universities and research centers are key.

- [LONGRUN](#): Design and development of efficient and environmentally friendly long-distance powertrains for heavy duty trucks and coaches – contributing to climate neutrality in transport. For manufacturers part of the consortium, projects like LONGRUN provide the possibility to showcase future fuel pathways and the potential of alternative fuels in heavy duty transport. Innovations are achieved in the areas of electro-hybrid drives, optimized ICEs and aftertreatment systems for alternative and renewable fuels, electric motors, smart auxiliaries, renewable energy generation & storage and power electronics. This results in 10% energy saving (Tank to Wheel) and related CO<sub>2</sub> reduction, 30% lower emission exhaust (NO<sub>x</sub>, CO and others) and 50% more thermal efficiency.
- [SPOTLIGHT](#): Disruptive photonic devices for highly efficient, sunlight-fueled chemical processes to convert CO<sub>2</sub> and hydrogen into methane and carbon monoxide for use in cars and energy storage applications.
- [Sharework](#) and [SHERLOCK](#): Collaborative human-centered robotics to assist workers on the factory floor during high-tech complex manufacturing processes in the automotive, railway and metal parts sector. Human-robot cooperation improves working conditions, with robots taking over repetitive and heavy tasks from workers.

Orgalim represents Europe's technology industries, comprised of 770,000 innovative companies spanning the mechanical engineering, electrical engineering, electronics, ICT and metal technology branches. Together they represent the EU's largest manufacturing sector, generating annual turnover of €2,819 billion, manufacturing one-third of all European exports and providing 11.9 million direct jobs. Orgalim is registered under the European Union Transparency Register – ID number: 20210641335-88.



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