EU R&I and Health Policy to Tackle Global Challenges

Making Europe's Research and Innovation Programme an engine of global development

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SUMMARY

This report assesses the EU's capacity to position its forthcoming Tenth Framework Programme (FP10) as a global leader in addressing global challenges through research and innovation (R&I). While the EU highlights Horizon Europe's achievements and its multiplier effect on GDP, we urge a more critical examination of the programme's limitations – particularly its fragmented governance, underfunding, and lack of global alignment.

We identify five structural weaknesses: lagging performance in cutting-edge science and innovation, disjointed national and EU-level funding, insufficient progress on general-purpose technologies, shallow capital markets, and competing geopolitical and defence priorities that threaten R&I budgets.

The report warns that the EU's rhetorical commitment to global challenges – climate change, health, biodiversity, and digital equity – is not always matched by consistent action. It calls for an overhaul of the EU's approach to global R&I cooperation, including meaningful engagement with low- and middle-income countries (LMICs), philanthropies, and private actors. The lack of coordination between Horizon Europe and external investment instruments like the Global Gateway undermines the EU's credibility and effectiveness as a global development actor.

To course-correct, FP10 must distinctly separate funding for industrial competitiveness and defence from initiatives targeting global challenges. A number of core actions are recommended, such as building cutting-edge research infrastructure (e.g. AI factories and suitable data governance), expanding access to interoperable scientific data and investing in advanced AI and domain-specific skills. It is also important to improve the design of globally participatory, multi-stakeholder partnerships for R&I. On the latter, we argue that the EU should demonstrate global leadership at least in the following critical domains: women's health, mental health, digital public infrastructure, climate and biodiversity, and trustworthy AI.

The report concludes with six further recommendations to embed global ambition into FP10:

- adopt a new structure for a self-standing, ambitious FP10;
- launch a large-scale initiative on AI;
- provide for suitable infrastructure, advanced AI skills and a new framework for R&I cooperation;
- establish a council on global challenges with multi-stakeholder participation, including from LMICs;
- enhance science diplomacy; and
- link R&I investments with external instruments like the Global Gateway.

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This publication is based on research funded by the Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the Gates Foundation.

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1 INTRODUCTION: A RENEWED EUROPEAN COMMITMENT TO ADDRESSING GLOBAL CHALLENGES?

The European Union's approach to research and innovation (R&I) is often praised by commentators and policymakers as being oriented towards rewarding excellent science, as well as tackling global challenges. A recent Communication adopted by the European Commission, which contains an interim evaluation of the Ninth Framework Programme for R&I (FP9, Horizon Europe), stands out for its particularly triumphant tone. The Commission claims that **Horizon Europe delivers 'clear value for money'.** The interim evaluation mentions a GDP 'multiplier' of up to 11 times over a 25-year period. One euro spent on R&I, the Commission argues, is expected to bring six euro of benefits between now and 2045.

Yet if anything, a much bigger budget will be needed to ensure that all the high-quality proposals presented are funded. Horizon Europe is reportedly able to mobilise the large-scale R&I investment needed for global challenges such as climate change, the protection of biodiversity, treatment of infectious diseases, civil security and AI. It is further able to trigger scientific breakthroughs and promote industrial competitiveness.

This rather positive narrative conveyed by the Communication was recently echoed by the resounding **announcement of the 'Choose Europe' programme.** Launched by Commission President Ursula von der Leyen and French President Emmanuel Macron, this EUR 500 million programme seeks to attract leading (postgraduate) researchers to Europe, particularly those located in the US. Besides the claim that it is 'a world-leading centre for R&I', compelling arguments used to promote Europe as a destination for researchers include the predictability of its commitment to funding research and the excellent quality of life of many of its countries.

These claims are growing harder to refute given what is happening in the US, previously a world-leading R&I destination. Under the Trump administration, agencies such as the National Science Foundation have been forced to halt operations. The National Institutes of Health has had to cancel USD 1.8 billion of research grants (triggering a massive wave of lawsuits) and is on its way to ceasing support for vaccines, among other programmes. Top US universities have been subject to profound threats to their academic freedom, including through sanctions and federal budget freezes.

Hence, it would seem straightforward for researchers wishing to freely advance their projects and make an impact (especially on global challenges) to move to Europe to find the academic freedom, infrastructure, government support and intellectual community they deserve and cherish.

1.1 FIVE GOOD REASONS TO WORRY ABOUT THE FUTURE OF EU R&I

However, there are many reasons to argue that Europe would need to substantially change its approach to R&I if it wants to achieve the world-leading status it claims to already have.

First, **Europe lags other parts of the world in excellent science** on the most complex, convergent technologies, and even more so in terms of innovation. The Draghi report and evaluation of Horizon Europe by the Heitor group, while highlighting positive elements, are crystal clear in their wake-up calls to European policymakers to step up their game. Horizon Europe and its predecessors are seen as more of a subsidy machine to the individual Member States and their academic communities, rather than a well-designed launchpad for excellent science and innovation. A slew of small breakthroughs in science are dwarfed by massive bureaucracy, lack of coherence among different pillars, and a widening chasm between R&I policy and other EU policy domains. The inability of the programme to move projects from low to higher levels of technology readiness, triggering market innovation, has become entrenched.

Second, even if it were perfect, **Horizon Europe accounts for less than 10% of overall public R&I funding in Europe** – a continent in which individual countries struggle to achieve sufficient levels of R&D spending as a share of GDP and the private sector clearly under-spends. The complicated reconciliation of national and EU R&I funding channels creates inefficiencies, especially for excellent science, where more coordination at the EU level has been authoritatively advocated. And the lack of good mechanisms for public-private cooperation for industrial competitiveness, possibly exacerbated by the rigidity of the rules, makes it very hard for the private sector to fully engage in projects at higher technology readiness levels.

Third, while value for money calculations provided by the interim evaluation of Horizon Europe are already being challenged, one crucial aspect that the evaluation overlooks is Europe's growing **lag in general-purpose technologies.** These are gradually becoming the DNA of the scientific enterprise, the engine of future innovation and productivity growth, and the vital fluid of solutions to global challenges. They include AI, quantum technologies, synthetic biology and other foundational developments that, as highlighted by the Draghi report, are at the centre of global competition for leading scientists. The EU is now trying to remedy this situation by investing specifically in AI for science (RAISE), launching AI (giga)factories and increasing its spending on quantum, but investment levels and market results do not show encouraging signs.

Fourth, the **lack of depth of Europe's capital markets** clearly stands as an obstacle to deeper, faster and more effective translation of excellent science into innovative

solutions, be they related to industrial competitiveness or global challenges. Several proposals have been advanced to address this issue, for instance by the Letta report and by CEPS (Marcus, 2025). Whatever is achieved on this front should in principle improve Europe's ability to generate innovative solutions but will have to be coupled with equally important reforms aimed at promoting public-private cooperation and partnerships.

Fifth, in today's turbulent geopolitical context, **it remains to be seen whether Europe can sustain or increase its commitment to funding R&I**. The emphasis placed on the subject by the Draghi report, which led von der Leyen to commit to putting R&I at the core of EU action in the years to come, has gradually been flanked, if not superseded, by equally important security and defence priorities. Europe is now having to commit to 'rearm' itself in view of the war in Ukraine and the concomitant waning of US support to military operations and NATO itself. As resources are not infinite, it comes as no surprise that the ramping-up of military expenditures at the EU and Member State level has already eroded funds earmarked for R&I (particularly for Horizon Europe) and promises to do so more significantly in the future. This in turn makes a shift towards more dual use R&I funding even more urgent; yet currently, dual use R&I cannot be funded under most of the instruments in Horizon Europe (European Commission, 2025).

1.2 A DARKER PICTURE FOR R&I AND GLOBAL CHALLENGES

The above five reasons to worry cast doubt on **Europe's ability to meet its commitment to addressing global challenges through R&I.** The absence of US support for multilateral organisations and domestic agencies in charge of promoting global development (USAID) calls for the EU to make a bigger effort to promote the values it constitutionally stands for. The EU must project its image through concrete initiatives and steer the global community towards achieving the goals set in the 2030 agenda and the recent UN Pact for the Future.

Here, the **narrative of the European Commission's recent Communication on Horizon Europe is weakened.** The Commission claims that 'some of the challenges that Europe faces are so vast and complex that solutions can only be found through large-scale investment in R&I', and that 'the Framework Programme's strong strategic vision makes it possible to focus efforts on the challenges that matter the most'. In practice, however, the examples brought in to support the Framework Programme's impact on climate, health and civil security are underwhelming.

There are structural and contingent reasons for the limited impact of EU R&I funding on global challenges. On the structural reasons, it must be recalled that **tackling global challenges is not an activity that one bloc, however big or powerful, can do on its own**.

Rather, tackling issues such as climate change requires large-scale collaboration involving public institutions, the private sector, international philanthropies and non-state actors.

In this respect, **the EU has not exactly shined in its ability to design or join multi-stakeholder partnerships.** Among other reasons, this is due to the rigidity of its financial rules, which makes it problematic to partner with other entities, and to the difficulty of fitting these transactions into the already complex landscape of EU instruments launched to deal with issues of global concern. This applies in particular to international R&I collaboration, on which limited progress has been achieved in Horizon Europe, and which would take the form of large-scale global consortia involving top research outlets from all over the world.

On innovation, the **conflation of industrial competitiveness and global challenges in the same pillar of Horizon Europe** has led to a rather suboptimal situation, in which the same rules apply to eminently inward-looking programmes and projects (those on competitiveness) and the more globally oriented ventures requiring openness and international cooperation (Dell'Aquila et al., 2025). Finally, delivering on global public goods requires links between the Framework Programmes and other instruments of international partnership, such as the Global Gateway; however, as noted in this report, such links appear to be insufficiently strong and merit ad hoc attention (idem).

Looking at the contingent reasons, the outlook appears even gloomier. Two main ones stand out, which seem to dampen the prospects for a stronger EU as a champion of global public goods. On the one hand, the **fragmentation of the multilateral order is making it harder for the EU to partner with other global powers**. This is especially the case for R&I focused on strategic general-purpose technologies such as AI or quantum computing, which hold great promise for grappling with grand challenges like climate change, biodiversity loss and pandemic preparedness, and even for migration and the protection of the democratic process.

On the other hand, the **EU's commitment to work on global challenges appears to be far from the spotlight.** In a situation in which Europe seeks to rearm itself and bolster its industrial competitiveness, emphasis has fallen more on funding dual use R&I and the defence industry. Given the need to allocate resources to these two areas, the relevance and salience of domains such as health or the environment are therefore likely to remain limited, and the search for scientific breakthroughs outside defence is likely to lose momentum. For example, a recent position paper authored by the German government reportedly advocates that the next EU budget prioritises defence spending, and does not give space to the collection of own resources by the European Commission. This is most likely to reverberate negatively on the EU's ability to play a leading role on global challenges.

In this report, we take stock of the current prospects for the EU to renew its commitment as a champion of global public goods through a reorganisation of its R&I programmes. The report is structured as follows. Section 1 reflects on the EU's current efforts to tackle global challenges through its policies on R&I and other areas, notably including the Global Gateway. Section 2 takes stock of existing gaps and deep dives into four specific domains to increase the level of granularity of our analysis (e.g. women's health, digital public infrastructure, biodiversity and climate, and AI). Section 3 discusses possible avenues for reform, which are meant to contribute to the design and launch of the next Framework Programme, FP10. Section 4 briefly concludes with a timeline of possible actions and a mapping of synergies with national policies and spending programmes going forward.

2 EU R&I POLICY AND GLOBAL CHALLENGES

The EU's commitment to tackling global challenges is rooted in its treaties, policy frameworks, and strategic agendas. In line with its values and principles, the EU has made sustainable development a cornerstone of its external and internal actions[1]. That said, most of the EU effort is found in external action, and particularly in international partnerships (under Directorate-General (DG) INTPA), with financial mechanisms such as the development and cooperation instrument NDICI-Global Europe. The latter's Global Challenges thematic programme refers to **global challenges as complex, interconnected issues requiring collective action** and international cooperation. It specifically mentions climate change environmental degradation, poverty and inequality, the Covid-19 crisis and its socioeconomic impacts as critical challenges for EU external action. Also listed are threats to multilateralism and the rules-based global order.

The current EU Strategic Agenda for 2024-2029 reiterates the EU's **ambition to 'lead the response to global challenges'** and von der Leyen's political guidelines promote the idea of economic foreign policy, calling for the Global Gateway to be taken 'to the next level by proposing an integrated offer to our partners'.

Against this background, with most of the attention concentrated on the delivery of solutions on the ground through Team Europe initiatives, **the role of R&I collaboration is often overlooked**. And yet, many of the existing global challenges need solutions that can only be developed through research collaboration, or by accelerating innovative responses, even before coordination is put into place to deliver those solutions in specific countries or territories. R&I is essential for solving complex and interconnected global challenges, providing the knowledge, tools, and technologies necessary to work on issues such as climate change, biodiversity loss, public health, and the digital transition. As the EU strategy evolves on these matters, it becomes evident that R&I must be tightly integrated into both internal and external actions to maximise its impact.

Over the past four decades, **EU Framework Programmes for R&I have placed growing emphasis on global challenges**, particularly in areas like climate change and health[2]. The

[1] The term 'global challenges' gained prominence in the early 2000s, particularly with the European Consensus on Development (2005), which emphasised the EU's role in supporting the implementation of the Millennium Development Goals. With the advent of the 2030 Agenda for Sustainable Development, the EU's efforts expanded under the New European Consensus on Development (2017), which set a clear focus on implementing the Sustainable Development Goals and addressing global public goods and challenges through innovation and research.

[2] The current Horizon Europe programme (2021-2027) expands the scope of international cooperation by offering funding opportunities to over 40 countries, including new associated partners such as New Zealand, Canada, and the UK. This broadens access to global talent, knowledge, and markets, helping to tackle global challenges and implement international commitments. The Framework Programme's global outreach enhances the EU's international relationships, as demonstrated by the 177 countries that applied for funding under the previous Horizon 2020 (European Commission, 2024).

current Horizon Europe programme (2021-2027) features a 'Global Challenges and European Industrial Competitiveness' pillar and a new mission-driven approach, which aims to address global concerns[3]. Yet, the interim evaluation of Horizon Europe shows rather underwhelming evidence of impact on them[4]. Even more worryingly, despite its clear commitment to approaching global challenges through R&I, the EU seems to have difficulty aligning R&I frameworks with external action instruments. As a result, while the EU's Global Approach to Research and Innovation (2021) emphasises the importance of leveraging R&I to solve global challenges through international partnerships, synergies between Horizon Europe and external instruments like the Global Gateway remain underdeveloped. This was also highlighted in the first biennial implementation report on the Global Gateway.

More specifically, the Communication on a Global Approach to Research and Innovation reaffirmed the EU's commitment to preserving openness in bilateral and multilateral cooperation while safeguarding EU and national interests (as open as possible, as closed as necessary). The Communication specifies that the global approach should be implemented through bilateral cooperation in R&I 'to make it compatible with European interests and values and to strengthen the EU's open strategic autonomy'. It must do so by 'mobilising science, technology and innovation to accelerate sustainable and inclusive development, and the transition to resilient, knowledge-based societies and economies in LMICs' (low- and middle-income countries). Finally, its R&I collaboration should be modelled on Team Europe initiatives, and thus involve EU financial institutions such as the European Investment Bank and Member States.

While most of the Communication refers to bilateral relationships, in search of reciprocity and mutual cooperation with partner countries, one section is dedicated to 'pooling global efforts to tackle global challenges together'. This entails the EU bringing countries around the globe 'closer together' in multilateral R&I partnerships, 'focused on finding solutions to global challenges'. The latter are further specified as 'including climate change, the biodiversity crisis, pollution, resource depletion, or infectious diseases, including in crisis situations, and enabling the green and digital transitions'. A good example of such a multilateral R&I partnership is the All-Atlantic Ocean R&I Alliance (AAORIA). It stands out as a truly global and collaborative project, which the EU has

[3] Horizon Europe's strategic plan for 2025-2027 allocates significant funding to key issues like climate change, pollution, biodiversity loss, the digital transition, and social resilience.

[4] The document shows that the largest share of funding was allocated to pillar II (Global Challenges and European Industrial Competitiveness, 59.0%), 60.4% of which was allocated to the climate and digital clusters. The largest proportion of supported projects focused on SDG3 (Good health and well-being, 44%), followed by SDG7 (Affordable and clean energy, 24.2%), SDG9 (Industry, innovation and infrastructure, 22.9%), and SDG16 (Peace, justice and strong institutions, 21%). Compared with Horizon 2020, coverage increased for SDG3 (from 26% to 44%), SDG7 (from 12% to 24%), and SDG16 (from 6% to 21%).

supported through consecutive Coordination and Support Actions (currently, OKEANO for 2024-2027).

So far, initiatives like AAORIA unfortunately remain rather isolated in the landscape of EU global R&I collaboration. Among the fistful of other important, global R&I collaborations in place, only some of them have delivered on their initial ambitions. For example, EDCTPx on clinical trials and GloPID-R on infectious diseases seem to have led to scientific progress and dissemination in the health domain. After overcoming significant hurdles and frictions between participating countries, ITER has successfully scaled up EU research ambitions in nuclear fusion to the global level, keeping the home base of the research in Europe (southern France). Flagship infrastructure projects like Copernicus for Earth Observation, rather than being R&I collaboration projects per se, still represent a major asset for researchers worldwide.

By contrast, 'Mission Innovation' to accelerate clean energy, originally conceived as an international collaboration project in which the EU partnered with the US, China, India and other countries, did not generate the expected results. It now faces an increasingly uncertain geopolitical outlook.

Against this background, three considerations are worth putting forward. First, **cooperation with philanthropies and international donors may become an imperative** in the coming years – instead of a 'nice to have' feature – as the resources available for the pursuit of global challenges are likely to become much thinner at the EU level due to the reallocation of the budget to defence and industrial competitiveness. Should this happen, the EU would have at once the challenge and the opportunity to redirect its efforts to outstanding problems, where global cooperation between different stakeholders is practically the only possible way to orchestrate a suitable response. Still, in this case ad hoc provisions for structured cooperation with international private and public donors would be needed to solve existing problems in organising public-private cooperation when EU funds are at stake.

Second, **the EU very often positions itself as a leader**, or convener, of large-scale initiatives, **rarely contemplating the role of a partner**. There are exceptions, especially in the domain of health, where the EU provides funding to established platforms for the deployment of solutions. Examples include Gavi, the Coalition for Epidemic Preparedness Innovations, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and GloPID. However, in other domains the extent to which large-scale partnerships are leveraged to find solutions to outstanding global challenges is more limited. Rather, the EU has launched a plethora of research initiatives, joint undertakings, missions and 'partnerships', very often with a much more European flavour. Partnering with international donors would also be important to benefit from the diverse expertise and

programme management culture of these organisations, especially on discovery and fundamental research projects.

Third, and in a similar vein, **the role the EU can play in large-scale global partnerships may vary across sectors,** depending on how well positioned it is to lead on a specific topic. The best use of EU resources may also change owing to changes in the geopolitical context, with the US leaving opportunities for the EU to exercise leadership on issues such as the climate, migration, health and many others. These may lead the EU to try to bridge R&I funding with funding for downstream development and international cooperation, by making the most of 'research for development'. In Section 3 below, we explore five areas in which reform would be needed for the EU and its Member States to achieve 'more with less'. However, a conceptual framework for determining whether the EU is fit to lead on specific topics is not available.

2.1 TOWARDS FP10: A RENEWED EFFORT TO ADDRESS GLOBAL CHALLENGES?

R&I plays a fundamental role in understanding, responding to, and preventing global problems by driving technological breakthroughs, generating knowledge, and informing policy decisions. Strategic frameworks, international collaboration, and engagement with diverse stakeholders are essential for the definition of the most important research questions as well as the effective deployment of innovative solutions on the ground (OECD, 2023). At the same time, the role of R&I for grand challenges has changed over recent years, creating new opportunities and dilemmas for large donors such as the EU.

To boost FP10's effectiveness in this domain, several factors must be taken into account in addition to the need for global collaboration (which was already implicit in the definition of global challenges). First, **R&I is becoming increasingly data- and AI-intensive**. The ability to leverage large-scale data collaboratives to share research questions, processes and results, and to run complex AI-driven simulations, has become a central feature of R&I in many crucial domains for the future of humanity. Many complex problems await a reframing of the underlying questions and better use of collective intelligence alongside AI to find new and more effective solutions.

In this context, R&I exhibits strong economies of scale and scope, along with increasing returns to openness and data sharing. The greater the quantity and quality of available data, the greater the ability of AI to enable sophisticated simulations and pattern detection as well as the development of digital twins for enhanced simulation. The same can be said about sharing compute resources and enabling researchers from all over the world to contribute to large-scale enterprises.

In this respect, **big data and AI are also shortening the time to market**. In many domains, the linear process that leads from basic research to market deployment is being

significantly shortened by faster data analysis, incremental design, agile and iterative models of development, and transfer learning. It is aided by the availability of general-purpose, foundation models that contemplate a variety of market applications. This is the case in key sectors of the life sciences, from medicine to physics, chemistry, and materials science[5].

All these innovations could help address various global challenges, but require data, compute, advanced AI skills, and a combination of excellent domain-specific skills and computer science. Keeping these solutions open and replicable is of course a formidable accelerator of democratised science and as such could lead to greater incremental innovation, as well as faster diffusion through reduced distribution and deployment costs.

Many of these advances admittedly originate from the military sector, where R&I has been heavily funded, especially in countries like the US and China. The latter is a good case in point for the opportunities and dangers created by open-source solutions in general-purpose technologies. For example, researchers from the Academy of Military Science of the Chinese People's Liberation Army were able to reuse the code of Meta's Llama, released as open source, to develop ChatBIT, a model fine-tuned and optimised for dialogue and question-answering tasks in the military field. It comes close in performance to OpenAI's ChatGPT-4. In the civilian space, DeepSeek R1 approached similar outstanding performances by using older Nvidia Chips and drastically reducing training and development costs. This, in turn, has led to a vibrant debate as to the need to distinguish research in the public interest from security and defence applications, where the openness of data and source codes may often be seen as potentially harmful.

An important aspect to consider when preparing for FP10 is that **openness (of data, source codes, and research results) is crucial** for making the most of R&I resources to tackle global challenges. As widely recognised in the literature and by international organisations such as UNESCO, approaching global challenges requires openness in defining the problem (e.g. co-creating the research process with global communities could significantly increase the uptake and fitness-for-purpose of solutions sought by

[5] Examples abound, ranging from rapid drug design (InSilico Medicines) to AI-driven development facilitated by the fast-scanning of compound libraries and literature reviews (ISM001-055), and the well-known example of predictive modelling of protein and drug molecule conformations (AlphaFold, Pfizer). And the past few years have witnessed the emergence of deep-learning-enabled AI-derived discovery of novel antibiotics like Halicin (2020) and Abaucin (2023). DeepMind's GNoME + A-Lab predicted over 200 million protein nanomaterials and validated 41 novel materials in just 17 days through automated lab systems. Reliance on joint AI+HPC pipelines led to screening over 32 million candidates in under 80 hours, identifying solid electrolytes for batteries and synthesising the top ones. AI-assisted robotic experimentation led to breakthroughs in fuel-cell catalyst development – significantly faster than manual lab trials. Similar examples are emerging in practically all sectors of the life sciences and engineering, prompting R&I policy to account for much faster, agile and effective models of scientific discovery and translation of research results into readily deployable innovations. Developments in 3D printing further help speed up the R&I process, for example via high-throughput prototyping and sector-specific solutions such as precision bioprinted drugs and devices.

R&I). It also calls for the availability of the data collected and used in the research process. While R&I for industrial competitiveness may require rather closed intellectual property provisions to enable an optimal combination of industrial property (e.g. in patent pools), for many global challenges opening up the research process and making results openly available enhances research effectiveness and speed.

Likewise, especially for global challenges, international R&I can more easily lead to widespread diffusion. For example, involving communities of innovators already at the early stage of R&I can significantly shorten the time to market. This of course requires (beyond openness) sufficient trust between the players involved in the R&I process that the technology and knowledge transfer will work properly and that the solutions generated will reflect the needs identified by the ultimate recipients and beneficiaries.

Against this background, it seems almost inevitable that in the current geopolitical context, the European Commission is trying to separate the R&I expected to contribute to defence and industrial competitiveness from that for tackling global concerns. The latter needs to be increasingly globalised and linked to the downstream deployment of innovative solutions through a new R&I cycle for global challenges. This is why in our recent report, *Towards an Ambitious FP10*, we recommend clearly separating these two workstreams in the upcoming FP10, alongside other reforms aimed at capturing the changes occurring in the scientific enterprise.

Furthermore, reviewing and scaling up the Global Gateway, in line with what was recommended in the Commission's Communication on the road to the next multiannual financial framework, could do more than help deliver on EU strategic and economic security interests. It could also strengthen mutually beneficial partnerships, aligning the priorities of both the EU and partner countries. This was echoed by a multi-stakeholder expert survey conducted by the European Parliament Research Service in 2024, which ranked the Global Gateway's 'responsiveness to partner countries' priorities' as the most relevant source of uncertainty.

2.2 CREATING THE PRECONDITIONS FOR GLOBALLY IMPACTFUL RESEARCH: FOUR MAIN ACTIONS

Based on the above, in FP10 the European Commission will have to make the most of a potentially limited budget, knowing that future solutions to global challenges may entail a mix of artificial and collective intelligence, advanced data-driven solutions, and collaborative schemes with a global scope and global participation. This leads to four main actions that appear to be essential in view of the post-2027 budget, and which have both internal and external consequences for the EU.

First is the **need to provide for suitable infrastructure to boost innovative and data-driven research**. To attract the best talent and research projects, and compete in the development of cutting-edge solutions, Europe needs to lead in developing a full technology stack for research. This includes the availability of AI (giga)factories, providing advance compute for researchers seeking to design, train and deploy advanced AI solutions. In addition is the European Open Science Cloud (EOSC), a dedicated data space for researchers enabling collaboration, aimed at, inter alia, supporting social and economic innovation and the Sustainable Development Goals (SDGs). Another important element will be the availability of trustworthy AI solutions optimised for science, embedded into platforms like the EOSC and supporting critical applications such as federated search, data classification, summarisation, and smart assistants across scientific domains.

The European Commission is currently finalising its strategy for AI in science, which will hopefully lead to an acceleration in the deployment of this infrastructure. Notably, global collaboration on R&I involves working to jointly develop infrastructure outside the EU as well, in partner countries. On this point the recent Communication on the International Digital Strategy contains important announcements, such as the intention to deploy AI factories outside the EU, connected to the network of EU AI Factories. It notes the intention to couple the availability of infrastructure with access to AI models and algorithms, 'in particular on projects relating to AI for the Public Good (e.g. tackling climate change and supporting the clean transition, improving healthcare or agriculture)'.

Second, there is a need to boost the availability of conventional and non-conventional **data for research**. In this area, the EU has traditionally been very active, providing access to biomedical research (e.g. ELIXIR and BBMRI), data for climate modelling and energy transition (Copernicus and ENES), data for agricultural optimisation and food security, etc. These data have to be made fully interoperable, integrated into the EOSC, and combined with additional data repositories going forward. Important opportunities are emerging for Europe due to developments in the US, where the Trump administration is halting support for institutions that share data for research with the rest of the world. Contrasting the otherwise imminent 'data winter' (Verhulst, 2024), now that the US is ending support for major repositories, like those on meteorological satellite data hosted by the National Oceanic and Atmospheric Administration (see Section 3.4 on the climate), it is essential to ensure that science continues to thrive.

Third is the need for **advanced skills**, including domain-specific competencies and AI ones[6]. In this regard, Europe is already well positioned at the international level: for

[6] As analysed in the forthcoming report by Nurski, L., Pal, S., Schneider, C. and Lazzaroni, R.M. (2025), *AI vacancies and talent in Europe*, CEPs and interface.

example, it trains more leading AI scientists than the US (Balland and Renda, 2023). However, these scientists often find academic careers in Europe insufficiently attractive due to several factors, including pay levels, a relative lack of resources to support research, technology and knowledge transfer, and constraints in setting up and managing large research teams.

Once again, for global challenges this has both internal and external action consequences. The European Research Area (ERA) Act, expected in 2026, will embed into EU law key principles such as researcher mobility, open science, and cross-border cooperation. But it will also have to encourage a greater expansion of the ERA to partner countries, including LMICs, so that skills are created outside the EU, to better respond to global challenges through global collaborative research efforts. The ongoing Union of Skills agenda at the EU level should ensure coordination with the ERA Act and the research and education pillar of the Global Gateway. Importantly, skills related to R&I must go beyond purely technical knowledge and competencies, to embrace analytical skills and multi-disciplinary thinking – as well as the abilities to connect the dots, reframe problems and reformulate relevant questions. All of these can be addressed with the help of modern data science.

Fourth, and finally, to complete the framework for boosting its ability to deal with global challenges the EU needs to thoroughly **rethink the way it approaches international cooperation.** It must adopt measures aimed at boosting its ability to join large-scale, mission-oriented initiatives that leverage data, AI, multi-disciplinary domain knowledge and multi-stakeholder cooperation to make speedier progress towards much-needed global solutions. Over the past few years, deeper R&I cooperation with other countries and regions has advanced, especially in the form of greater co-creation of R&I priorities with partner regions (e.g. the Africa Union, ASEAN and Mercosur). That said, multi-stakeholder R&I partnerships require more than intergovernmental cooperation or a mere focus on deployment. The future ERA should include private donors and philanthropies alongside national R&I agencies, in an effort that would once again provide both internal and external action benefits.

3 FIVE AREAS WHERE EUROPE CAN MAKE A DIFFERENCE

Assuming that the European Commission takes the necessary measures to boost its contribution to global challenges, in which domains could EU action make a real difference? Below, we illustrate the need for action and possible future priorities in five different areas: women's health, mental health, the digital public infrastructure, climate and biodiversity, and trustworthy AI.

3.1 WOMEN'S HEALTH

The field of women's health is wide-ranging and complex. Significant gaps in data, investment and focus remain. Women are a heterogenous, diverse population that experience unique social, health, and biological matters throughout their lives. Historically, research on women's health has concentrated on reproductive health, which limits our understanding and capacity to respond to the full scale of the problem (*The Lancet*, 2023). This focus on sexual and reproductive health is vital, considering the disproportionate burden of HIV and other sexually transmitted infections and continued high rates of maternal mortality among women and girls in LMICs. Even so, it is also necessary to broaden the scope of research on women's health in the context of global health challenges and the transitioning burdens of disease (WHO, 2025).

The prevalence of non-communicable diseases among women during their prime adult years is a growing concern, impacting their productivity and the broader economy (NCD Alliance and International Diabetes Federation, 2011; Tempkin et al., 2023). In the EU, women face a higher incidence of depression than men, with 8.7% of women experiencing chronic depression compared with 5.5% of men – a trend consistent across all EU Member States (Figure 1)[7]. Furthermore, women in the EU, particularly older adults, face high rates of chronic diseases such as arthritis, neck and back problems, and high blood pressure[8].

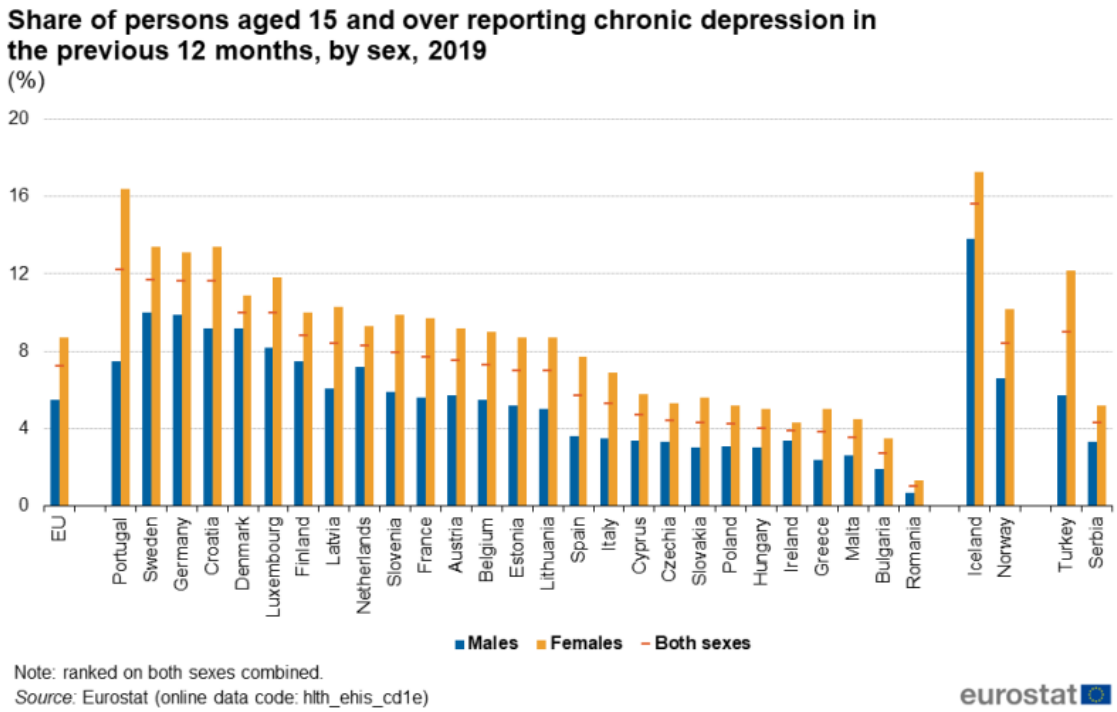
It is essential to consider the differences between men and women when designing solutions to address the underlying risk factors, prevention, progression, and management of disease. Women experience unique health conditions, including menstruation, menopause, and pregnancy, which can have significant physical and mental health implications. However, our understanding of these implications in relation to health development and treatment remains limited[9].

[7] See Eurostat, 'Mental well-being and social support statistics'.

[8] See Eurostat, 'Ageing Europe – statistics on health and disability'.

[9] See the Innovation Equity Forum (2025), *Women's Health Innovation Opportunity Map 2024 Progress Report*.

Figure 1 – Chronic depression in the EU



Research bias persists in a number of ways. Women of childbearing age are often excluded from clinical trials. Medical advancements and technologies are developed on assumptions based on the physiology of men. Implementation of innovations is hindered by inequities such as gender norms and the gendered digital divide[10] (see also Dell'Aquila et al., 2025; National Academies, 2025). The ongoing challenges posed by current risks to global health security, such as climate change and antimicrobial resistance, further underscore the need for dedicated investment and a strategic focus on women's health in the EU and globally. This is due to the inequitable exposure of women to risks and vulnerabilities (Bengtsson 2022; WHO, 2024; Sorensen et al., 2018; Barasa, 2024).

Furthermore, the health of women is greatly affected by the wider environment. It is widely acknowledged that health and well-being are influenced by social, economic, environmental, and biological factors, which are experienced differently by men and women (McKinsey Health Institute, 2025). Investing in women's health is intrinsically an investment in more robust and resilient systems. A 2024 report by the World Economic Forum and McKinsey Health Institute found that increasing investment in women's

[10] See also EUI, 'FEMETRICS, Visible Women: gender, data, social Europe'.

healthcare could add USD 1 trillion to the global economy each year by 2040, highlighting the major economic benefits of this investment.

It is critical to consider gender and sex differences in all areas of health, including medical research, pharmacology, and public health programming (Peters, 2016). The absence of comprehensive data hinders the ability to formulate effective policies and responsive programming aligned with the unique needs of women. There is a dearth of data across the realm of women's health (di Lego, 2023; WEF 2024; , Women's Health Opportunity Map 2023). While there is an increase in global and regional initiatives to address this issue, such efforts are often siloed, resulting in limited success (*The Lancet*, 2023). In 2020, just 5% of global research and development funding was allocated to women's health, with the majority (4%) focused on cancer research and the rest dedicated to fertility research (*Nature Reviews Bioengineering*, 2024). This narrow scope ignores other pertinent health issues that affect women at increased rates, like autoimmune diseases and depression (Tempkin et al., 2023). Other prominent conditions, such as heart disease, present differently among women and men, continue to be underfunded (*Nature Reviews Bioengineering*, 2024; Tempkin et al., 2023).

A progress report released a year after the *2023 Women's Health Innovation Opportunity Map*, highlights ongoing challenges despite some advancements. Key gaps remain, including insufficient gender-specific health data in both high-income countries and LMICs, limited market incentives for investing in women's health solutions, persistent funding shortages, and a lack of diverse stakeholder participation in shaping national and global health priorities. However, there is also evidence of progress, as demonstrated by EU initiatives, such as the FEMETRICS project, which is funded by the EU's Widening Europe Programme and focuses on closing gender data gaps in official statistics.

Research on women's health aims to understand and identify effective prevention, treatment, and management measures across the life course for holistic health and well-being. **Horizon Europe currently does not have a category for women's health** but rather integrates 'gender and intersectional research' into different clusters of work, including under pillar 2, cluster 1 on health and cluster 2 on culture, creativity, and inclusive society. Examples of women-specific research projects include those on endometriosis (FEMaLe), breast cancer (REBECCA and MammoScreen), and cardiovascular disease prevention for middle-aged women (CARAMEL). Despite building momentum, there is currently no funding for menopause research under Horizon Europe, and areas like mental health, which disproportionately affect women, receive insufficient funding, as discussed in Section 3.2 (*Nature*, 2025; *European Journal of Psychiatry*, 2020).

The US government is unlikely to provide the needed boost, even if the highly successful Women's Health Initiative at the National Institutes of Health seems to have been spared

by the 'chainsaw' of Trump cuts for now. By contrast, the EU is well positioned to step up its efforts in this crucial domain. To address ongoing gaps, it is essential to allocate **increased funding to conditions that are specific to women**, diseases that impact women differently from men, and those that have historically been under-researched. Investing in research and research infrastructure for women's health is critical to developing evidence-based policy in the EU and therefore cannot be overlooked in the next phase of the EU Framework Programme (*The Lancet*, 2023; Peters, 2016). Among the actions recommended, the Commission should explicitly **include women's health research in FP10,** and launch a dedicated **multistakeholder partnership for women's health**, based on an appropriate reconceptualisation of this important R&I domain (something we at CEPS are doing with the 100 Questions initiative on women's health innovation).

3.2 MENTAL HEALTH: TOWARDS A GLOBAL MULTI-STAKEHOLDER PARTNERSHIP?

Mental health is increasingly emerging as a global health problem and policy matter. It transcends national boundaries, and is exacerbated by global stressors such as climate change, health crises, economic and political instability, and forced displacement (Patel et al., 2018). For example, in the first year of the Covid-19 pandemic, there was a 25% increase in cases of depression and anxiety worldwide, with women and younger people being more affected (WHO, 2022). Mental disorders, neurological disorders, self-harm and substance use disorders accounted for about 12% of the global disease burden[11] in 2021, surpassing both cancer and Covid-19[12]. Depressive disorders and anxiety disorders were the second and sixth causes of years lived with disability in the same year (*The Lancet Psychiatry*, 2024). Very importantly, deteriorating mental health can also affect a person's physical health (e.g. by weakening the immune system) and reduce productivity (Dinarte-Diaz, 2023; Patel et al., 2018).

Mental health can also be considered a global public good, in the sense that it concerns not just the population with biomedical mental disorders, but all of society, being a universal attribute of the overall health of people in all countries (Patel et al., 2018). Therefore, global collaboration on mental health research and policy intervention is crucial[13]. The World Health Organization (WHO) has identified five priority areas for

[11] The 'burden of disease' is the sum of mortality and morbidity, measured by a metric called DALYs (disability adjusted life years). One DALY equates to one lost year of healthy life, caused by either premature death, disability or disease. Source: the Institute of Health Metrics and Evaluation.

[12] Data from 'Global Burden of Disease', the Institute for Health Metrics and Evaluation.

[13] The Sustainable Development Goals include mental health as an indicator: Target 3.4 sets to 'reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being'. In addition, the WHO has launched its Comprehensive Mental Health Action Plan 2013-2030, which includes targets for mental health research.

mental health research, based on recommendations by the Lancet Commission on Global Mental Health:

- identification of root causes
- prevention and early interventions
- treatment and access to care
- awareness raising
- transformation of health systems and policies.

Research plays a pivotal role in enhancing knowledge and identifying solutions to address mental health problems, and coordination between researchers, policymakers and funders is critical (Patel et al., 2018).

Despite some policy momentum, current **progress towards WHO targets is considered unsatisfactory** (WHO, 2021). Global research on mental health remains suboptimal. High development costs, unfavourable regulatory environments and a limited market (due to limited patient access caused by a shortage of prescribers) are the major non-technical barriers to global mental health R&D (Amato et al., 2024). Globally, funding for mental health research is disproportionately low compared with other diseases despite the high prevalence of mental disorders. It is often focused on basic research, with the majority of investment coming from high-income countries (90%) (Amato et al., 2024).

Recent political changes have further exacerbated the challenges facing mental health research. The US has historically been the leader in mental health R&D, accounting for 39% of funded grants globally (Amato et al., 2024; Woelbert et al., 2021). However, this leadership is not guaranteed. The US National Institute of Mental Health – the world's leading research institution on it – has already faced funding cuts. It is likely to be merged with three other institutions of the National Institutes of Health into the 'Brain' category, potentially leading to a looser US focus on mental health[14]. Funding cuts and the remodelling of mental health R&D governance in the US would leave large gaps in the already underfunded global enterprise of mental health R&D, presenting both a major challenge and a significant opportunity for the EU to step up.

There is a solid basis for **EU global leadership in mental health R&D**. In terms of infrastructure, it has world-class universities and research institutions specialising in neuroscience, psychology, and psychiatry (such as the Max Planck Institute in Germany or the Karolinska Institutet in Sweden). The EU's research networks (e.g. ERA-NET NEURON) help to coordinate efforts across several countries.

[14] See 'Brain Science: Merging the Institutes and Centers (ICs) of the NIH', *Franklin County Free Press*, 25.3.2025.

In policy terms, EU leaders have set an ambitious mental health agenda. The European Health Union, unveiled in November 2020, includes mental health as one of its four key areas of action. The European Commission adopted a Communication on a comprehensive approach to mental health in June 2023, which includes 20 flagship initiatives and leverages EUR 1.3 billion from various funding instruments. In this respect, Horizon Europe and EU4Health have been the main funding sources for mental health research at the EU level. And some of the world leaders in mental health research funding, including the UK, Canada and New Zealand, have now associated themselves with the Framework Programme. This may bring additional research on important aspects such as foundational research, aetiology (i.e. the study of the causes of mental health conditions), treatment evaluation and disease management (Woelbert et al., 2020).

Finally, the EU has also been active, with some of its Member States, in advocating support for the mental health of specific groups. For example, in the context of the Global Compact for Refugees, the European Commission, Germany and the Netherlands have partnered with the Amal alliance – with support from the UNHCR and WHO – in the multi-stakeholder pledge on 'Fostering Mental Health and Psychosocial Wellbeing'. This is to be finalised at the end of 2025 with the meeting of high-level officials. The pledge has received 98 contributions to date.

The above building blocks pave the way for the EU to **strengthen its global leadership in mental health research through FP10,** in numerous ways.

- There is a wide window for FP10 to address mental health R&D from a **whole-of-society perspective,** addressing it as a global burden. This broadening of mental health research is in line with increasing recognition of the root causes of mental health disorders: not only genetic but also social factors can affect mental health conditions. There is a growing need for mental health R&D to go beyond traditional disciplines such as neurobiology, neuroscience and genetics. FP10 could support research that highlights the link between society's mental health and global stressors like climate change, pandemics and food insecurity (Charlson et al., 2021; Kola, 2020; Meherali et al., 2021; Osei-Owusu et al., 2024; Vergunst & Berry, 2022).

  FP10 research could also promote interdisciplinary approaches to mental health, drawing on other fields such as political science, economics, environmental studies, education, arts and culture (Patel et al., 2018). These could build on existing research under Horizon Europe's Comprehensive Approach to Mental Health – for instance, studies linking mental health with online arts and culture, promoting school-based interventions, or tackling psychosocial risks at work.

- FP10 research could also respond to the unmet need to address **mental health challenges in vulnerable populations, particularly those living in LMICs**. The market for mental health R&D in the Global South is limited due to difficulties in access to treatment. LMICs face particular obstacles in terms of health workforce, hospital facilities, insurance coverage and treatment affordability, as well as the persistent stigma around seeking treatment due to discriminatory attitudes towards people with mental illness (Amato et al., 2024; WHO, 2021). As a result, 90% of people with a mental health problem in LMICs do not have access to treatment, compared with 50% in high-income countries (Amato et al., 2024).

  Meanwhile, around 90% of research grants related to mental health comes from funders in high-income countries (Woelbert et al., 2021). This model of mental health R&D currently has several shortcomings, such as non-representative trials (partly due to unavailable/poor patient databases in LMICs) and lack of real-world evidence on treatment effectiveness in LMICs (Amato et al., 2024; WHO, 2021). Research to understand the causes of access inequalities – based on representative data, involving researchers from LMICs and taking into account the local context in LMICs – could unlock a huge scope for discovering mental health solutions globally.

- **Digital technologies** are helping to make mental health solutions more accessible on a global scale, alleviating the shortage of mental health services or addressing the stigma associated with seeking care (Huang et al., 2024; Smith et al., 2023; Stade et al., 2024). For example, wearable sensors can help track mental health symptoms and large language models are increasingly being used as alternative tools for psychotherapy. Virtual reality and augmented reality in the metaverse may also be useful for treating mental health disorders (Patel et al., 2018; Usmani et al., 2022).

- The US is currently leading research on digital and AI-based mental health tools. For example, around 60% of the approved and pipeline digital therapeutics come from the US (Amato et al., 2024). Yet the EU's approach could add value by attending to issues such as data privacy, liability, transparency, and adaptation of digital tools to low-resource settings. This is even truer today as the US seems to be backtracking from regulatory measures aimed at securing trustworthy AI solutions. Meanwhile, the EU is still quite focused on ensuring that AI and other digital technologies are legally compliant, ethically aligned, and in particular oriented towards societal and individual well-being.

- Through FP10, the EU could also lead **research on transforming health systems and mental health policies**. For example, EU countries like Finland, Sweden, the Netherlands, and France have innovative approaches to mental health that could serve as models for other regions. These include the Open Dialogue Model in Finland,

free youth therapy in France, or the Minddistrict platform on e-health in the Netherlands. In Sweden, debates on children's screen time have led to a proposal for a national ban on mobile phones in schools. Part of the research funded under FP10 could aim at analysing success factors and shortcomings in these cases studies, which could be used for best practice.

- Finally, it is crucial that FP10 aligns its **efforts on mental health research with initiatives led by multi-stakeholder partnerships**. For example, the Wellcome Foundation's Mental Health Programme studies early intervention in anxiety, depression and psychosis. The Gates Foundation targets the mental health dimension through its Global Health, Global Policy and Gender Equality divisions. Grand Challenges Canada and UKaid have jointly launched the Global Mental Health Programme to address the mental health needs of younger people in LMICs. Finally, the International Alliance of Mental Health Research Funders (IAMHRF) operates as a collaborative network of research funders.

3.3 THE DIGITAL PUBLIC INFRASTRUCTURE: AN AGENDA TO REALISE THE PACT FOR THE FUTURE

The concept of digital public infrastructure (DPI) has gained increasing prominence globally. This has been particularly noticeable since India's G20 presidency in 2023. There, it was defined as 'a set of shared digital systems that should be secure and interoperable and can be built on open standards and specifications to deliver and provide equitable access to public and/or private services at societal scale'. The UN Development Programme adds that these services should be governed by enabling rules to drive development, inclusion, innovation, trust, and competition, while respecting human rights and fundamental freedoms.

Essentially, DPI can be understood as an intermediate layer in the technology stack, positioned between the foundational physical and logical layers (like internet connectivity, devices, and cloud infrastructure) and sectoral applications (such as e-commerce and telehealth) (World Bank, 2023). The G20 has identified three fundamental components of a DPI: digital ID, digital payments, and data exchange.

The development of a robust DPI is considered important for the EU for several reasons. For a start, it is seen as a way for countries to achieve sovereign solutions and ensure that specific layers of the internet architecture align with national values and principles. The EU in particular has witnessed a gradual loss of value, data, and investment to other world powers. The rise of DPI could be the means to restore an effective balance between public spaces and private incentives in the digital environment.

A well-developed DPI can bring significant efficiency by digitalising public services, leading to substantial savings and improved benefits for the public. For instance, a functional e-identity, wallet, and data exchange layer can facilitate fee-free instant payments and privacy-friendly data spaces. It can also enable 'zero contact administration' between governments and businesses, streamlining procedures and objectives like 'ask only once'. Extending full digital ID coverage, a component of DPI, could unlock significant economic value, potentially boosting GDP. A McKinsey study on seven countries in 2019 found that extending full digital ID coverage could unlock economic value equivalent to 3-13% of GDP in 2030. Furthermore, DPI can foster innovation and growth by encouraging collaboration between the public and private sectors and by bridging the digital divide. It can enhance financial services, healthcare, and government data sharing, leading to broader societal benefits and significant socioeconomic advantages, including estimated GDP growth.

From the perspective of resilience and technological sovereignty, DPI, especially when based on open-source software and open standards, can reduce a country's dependence on single providers, such as large-scale cloud-based giants. Federated and decentralised architectures with interoperable services can offer end-users alternatives to dominant solutions. A robust DPI also provides the option to move services entirely online during emergencies, as demonstrated by countries during the Covid-19 crisis and Ukraine in response to the Russian invasion. During the Covid-19 crisis, countries with robust DPI reached 51% of their populations with public services, far exceeding the 16% reached by other countries (Bandura et al. 2024).

Inclusion is another critical aspect, as DPI can improve the precision and reach of service delivery, benefiting marginalised populations. Examples like Brazil's Pix system demonstrate how DPI can bring previously unbanked individuals into the formal financial system. Finally, DPI has the ambition of self-sovereignty and user empowerment, aiming to give end-users control over their data and the ability to choose providers in a decentralised environment. This addresses concerns about the power concentration and surveillance capitalism that have emerged in the digital space.

To establish itself as a leader in DPI, the EU must actively pursue several strategic avenues. A crucial step involves facilitating a concrete, **multi-stakeholder standardisation effort**. This will provide legal clarity on **data quality and management** and set the standards governing data flows, digital identity, wallets, and overall data interoperability – encompassing both technical and semantic aspects through common data models and vocabularies. Simultaneously, through FP10, the EU should launch a specific initiative on **data stewardship** to cultivate the necessary skills for data collection, storage, reuse, and protection across the EU. This initiative should also foster a **'social licence' for privacy-preserving data circulation** within the single market. Furthermore, the EU needs to

reiterate its commitment to **secure, user-centric, open-source solutions**. While the dedication to open source varies among Member States, a unified and stronger commitment is required, alongside efforts to enhance the security of these solutions.

FP10 and the EU's growing network for R&I cooperation could become an engine of future development powered by the DPI around the world. Not surprisingly, the UN Pact for the Future puts significant emphasis on the DPI, and the recently published EU International Digital Strategy also gives the DPI a very high priority. In this vein, the DPI and related technologies that will make up the future EuroStack appear to be perfect candidates for establishing a new continuum between R&I cooperation and international partnerships. Several areas of the DPI would require advances that collaborative R&I could achieve faster and more effectively than a web of individual research and innovation actions, as outlined below.

- On **security and privacy by design**, the challenge is balancing openness with robust cybersecurity and data protection. Collaborative R&I could aim at developing privacy-preserving architectures (e.g. zero-knowledge proofs and differential privacy), securing identity verification without surveillance, and enhancing resilience to cyberattacks and insider threats in resource-constrained settings.
- On interoperability and standards, it is essential to make progress on creating **modular, interoperable components** across layers of the DPI stack (identity, payments, and data exchange). Research is needed to develop common protocols and Application Programming Interfaces that allow cross-platform and cross-border compatibility, achieve semantic interoperability, and bridge legacy systems with modern DPI architectures.
- Likewise, further progress is needed on **openness and vendor neutrality**. Here, the main task is ensuring that DPI components are open-source and auditable, and that they avoid vendor lock-in. Yet for this to be fully achieved, R&I collaboration would be needed to develop tools for automated code auditing and the governance of open-source components, along with suitable maintenance models for open infrastructure.
- The future DPI should also provide for **inclusive and equitable access** to fit the ambition to provide a public good. The opportunity could be seized by designing a DPI that serves marginalised groups, including those with no smartphones or digital skills. This in turn requires human-centric interface designs (voice, local languages, and low-bandwidth UX), but also assistive technologies and accessibility for users with disabilities, as well as offline-first or low-connectivity DPI services.
- In terms of **institutional and governance complexity,** collaborative R&I would be needed to explore governance structures that are transparent, accountable, and

adaptable to different contexts. This may require legal or 'RegTech' frameworks for accountability, grievance redressal, and auditability. It may also call for cross-jurisdictional governance models (especially in federated systems) and joint regulatory sandboxes for testing DPI innovations safely.

- A fully-fledged DPI also entails tackling problems of **mistrust, misinformation, and low digital literacy**. This takes targeted campaigns to raise awareness and build trust in digitally provided services, as well as social science research on DPI adoption across communities, and misinformation-resistant design principles.
- Key innovations are also needed on **data governance and sovereignty**, especially to enable data management sharing between DPI layers (e.g. health, education and finance) while maintaining control over data (re)use. Collaborative R&I should start from existing consent management protocols (e.g. India's DEPA model), exploring federated data governance architectures and AI/data ethics frameworks that scale with DPI.
- Future pervasive DPIs should perform **at population scale under real-world conditions**. This requires well-defined performance benchmarking and stress testing methodologies, scalable cloud-native and edge-computing infrastructure, and advanced fault tolerance, especially in disaster-prone or low-connectivity areas.
- Finally, it is important to ensure that DPI is trustworthy in the broadest sense. This, according to the EU definition (borrowed from the AI domain), might entail a three-pronged approach, where the DPI solutions are legally compliant, ethically aligned, and socio-technically robust. Collaborative R&I could ensure that the DPI is aligned with international norms and enables cross-border interoperability (e.g. for remittances). It could foster compliance with frameworks such as the EU's General Data Protection Regulation and the African Union Data Policy, and cover portable identity and know-your-customer aspects. Research on **digital sovereignty** in LMICs could usefully complement this framework.

All these could be aspects of an international moonshot on the DPI, which in turn could lead to enormous positive spillovers for developing economies around the world, helping them partake in the burgeoning digital and AI-driven economy. It would require leadership on the EU side, as well as putting together a network for intensified cooperation ventures with public and private players from all over the world. Key performance indicators and milestones would track progress on the way to a fully-fledged, globally pervasive digital infrastructure. By undertaking these comprehensive steps, the EU could overcome fragmentation, leverage its strengths, and establish itself as a global leader in developing and deploying a secure, interoperable, user-centric, and open DPI.

3.4 CLIMATE AND BIODIVERSITY

Recent events have made the EU's role in setting the global agenda for sustainable development more urgent and important than ever. This is especially true with respect to biodiversity and the climate, in which LMICs are key stakeholders. But some in the global community – notably the US, UK, Australia, and New Zealand – are backpedalling on climate action due to fiscal pressures, political opposition, outright denial, and perceived difficulty of implementation. By contrast, **Europe is still forging ahead**. It took the lead at the COP29 summit in November 2024 in brokering a deal for global financial flows from developed economies towards LMICs for climate finance in service of climate mitigation and adaptation, as outlined in the Paris Agreement. This includes a plan to present a 1.5 C-aligned nationally determined contribution from the EU, work to finalise carbon market rules to support environmental integrity, and new partnerships to reduce methane emissions and transition away from fossil fuels.

Europe has grown more credible as a leader of an **international 'coalition of the willing' to tackle climate change**, possibly including the most reluctant, yet leading, emitters. In July 2025, the European Commission recommended reducing the EU's net greenhouse gas emissions by 90% by 2040, relative to 1990, as set out in von der Leyen's political guidelines for 2024-2029. This follows the 2030 emissions reduction target of at least 55%. This shows the EU's determination to provide predictability and stability for investments in the EU's clean energy transition and drive industrial competitiveness. Such a target also has external action consequences, as shown in major strategy documents such as the Clean Industrial Deal.

Against this background, the **developed world is reducing its ambitions on climate action** and the pledges it had made to LMICs for climate transition funding amid a large-scale pullback in overseas development assistance (ODA) from the world's leading donors. This deals a double blow to sustainable development in LMICs – and likely the provision of global public goods on which the SDGs depend.

At the same time, this has created space for programmes other than traditional development aid, particularly those that provide opportunities for developed countries to support investment in their own domestic industries to meet shifting national priorities. R&I cooperation with LMICs is gaining new relevance as the EU seeks to diversify its global partnerships to augment its soft power. It further offers prospects for recruiting new talent for critical industries addressing sustainability challenges and developing critical capabilities in industries supporting the provision of global public goods to safeguard the environment and biodiversity. Engagement with LMICs has traditionally consisted of ODA in the form of grants and investment to provide vital services and capacity building. However, geopolitical uncertainty and domestic political

frictions are prompting donors around the world to reevaluate these traditional aid modalities.

The abrupt **restructuring of USAID**, formerly the world's largest bilateral donor, demonstrates this phenomenon clearly. Although it was touted as a strategic shift, the dismantling of USAID represents a clear pivot towards a transactional approach to development cooperation, favouring financial investment in programmes that advance donors' national security, strategic, and economic interests. USAID's traditional humanitarian assistance programming for global health, food security, and disaster response has largely been kept but scaled down and folded into the State Department. Overall, more than 80% of USAID grants and contracts were terminated for convenience as of March 2025, representing 27 billion 76 billion that will not be deployed[15].

Meanwhile, the EU is not immune to the forces driving this retrenchment on ODA. Despite ambitions, the EU is also facing headwinds on spending more on ODA due to shifting EU priorities towards strategic autonomy and increased defence spending. The OECD estimated that global ODA is projected to fall in 2025 by 9 to 17%, after a drop by 9% in 2024, and with a further decrease expected in 2026, mostly due to the restructuring of USAID. While the EU institutions remain committed to maintaining the EU's level of ODA spending, there are tensions with Member States. Many of the EU's largest Member States, including Germany, France, Sweden, and the Netherlands, have announced significant cuts to their ODA commitments[16] due to budgetary pressures and rightward shifts in domestic politics. While this trend has accelerated since Donald Trump was re-elected to the White House, it was well afoot beforehand, driven in recent years by changing geopolitical power dynamics, new military conflicts, global health emergencies, and inflationary pressures from supply chain disruptions during Covid-19.

It is becoming clear that that EU institutions and Member State governments need make a compelling case to the public that international cooperation can and must serve multiple purposes. It must ensure security at home and abroad, protect the environment, and promote sustainable development, which includes the climate agenda. According to the CEO of the French Development Agency, the current system of ODA was worked out decades ago. What happens next is 'just consistent with what the world has become, and

[15] See *Politico* 26.3.2025, https://www.politico.com/news/2025/03/26/documents-reveal-scope-of-trumps-foreign-aid-cuts-00252918 accessed 28.3.2025.

[16] Source: European Parliamentary Research Service, https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/769540/EPRS_ATA(2025)769540_EN.pdf, accessed 26.3.2025.

we need a new architecture. We need to turn from assistance to investment – sustainable, inclusive investment.'[17]

This trend towards investment-as-ODA has created both opportunities and challenges for the EU as it attempts to grapple with a competing set of domestic priorities and international cooperation to serve its own needs, build new alliances and ensure that global public goods are safeguarded. The opportunities are consistent with the EU's current sustainable investment policies and commitments to climate action, sustainable development and decarbonisation. Still, the challenges are that the EU has relatively few tools for international cooperation in the form of today's programmes to execute this agenda. But more importantly, the few tools and programmes leveraging R&I for sustainable development that it does have cannot absorb the volume of ODA currently (or formerly) deployed across a wide range of other programmes in development cooperation. This suggests that new competences need to be created, and existing ones should be further developed.

The Global Gateway is an existing tool that could be further leveraged to mitigate the climate crisis. It was conceived for exactly the purpose of bridging the gap between sustainability and reimagined partnerships for development cooperation, and thus it could serve as a ready-made solution for building R&I partnerships for both. However, in 2025 it remains underutilised as a tool, particularly in the R&I pillar as research does not figure prominently in the recently announced list of flagship Global Gateway projects. Instead, these tend to follow the well-worn playbook of building infrastructure as the path to development in LMICs, rather than developing new avenues of engagement through R&I[18]. Although some solutions for regional climate adaptation have been developed and successfully tested at small scale, the full potential of the Global Gateway to promote the systems change and governance practices that would have the greatest impact on future climate stability has yet to be reached.

To enhance the Global Gateway's alignment with R&I and advance its strategic goals on climate action, the EU should adopt an integrated approach that prioritises knowledge co-creation, equitable partnerships, and capacity building. It should specifically support the energy transition and sustainable agriculture, as they are intertwined and the two sectors most closely linked to the consequences of climate change, requiring advancements in mitigation and adaptation to spur development in LMICs.

This approach could significantly increase the Global Gateway's developmental impact, matching investment with local needs, scientific evidence, and long-term sustainability.

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[17] Devex, https://www.devex.com/news/devex-newswire-europe-s-development-budget-balancing-act-109718, accessed 28.3.2025.

[18] Council of the EU, https://data.consilium.europa.eu/doc/document/ST-15281-2024-INIT/en/pdf

For example, in Sub-Saharan Africa, R&I could help tailor **green hydrogen systems** to industrial clusters near ports, complementing the Global Gateway's infrastructure funding. Meanwhile, Horizon Europe's Africa Initiative and Mission Innovation partnerships with African research institutes provide a model for **joint green-tech development**. These two EU initiatives target sustainable development in Africa from different angles and would be more efficient and impactful if better coordinated, especially through the EU-Africa Green Energy Initiative.

Similarly, for agriculture the EU could partner with research institutions, farmers' cooperatives, and regional and international NGOs to promote **climate-smart agriculture** adapted to local contexts. R&I cooperation under Horizon Europe and the Global Gateway could jointly support the development of **drought- and flood-resistant crops.** Initiatives on **regenerative farming systems** could help increase carbon sequestration, reduce input dependence, and restore degraded soils. Along with digital tools for **precision agriculture**, assistance in these areas would enable smallholder farmers to better manage weather-related impacts, combat pests, and use inputs efficiently.

These solutions would not only increase productivity but also reduce agriculture's climate footprint. Projects such as DeSIRA (Development Smart Innovation through Research in Agriculture), funded and implemented by the EU, multilateral donors, and NGOs, offer an attractive model for integrating R&I with EU development cooperation. This model could be emulated by closer cooperation between the Global Gateway and the R&I Framework Programmes of the DG for Research and Innovation.

3.5 ARTIFICIAL INTELLIGENCE

At first blush, **Europe would not be the most straightforward candidate to lead the world on AI**. The US and China have a clear lead in AI investment, as well as uptake in many sectors of the economy and society. Commentators and experts, and even EU policymakers, continually acknowledge that the EU must double down on its efforts to design, develop and deploy AI solutions, and not solely depend on those developed elsewhere.

The issue has grown even more urgent with the emergence of powerful AI frontier models, including generative AI models. These are mostly developed in the US and China and they provide the basis for a variety of applications in several sectors (referred to as 'general-purpose AI systems'). These models have conquered the market very quickly, while proving increasingly capable of simulating human intelligence and creativity. Yet their consumption of energy and water is soaring due to the need to process growing amounts of data. Furthermore, the persistent problem of hallucinations prevents them from accomplishing very complex tasks (Balland, 2025; Shojaee et al., 2025).

At the same time, **global cooperation on AI for the public interest,** as well as on the **mitigation of the risks of AI use** has slowed down due to the Trump administration's rejection of the scope of cooperation in contexts such as the OECD, G20, and the UN (to be fair, the previous US administration did not wholeheartedly support developments in the UN either). This is also resulting in a withdrawal of all regulation in the US, including a 10-year ban on regulation of AI at the state level. Ongoing trade negotiations have entailed pressure exerted by the US on other parties, notably the EU, to dilute or slow down attempts to regulate AI.

Developments in global AI development and cooperation are far from ideal with respect to the use of AI 'for good'. First, LMICs may not be given access to AI solutions at all or be forced to use those trained and deployed in more developed countries, with a resulting lack of ownership, as well as accuracy. Second, the interest in artificial general intelligence (AGI) is shifting global investment away from uses of AI for the SDGs (Renda, 2023). And the lack of sufficient support for initiatives involving the global community (e.g. by UNESCO or the UN Advisory Body on AI) is likely to leave AI monitoring and supervision in the hands of the G7, or even the 'G6'.

The world would benefit enormously from greater leadership on directing AI investment towards highly needed uses, rather than AGI. For example, AI could contribute to immensely important scientific breakthroughs (e.g. AlphaFold). It could also help to optimise value chains and contribute to smarter weather prediction. Furthermore, it could enhance pandemic preparedness and feed digital twins of our bodies and the planet, leading to breakthroughs in practically all fields of science and accelerating innovation in industry. All the same, it needs to be designed, developed and deployed with due care and ethical alignment, to avoid harmful bias and safety problems and to protect economic, societal and environmental sustainability.

In this respect, the EU has an advantage over other global powers. It does not shy away from regulating like the US, nor does it regulate large language models to force specific narratives, like China does. It has led the way to trustworthy AI principles (the Ethics Guidelines for Trustworthy AI published in 2019 by an independent high-level expert group). And it has tackled the daunting task of setting out a regulatory framework (August 2024) and is now paving the way for making the EU an 'AI continent' (2025). That said, Europe can only prove credible in this domain if it shifts gear on AI, by refining and advancing its science, and deepening its uptake in industry sectors and society.

As proposed already in Renda (2023), the European Commission should **launch a large-scale initiative on AI to achieve scientific breakthroughs** and then apply these breakthroughs in science, industry (robotics), and public services (complementing work on the DPI, on which see Section 3.3). Particularly for scientific breakthroughs, the

Commission should aim to go beyond current large language models to explore alternative ways to achieve trustworthy AI, rather than AGI. The premise for this observation is twofold: on the one hand, today's powerful, energy-, water- and data-hungry generative AI models, however impressive, are not likely to respect any of the seven requirements of trustworthy AI; on the other hand, many of the applications that will be needed in science, industry and public services may not require generative AI, but rather other, more reliable forms of AI, to which current market leaders are paying less attention.

In the future, FP10 could launch a large-scale collaborative initiative on AI (sometimes referred to as 'CERN for AI'). This would enable researchers from Europe and beyond to work on a joint mission to (i) develop trustworthy AI, (ii) lay down the preconditions for its diffusion (data, privacy-preserving technologies, etc.), and then (iii) pave the way for solutions to be deployed in key sectors such as science, industry and government.

Traces of this initiative are currently found in the European Commission's Competitiveness Compass (which announces a 'CERN for AI', expected to concentrate on exactly the three areas outlined above). They can also be seen in the EU's International Digital Strategy; however, it takes a rather narrow approach, mostly devoted to deploying AI solutions outside the EU and attracting talent to Europe. One encouraging initiative in the strategy is the prospective building of AI factories outside the EU, which would be a first step towards generating value in partner countries and moving towards a genuinely global R&I collaboration *inter pares*.

Besides scientific breakthroughs, a future EU-led large-scale initiative on AI would perhaps be the only real prospect for the global community to put AI to use on global challenges. It would echo the work done by the UN Advisory Body on AI, as well as by other UN agencies (UNESCO or the International Telecommunication Union), echoed in the UN Pact for the Future and the final declaration of the Paris AI Action Summit. It would project the EU as a leader in the global development of meaningful and responsible AI solutions for the benefit of all.

4 CAN EUROPE DO IT? SIX STEPS TO BOOST EUROPE'S LEADERSHIP IN GLOBAL R&I COLLABORATION

Europe is once again at a crossroads, between the perils of an increasingly unpredictable geopolitical landscape and a broad, yet probably brief window of opportunity to lead the world towards global sustainable development. Once again, a careful look at Europe's positioning in the global order suggests that even if European leaders took an entirely self-interested approach to FP10 and the future European budget, playing a leading role in global sustainable development would still be a compelling option. The alternative would mean confining Europe to a secluded position, with middle powers increasingly attracted by other standards, trade and economic relationships that are incompatible with EU values. In this scenario, which we termed 'wretched fortress' in a recent foresight exercise, the EU would most likely perish, and with it the dream of a peaceful and stable international order.

The road towards an ambitious and forward-looking FP10 is nonetheless full of traps and perils. Below, we offer a list of recommendations aimed at ensuring that Europe (not only the EU, but also its associated countries, notably including the UK) does not miss this once-in-a-generation opportunity.

The first big 'appointment' for the European Commission is **adoption of the proposal for the next EU budget**, or multiannual financial framework, which is set to be presented in two rounds in mid-July and mid-September 2025. There, the European Commission will have to make the initial tough choices, in particular on the balance between more inward-looking budget headings, where R&I funding will be destined for defence and industrial competitiveness, and more globally oriented R&I spending.

The Commission's proposal will clarify whether FP10, as seems likely, will remain a separate programme from the otherwise all-encompassing 'Competitiveness Fund'[19]. Also to be clarified is whether specific institutions such as the European Research Council and the European Innovation Council will be maintained within FP10, and with what budget and level of discretion.

Another important part of the EU's proposal for the budget that affects FP10 is the decision on whether to abandon the programme's pillar structure. It could possibly embrace a two-pronged approach, in which industrial competitiveness and defence are separate from programmes related to global challenges. In line with our 2025 report, *Towards an ambitious FP10*, we recommend using **a new 'brain structure' for FP10,** with

[19] As discussed in a forthcoming paper by Renda, A. (2025), *Can the EU become more agile, adaptive and effective in the post-2027 budget cycle?*, Joint Research Centre, European Commission.

a cerebellum (the European Research Council and other basic research activities) and then the two hemispheres (defence and industrial competitiveness, and global challenges).

If the European Commission's proposal does not reflect this structural change, we would urge the European Parliament and the Council to introduce safeguards that would leave enough room and budget for EU institutions to advance international R&I cooperation on global challenges.

Second, assuming the brain structure is applied, it is essential that **FP10 combines excellence-driven and mission-oriented approaches** in funding basic science. Given the ongoing, pervasive impact of AI and data-driven approaches on the scientific enterprise, the otherwise open-ended work of the European Research Council in funding excellent research projects should be coupled with the launch of a large-scale **international initiative for breakthroughs in trustworthy AI.** This should be led by the EU but be open to researchers from associated countries and LMICs.

Such an initiative would be professionally steered and characterised by a 'portfolio approach', in which several alternative solutions are explored in order to ensure that measurable mid- and long-term results are achieved (i.e. a 'moonshot'; see Renda, 2023). This is essential, as explained in Section 3.5, for Europe to lead on ethical and responsible AI in the public interest and to consolidate its stewardship of global AI cooperation. It is also vital for creating a network of collaborative R&I initiatives around the world, based on trustworthy AI principles.

Third, to build a bridge between basic research and solutions with higher technology readiness levels, the European Commission should work on creating the preconditions for next-generation R&I to tackle global challenges through multi-stakeholder collaboration. Based on Section 2.2, these include:

(i) **suitable infrastructure** to boost innovative and data-driven research, including AI (giga)factories and a well-developed European Open Science Cloud;
(ii) a **dedicated data space** for researchers to enable collaboration, which boosts the availability of conventional and non-conventional data for research;
(iii) the **development and attraction of advanced skills**, including domain-specific and advanced AI competencies; and
(iv) a new **framework for international R&I cooperation**, which includes guidance on setting up multi-stakeholder, collaborative R&I partnerships.

Fourth, to effectively address global challenges, a **dedicated council** should guide efforts, bringing together researchers, EU policymakers, national agencies, LMIC representatives, donors, industry, and civil society. Backed by advisory groups, it would set research

priorities and coordinate with the EU and global partners. The European Commission's inter-DG working group, led by the DG for Research and Innovation, would ensure coherence across thematic DGs and the European External Action Service. Synergies with the Council for Industrial Competitiveness and the European Research Council would keep FP10 in sync with EU goals and scientific excellence.

Furthermore, coordination with external frameworks like the Global Gateway is essential in order to align priorities and strengthen partnerships. Greater engagement of EU delegations, Member States, civil society, and business actors abroad would boost impact and visibility. Currently fragmented, EU science diplomacy needs a common framework to address global challenges and foster collaboration with the Global South.

Fifth, the EU should collaborate with its closest partners in R&I to **launch large-scale multi-stakeholder partnerships** in areas where EU leadership is most needed, and where the complementary expertise of international donors and the private sector must be effectively catalysed for measurable, tangible impacts. In Section 3, we have identified five areas (women's health, mental health, DPI, climate and biodiversity, and AI for good), but of course the list may grow longer over time if the preconditions are in place (for example, a global initiative on tackling mis- and disinformation could be a strong candidate). In other areas, the EU could earmark funds to contribute to initiatives led by international organisations or private donors (GloPID, Gavi, etc.).

Sixth, and finally, thanks to the work of a dedicated council, these R&I initiatives could then be **directly linked to the Global Gateway and other external action initiatives** – especially if these streams of funding are combined into a new fund for the post-2027 budget cycle. This way, the EU would achieve a real continuum of actions, which links research to innovation and its deployment and diffusion, within and outside the EU. Doing this would greatly benefit Europe's competitiveness and security in the long term. It would also ensure that the EU pursues its ultimate goals, including those stated in Article 3(5) on the Treaty on the Functioning of the European Union: to contribute inter alia to peace, security, and sustainable development on Earth.

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