

A new European innovation agenda

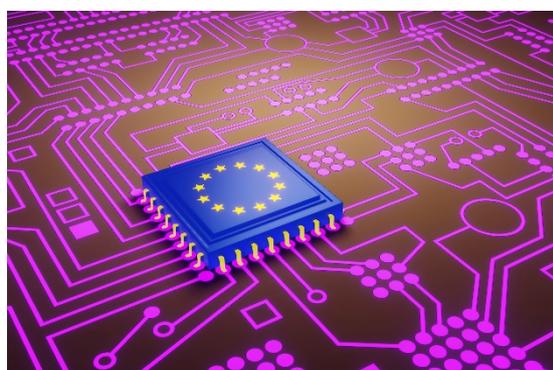
SUMMARY

Since the Lisbon strategy, launched by the European Council on 23-24 March 2000, the EU's ambition has been to become the most competitive and dynamic knowledge-based economy in the world. The growing effects of the ecological crisis, from climate change to the loss of biodiversity, digitalisation and mounting geopolitical tensions have broadened the scope of innovation policies to the transformations required by both sustainability and preparedness to crises, such as the Covid-19 pandemic.

Today, the EU's innovation performance gives a mixed picture. While the EU has managed to keep its scientific base at the forefront of the global race, it has not been able to disseminate the new knowledge, technologies and solutions created by EU actors across Member States. Consequently, since the early 1990s, the euro area's average productivity rate has lagged behind that of the United States, and the gap in productivity among EU regions signals the existence of an innovation divide.

With the adoption of a communication on a new European innovation agenda on 5 July 2022, the European Commission aims to encourage innovators to make better use of EU single market finance opportunities, as well as to attract new private and public investors to reinforce EU financial and capital markets.

The communication presents a set of legislative and non-legislative initiatives based on five flagship areas – access to finance; framework conditions for deep tech innovation; tackling the innovation divide; deep tech talents; and improving innovation policies – which cut across the von der Leyen Commission's political priorities. The initiatives will allow EU investment to be targeted to promoting scale-up of EU innovative businesses, and to provide additional cooperative opportunities for all EU actors in the fields of education and research and innovation (R&I). The forthcoming adoption of the revised State aid framework for R&I is expected to incentivise further national and regional R&I investments, thus delivering on the five flagships.



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Introduction

The United Nations (UN) Intergovernmental Panel on Climate Change (IPCC) notes in its Sixth Assessment [Report](#), 'Climate change 2022: Impacts, Adaptation and Vulnerability':

There is a rapidly narrowing window of opportunity to enable climate resilient development. Multiple climate resilient development pathways are still possible by which communities, the private sector, governments, nations and the world can pursue climate resilient development ... Innovation refers to the continuum of activities and results along the development and deployment of new or significantly improved product or business process (or combination thereof) that has been introduced on the market or brought into use. Innovation occurs in all, and across the sectors¹ of an economy.

In addition to climate mitigation and adaptation, innovation is a key driver for improving living standards (as measured as income per capita), in particular through its contribution to productivity growth, which determines an economy's output growth. Its processes and results affect people, institutions, economic sectors and countries in several ways.

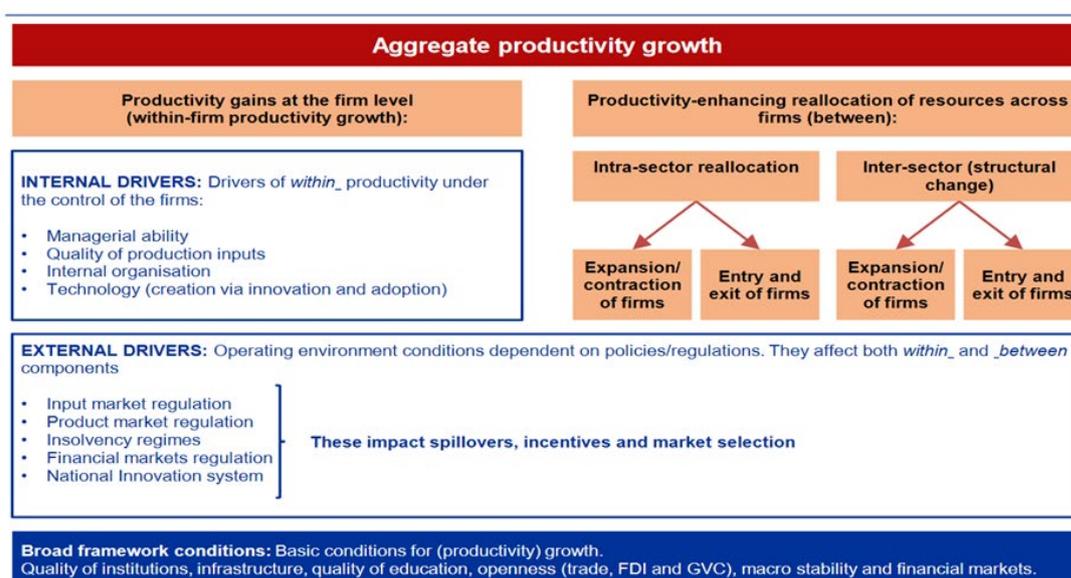
Policy can contribute directly and indirectly to setting a direction for innovation and shaping how its effects are distributed. Following the Lisbon [strategy](#) adopted in 2000, and the innovation [union](#) adopted in 2010, the EU has broadened the scope of its innovation policy to include its contribution to the EU's sustainable competitiveness in the twin digital and ecological transitions, and its role in EU preparedness to crises, such as the Covid-19 pandemic.

Context

Innovating to re-invigorate EU productivity and competitiveness

The economic growth rate is determined by the amount of labour and capital used for production, and by the overall efficiency with which these inputs are combined, namely multifactor productivity (MFP). Innovation activities (such as research and development investment) and outputs (such as patents) positively determine productivity at the firm level, thus helping to improve productivity across the economy (see Figure 1). Innovation policy is therefore key to foster EU competitiveness, as laid down in Article 179(1) of the Treaty on the Functioning of the European Union, which includes EU competitiveness as one of the objectives of science and technology investments.

Figure 1 – Channels of interplay between innovation investments and productivity



Source: [Key factors behind productivity trends in EU countries](#), ECB, 2021, p. 15. 'FDI': foreign direct investment; 'GVC': global value chain.

According to a 2021 European Central Bank (ECB) [report](#), over the last three decades, MFP explains a significant share of productivity growth in most Member States, and the main share in a third of Member States (see Figure 2). However, the corresponding rate observed in the United States (US) over the same period has always been higher than that observed for the EU.

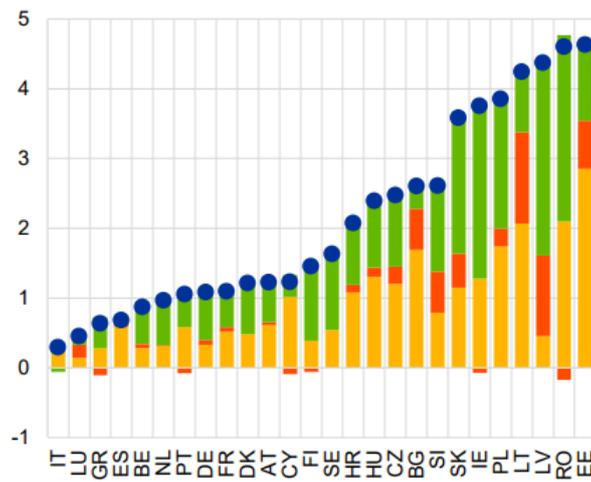
In the EU, innovation and productivity depend markedly on sectoral and national trends. Across economic sectors, the gap between technological frontier and non-frontier businesses is wide: while between 2005 and 2017, the median average MFP growth rate in the manufacturing sector was 2.9% among technological frontier businesses, it stood at only 0.6% for non-frontier businesses.

The difference is similar in the service sector, where the rates for frontier and non-frontier businesses are 2.6% and 0.5%, respectively. As for dynamics at Member-State level, in the same period (2005-2017), the main trend was for Member States having acceded to the EU in 2004 to catch up with the rest of the Member States. The increase in the productivity rate of EU high technology sectors, in particular, is fully determined by this catch-up.

Figure 2 – Contributions to growth in gross domestic product (GDP) per hour in the EU-27 (1996-2017 average)

(percentage points)

- Productivity per hour
- Capital per hour
- Capacity utilisation
- TFP

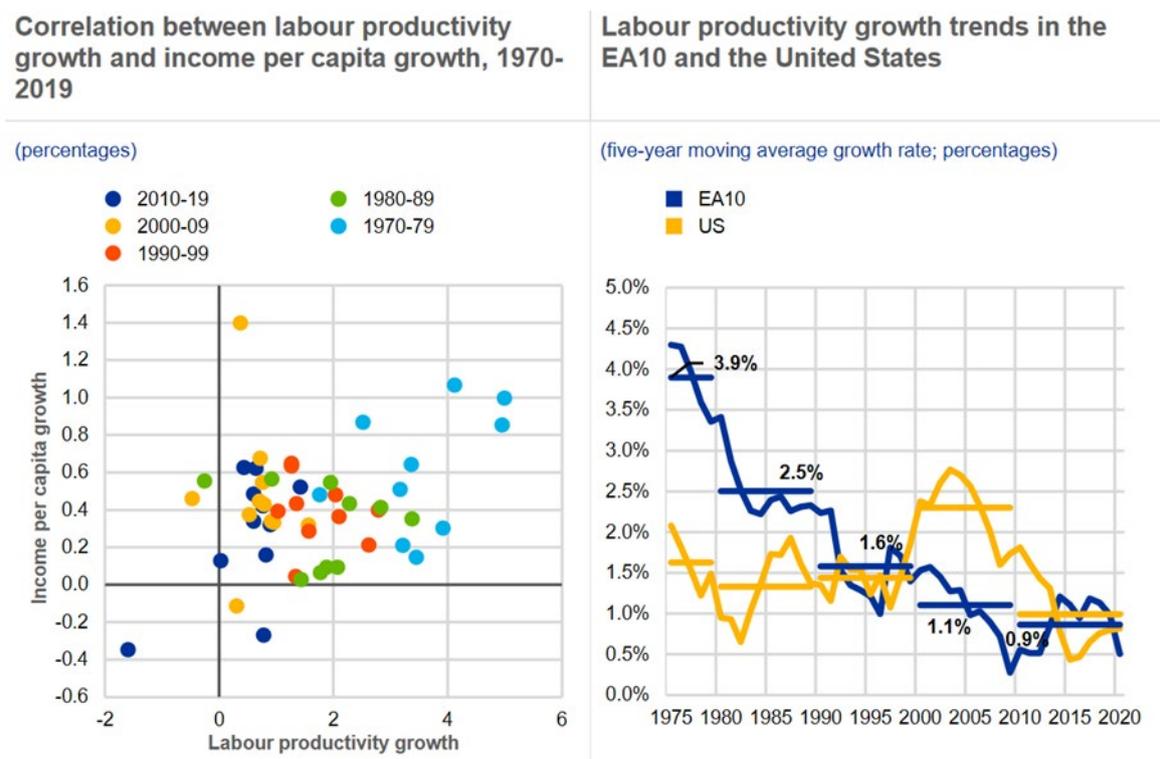


Source: Source: [Key factors behind productivity trends in EU countries](#), ECB, 2021, p. 27. TPF: total factor productivity.

The positive relationship between innovation and productivity has weakened both in the US and in the EU, giving rise to the concept of 'innovation paradox', whereby the increase in innovation investments and outputs (such as patents) does not lead to a commensurate increase in productivity and economic growth.

According to the ECB study mentioned above, the academic literature provides an explanation along this overarching alternative: while some economists argue that the impact of the innovation spurred by digital technologies will take time to diffuse across the economy and society, others suggest that technological innovation might not have the transformative power to sustain productivity growth. In the case of the EU, this slowdown in productivity is markedly more intense in the EU than in the US (see Figure 3 below). While this might reflect EU sectoral disadvantages in information communications technology-intensive sectors, it might also indicate a decrease in innovation in the manufacturing sectors in both the EU and US, aggravated further in the EU by the slowdown in technological frontier businesses' MFP growth rate. As for services, the productivity gains from technological advances seem to be beneficial only to technological frontier businesses, which signals potential monopoly effects of new business models enabled by technological change. It also raises the issue of technological diffusion among non-technological businesses. According to the ECB, in 2020, less than 40% of European micro-enterprises had adopted an advanced digital technology, compared with almost 50% in the US.

Figure 3 – Labour productivity trends in the EU and the US since 1970



Source: [Key factors behind productivity trends in EU countries](#), ECB, 2021, p. 10. 'EA': euro area.

Moreover, evidence shows that total public and private investment in research and development have not increased substantially in the EU and the US since 2000, with a respective average range of circa 2.0-2.3 % of GDP and 2.5-2.9 % of GDP, while the growth of new patents has been flat since the global financial crisis of 2008.²

Investing in innovation for EU sustainability and preparedness

By enabling change, innovation does not only contribute to the economy's competitiveness, but also allows for its transformation ('creative destruction'³), as well as for preparedness. According to the UN global sustainable development reporting [exercise](#), science and technology is one of the four policy levers for achieving sustainability, the other three being governance, economy and finance, and individual and collective action.

Changes towards climate neutrality and biodiversity restoration require the commitment of all socio-economical actors, institutions at all levels of governance, and citizens. In this context, innovation policies can steer the efforts towards the outcomes intended, in addition to incentivising innovation activities. This approach is grounded in competitive [sustainability](#), as presented in the new EU growth [strategy](#), which, alongside productivity, includes criteria of environmental sustainability, fairness and macro-economic stability.

The transformation required is systemic. The new EU industrial [strategy](#), adopted in 2020 and updated in 2021, focuses on 14 key industrial ecosystems⁴ in which transformation is necessary to achieve the twin digital and ecological transitions. In 2021, these ecosystems represent 70 % of the EU economy, and 80 % of the business economy (measured as a share of value added); this points to the need for a holistic approach to transformation, one that also includes the social effects.

The scope of the innovation efforts needed to achieve climate neutrality highlights how important innovation is for both creating and diffusing technologies and systems. Industry is responsible for a significant share of EU greenhouse gas (GHG) emissions: according to the European Environmental Agency's GHG data [viewer](#), in 2021, energy supply represented 27 % of GHG emissions in the EU,

with domestic transport making up 23 %, industry 21 %, and buildings 11 %. Moreover, the uptake of digitalisation is generating additional upward pressure on emissions. As mentioned in the [staff working document](#) accompanying the Commission communication on a new European innovation agenda, the EU can rely on its competitive edge in patenting in the key technologies, including climate and environment (23 % of overall international patents applications in 2018), energy (22 %), and transport (28 %). However, the EU is lagging behind the US and China when it comes to patent applications in digital technologies, which are an asset for accelerating the green transition, as well.

While speeding up the twin transitions through technological innovation is expected to improve the EU's resilience, (technological and non-technological) innovation can also facilitate EU preparedness to other shocks, such as the consequences of the Covid-19 pandemic or the Russian war on Ukraine. In a 2021 [paper](#) on technology sovereignty, the Fraunhofer Institute for Systems and Innovation Research highlights the growing relevance of technological sovereignty in the global political debate. The paper outlines the conditions needed to ensure a balance between reinforcing states' (or federation of states') preparedness in creating or sourcing key technologies, and the preservation of a rules-based multilateral order. It concludes that technology sovereignty should not be seen as a substitute for protectionism, but should preferably result in public initiatives to strengthen capacity building.

This approach is reflected in several recent EU initiatives. For instance, in 2022, with the planned adoption of a proposal for a regulation on a space-based global secure communications system, the EU is set to invest in establishing a European constellation of satellites, which is expected to provide connectivity and the continuity of governmental services across the world. This objective will also be achieved through support to technological innovation in space industries. In turn, both the infrastructure and enhanced connectivity are expected to facilitate innovation in the telecommunications sector and among end-users of the infrastructure's commercial services. Important projects of common European interest ([IPCEIs](#)) are another example.

State of play

Lisbon strategy: Launch of the EU's innovation policy

In 2000, the European Council of Lisbon [noted](#) that the EU was facing 'a quantum shift resulting from globalisation and the challenges of a new knowledge-driven economy', and set a new strategic goal: for the EU to become the most competitive and dynamic knowledge-based economy in the world by 2010. This strategy was built on three pillars: i) preparing the transition to a knowledge-based economy and society by better policies for the information society and R&D, as well as by stepping up the process of structural reform for competitiveness and innovation; ii) modernising the European social model, investing in people and combating social exclusion; and iii) sustaining the healthy economic outlook and favourable growth prospects by applying an appropriate macro-economic policy mix.

The initiative towards achieving a European research area, as framed by a 2000 Commission [communication](#), provided a key contribution to this strategy. The European Council outlined six main action strands, including pooling research and development (R&I) investments and initiatives among Member States; improving the environment for private research; and establishing a pan-European network for electronic scientific communications. In 2002, the European Council meeting in Barcelona agreed on an EU R&I investment target of 3 % of GDP by 2010, with two-thirds of investments coming from the private sector.

Following the 2008 financial crisis, the Commission adopted in 2010 its [communication](#) on Europe 2020, a strategy for smart, sustainable and inclusive growth. The strategy was based on five main quantitative headline targets for the EU, including a target of investing 3 % of the EU's GDP in R&D by 2020, and underpinned by flagship initiatives, with the 'innovation union' flagship, intended to improve framework conditions and access to finance for R&I.

According to Eurostat [data](#) from March 2022, by 2020, only four Member States (Belgium, Denmark, Germany and Sweden) had achieved the target of investing at least 3 % of their GDP in R&I. With an investment of 2.94 % of its GDP, Finland had almost reached the objective. Despite the sluggish growth in R&I investment in most Member States, the innovation performance of all Member States, as measured in the European innovation [scoreboard](#) with 32 indicators along four headlines (framework conditions, innovation activities, investments, and impacts) shows an increase in the innovation performance for the EU as a whole by 12.5 percentage points from 2014 to 2021. This is due, in particular, to strong performance increases across several indicators, such as 'broadband penetration', 'venture capital expenditures' and 'international scientific co-publications'.

Internationally, over the same period, the EU had a performance lead over Brazil, China, India, Russia and South Africa, and a performance gap with Australia, Canada, Japan, South Korea and the US (Figure 2). Between 2014 and 2021, the EU improved its relative position towards six of its global competitors: Australia, Brazil, Canada, India, Russia and South Africa. However, in the same period, the performance lead over China narrowed, and the performance gap with Japan, South Korea and the US widened.

Adoption of the 2022 European innovation agenda

In its [communication](#) on a new European innovation agenda, adopted on 5 July 2022, the Commission presents a set of initiatives, already launched or forthcoming, meant to encourage innovators to make better use of single-market finance opportunities, and to attract new institutional investors, with a view to reinforcing EU financial and capital markets.

The communication refers to innovation activities that support the transition to a circular, resource-efficient and digital economy. It includes a special focus on 'deep-tech innovation', which can be defined as transformative business models underpinned by scientific and/or technological breakthrough. As explained by Finland's technical research centre, [VTI](#), the economic relevance of deep tech is [high](#), thanks to its capacity to create new markets in all the economic sectors.

The communication spells out **five flagships areas**, informed by legislative and non-legislative initiatives, cutting across the von der Leyen Commission's political priorities. Interestingly, the communication does not include any specific governance setting within Commission services to follow up on its implementation.

1. Access to finance for deep-tech scale-ups. The Commission praises the growth of private-capital investment in Europe between 2016 and 2020, with a compound annual growth rate of 49 %, compared with 34 % for China and 28 % for the US. At the same time, it notes that, when it comes to providing non-debt investments, such as large venture capital (VC), the EU is still relying primarily on public institutions' investments (35 % of the VC funds raised in the EU in 2020), thus hinting at the difficulty of harnessing other institutional investors, such as insurance companies, which account for only a 12.7 % share.

A 2022 [assessment](#) by Bruegel think-tank confirms the relevance of these trends: it finds that in the US and the EU, VC has grown by a similar factor of about two between 2020 and 2021. Moreover, while US-based VC is involved in more than 90 % of domestic VC deals, EU-based VC is involved in only up to 80 % of such deals. The Commission presents a set of legislative and non-legislative initiatives to boost the supply of EU equity funding, while supporting a maximum of innovators, especially women, in accessing it.

On the legislative side, on 11 May 2022, the Commission adopted a proposal for a Council [directive](#) on a debt-equity bias reduction allowance on corporate income tax (DEBRA). The objective is to grant equity the same tax treatment as debt in terms of tax deductibility. Non-financial corporations would be eligible for an allowance covering the cost associated with raising equity such as VC. Another legislative initiative, the EU listing [act](#), planned to be adopted by the end of 2022, aims to facilitate initial and ongoing listing requirements, not least to increase legal certainty for the issuers of such equity.

As for the non-legislative initiatives, the EU intends to attract new private investors, including institutional ones, through InvestEU. The Commission will also pilot an 'innovation gender and diversity index' to help investors connect with a wider range of investing opportunities.

2. Framework conditions for deep-tech innovation. The important role of technological and non-technological innovation (such as governance solutions) in accelerating the twin transitions calls for the [future proofing](#) of EU legislative and non-legislative initiatives throughout the policy cycle, from design, to implementation and evaluation. This is especially true of regulatory initiatives that help shape new markets driven by emerging technologies, such as renewable hydrogen or artificial intelligence applications.

The Commission Better Regulation [Toolbox](#), updated in 2021, includes two developments relevant for legislative initiatives: a tool on how to harness regulation to support and/or facilitate R&I (Tool 22), and one on innovative policy instruments, such as regulatory sandboxes (Tool 69). [Regulatory sandboxes](#) provide a framework for experimenting with a new product, service or system in the real world, for a limited amount of time, under the supervision of a public authority. They are relevant for both legislative and non-legislative initiatives, for instance on public investment or public procurement. In 2023, the Commission is expected to adopt a staff working document to provide policymakers and innovators with guidance on how to identify areas and establish experimentation spaces. To optimise this guidance, the Commission will appoint an 'innovation-friendly regulation' advisory group. The potential of regulatory approaches calls for continuous efforts to support uptake of emerging technologies – also through investment at high levels of technological maturity – and to deploy test beds for the twin transitions, such as that for renewable hydrogen, to be funded through the forthcoming Horizon Europe 2023-2024 work programme.

The communication also mentions that, in the forthcoming revised State aid framework for research, development and innovation (publication pending the [outcome](#) of the 2021 public consultation), the Commission will include a new provision that will allow Member States to support the construction and upgrade of experimentation and testing infrastructure.

3. Promoting innovation ecosystems and tackling the 'innovation divide' across the EU. According to the Commission's eighth [report](#) on economic, social and territorial cohesion, in 2021, only 12 % of the EU-27 population was living in [NUTS 2](#) regions meeting the R&I investments target commensurate with the EU's 3 % of GDP target. Moreover, the outcome of the regional innovation scoreboard's 2021 edition shows that, compared with 2016, the majority of the population living in one of the EU's less developed regions is also living in a region that scores at the lower scale of the scoreboard ('emerging innovator'). More broadly, the 'innovation divide' in the EU has been recognised as such by the co-legislators as one of the policy objectives underpinning the EU framework programmes for R&I, namely Horizon 2020 (2014-2020) and Horizon Europe (2021-2027), in particular through the 'widening participation' [programme](#). Consolidated data for Horizon 2020 show that legal entities based in widening eligible EU territories (EU-13, Luxembourg and Portugal) represent 8.54 % of the programme participants, which corresponds to an EU contribution of €3.59 billion (5.25 % of the overall Horizon Europe budget).

According to the staff working document accompanying the Commission communication, regional disparities in innovation, as measured by two innovation outputs – the number of European Patent Office (EPO) applications, and scientific publications – have been on the rise since 2015. This situation is driven by several factors, as highlighted in a 2020 independent expert [report](#) on the R&I divide in the EU. In particular, in line with the endogenous growth [theory](#), R&I investment at firm level can spur increasing returns that consolidate a firm's productivity and competitiveness. At territorial level, the extent of infrastructure, skills and clustering among R&I actors feed virtuous cycles between investment and cooperation, as well. The Commission therefore intends to reinforce networking opportunities for all regional R&I actors. By the end of 2023, this will notably lead to [support](#) for up to 100 regional authorities in reinforcing the directionality of their R&I investment towards the constitution of 'regional innovation valleys'.

Beyond EU investment, with the [updated communication](#) on IPCEI, the Commission aims in particular to facilitate the involvement of newcomers. To qualify as an IPCEI, an initiative must involve a minimum of four EU Member States (compared with only one under the 2014 communication), and be open to all Member States. The growing inclusiveness of IPCEIs launched under the 2014 communication is already signalling the IPCEIs' ability to include and connect newcomers: while the first IPCEI authorised in 2018 gathered 29 undertakings from five Member States, the second IPCEI on batteries was submitted on behalf of 12 Member States, with 42 participant undertakings and up to 150 external partners.

4. Deep-tech talents. The role of innovation, both technological and non-technological, in achieving EU climate neutrality and biodiversity restoration relies on the skills of the EU workforce in terms of creating and disseminating new products, services and systems. As regards innovation creation at EU level, Annex B to the European innovation scoreboard's 2021 edition shows an increase in the share of new doctorate (PhD) graduates in science, technology, engineering and mathematics (STEM) in the population since 2014.

- On average, 0.8 new PhD degrees in STEM were awarded in the EU per 1 000 individuals aged 25 to 34. However, the gender gap is still significant. As reported by the [She figures](#) 2021 edition (gender in R&I), at EU-27 level, women are still under-represented among doctoral graduates in the STEM fields of physical sciences (38.4 %), mathematics and statistics (32.5 %), information communications technology (20.8 %), engineering and engineering trades (27 %), and architecture and construction (37.2 %).
- The further internationalisation of doctorate training highlights the attractiveness of Member States' higher-education actors. According to the annex to the scoreboard mentioned above, the average share of foreigners among the population of doctorate students stood at 18.7 % for the EU-27 in 2021. However, in eight Member States (Belgium, Denmark, Ireland, France, Luxembourg, the Netherlands, Austria and Sweden), less than 30 % of PhD students are foreigners, while in eight Member States (Bulgaria, Greece, Croatia, Latvia, Lithuania, Poland, Romania and Slovakia), this rate is below or equal to 10 %.
- As to innovation dissemination, the EU is facing a disadvantage compared with OECD partners in terms of the share of the population aged between 25 and 34 having completed tertiary education. Whereas the EU average share was 28.9 % in 2021, the OECD average [share](#) was 45.6 % in 2020. Access to lifelong learning is still limited in most EU Member States: in 2021, only 10.8 % of the EU population participated in lifelong-learning activities. Only four Member States (Denmark, Estonia, Finland and Sweden) have at least 20 % of the population participating in these activities.

However, as mentioned in the ECB 2021-2022 investment [report](#), the EU can rely on the capacity of its innovative firms to generate more jobs, with similar intensity as their US counterparts. The share of EU firms that increased their workforce stands at 32 % for digital adopters and active innovators (developers, incremental and leading innovators), compared with only 23 % for non-innovative firms. In its communication, the Commission enumerates a set of non-legislative measures. They are either targeted at widening the pool of high-skilled professionals (for instance, a joint [initiative](#) of the European Innovation Council and the European Institute of Technology to promote the gender balance among deep-tech innovators), or at supporting the internationalisation of cooperation among higher-education institutions (HEI). Following the launch of the 'European Universities' alliances, the EU-funded [networks](#) now represent 5 % of all EU HEI, which corresponds to 20 % of EU students. The communication announces support for training activities on emerging technologies and in scientific fields, including quantum, data science and artificial intelligence.

5. Improving the innovation policy-making framework. The Commission notes the need to support the innovation policy cycle with a framework and data capable of capturing the various aspects of the twin digital and ecological transitions. However, the measures outlined by the Commission are limited in their scope and ambition. On the one hand, the Commission announces

an explanatory report on definitions relating to start-ups, scale-ups and deep-tech innovation in early 2023, as well as the launch of a technical support instrument for Member States to design and implement 'better innovation policies'. On the other, the need to update more broadly the methodological approach to policy monitoring, to allow for proper assessment of the interplay between innovation and the overall EU policy objectives, is not substantiated by a specific action. However, for its part, the 2022 European [semester](#) provides full reporting on the UN Sustainable Development Goals (SDGs) across the Member States.

In the field of EU innovation policies, a January 2022 [report](#) by the expert group on the economic and societal impacts of R&I (ESIR) advises the EU to play a 'proactive leading role in defining terms and measures that align with the vision [for the twin transitions]'. This raises the question of data availability to ensure effective monitoring of public policies. The 2022 edition of the EU monitoring [report](#) on progress towards the SDGs notes that only 59% of the 232 global indicators adopted by the UN General Assembly are currently classified as available and published by more than 50% of countries globally.

Co-legislators' positions

Council of the EU position

The Council has stressed the transformative dimension of the Commission priorities for 2019-2024, in particular the [European Green Deal](#) and [A Europe fit for the digital age](#). On 1 December 2020, the Council adopted [conclusions](#) on the new European research area, in which it recognises the need for a corresponding forward-looking research, innovation and diffusion strategy. It stresses the importance of R&I policy for leveraging business R&I investment, deploying new technologies and supporting the absorption of knowledge and technologies. With another set of [conclusions](#) on providing researchers with attractive and sustainable careers and working conditions and making 'brain circulation' a reality, adopted on 28 May 2021, the Council acknowledges that uneven flows of researchers and 'brain circulation' need to be addressed not only at national but also at European level through policy measures and instruments. Following the outbreak of Russia's war on Ukraine, the Council has also further developed the positive relationship between innovation and EU strategic autonomy. For instance, with its [conclusions](#) of 10 June 2022 on the EU approach to space traffic management, the Council encourages the Commission to ensure that EU start-ups are sufficiently capitalised to be able to reap their full innovation potential and compete with non-EU fast-growing actors.

European Parliament position

The European Parliament supports stepping up EU innovation capacities to achieve the overarching political priorities of climate neutrality. Its [resolution](#) of 8 July 2021 on a new European research area for R&I, recalls the importance of R&I's contribution to achieving the goals set out in the Paris Agreement and the objectives of the European Green Deal. It also sets out the conditions needed to optimise this contribution, with excellence of research activities and infrastructure being one of them: for instance, it stresses that the EU should be equipped with world-class infrastructure and equipment in order to perform R&I activities, support industries and SMEs, and unlock the innovation potential to deliver on European policy objectives. The resolution highlights that excellence goes hand in hand with cooperation among all R&I actors, across all EU Member States. It underlines the importance of cooperation, from the design phase of projects between academia, research institutions and industry onwards, to promote science, innovative technologies and increase wellbeing. According to the resolution, universities – including their students – are key actors in creating and connecting R&I ecosystems. It also stresses the need for more targeted support aiming to help close the R&I gap in the EU.

Its [resolution](#) of 6 April 2022 on a global approach to R&I highlights the relevance of international cooperation to reinforcing EU innovation capacity. On one hand, the EU innovation system's

openness is a driver for both its international attractiveness, and its objective of a balanced brain circulation from, to and across the EU. On the other, international cooperation is also key to developing technologies and reducing dependencies to achieve the EU's overarching political objectives. In particular, the resolution recommends intensifying collaboration with all interested and like-minded countries in order to find a long-term solution to the shortage of raw materials, and that global innovation capacities in materials science and the circular economy be increased while encouraging substitution.

Parliament's [resolution](#) of 7 July 2022 on the financial activities of the European Investment Bank (EIB) 2021 annual report takes note of the EIB Group's investment of €20.7 billion to support innovation in 2021, including investment in digitalisation and the promotion of skills and training for the digital world, and considers that this has made a substantial contribution to EU global competitiveness and employment. It also welcomes the contribution of other EIB investments aligned with the objective of competitive sustainability, such as the doubling of the Clean Oceans initiative (from €2 to €4 billion by 2025) to reduce plastic waste. To widen further the innovation opportunities associated, it considers that emphasis should be placed on projects aimed at finding sustainable alternatives to single-use plastics. The Parliament also reiterates its call for the EIB to support the goals of the EU chemicals strategy for sustainability as part of its new operations, by boosting innovation for safe and sustainable-by-design chemicals, materials and products; the circular economy action plan based on non-toxic material cycles; and the action plan towards zero pollution for water, air and soil.

Stakeholder views

Between 12 April 2022 and 10 May 2022, the Commission organised a public online consultation on the five flagships areas set out in the communication. Only 113 written [contributions](#), coming from 17 Member States, were received, mostly by business organisations (18.6% of responses) and pan-European R&I umbrella networks (18.6% of responses). Overall, most contributions support the relevance of the flagships retained.

Regarding access to finance, in particular, the European Association of Innovation Consultants [supports](#) the European Innovation Council [accelerator](#), which it views as a solution to mitigating the risks associated with market entry of a new product or service. On regulatory sandboxes, the Novo Nordisk Foundation particularly stresses the [need](#) to achieve a systemic update of the possible adverse interfaces between regulation and the state of the arts of technologies developed to accelerate the twin transitions. On the promotion of innovation ecosystems and reduction of the innovation divide, a [contribution](#) from the Vanguard [initiative](#) invites the Commission to further improve cooperation between innovation ecosystem actors and the institutions at all levels of governance. It notes that strengthening interconnections is not only conducive to reducing the innovation divide, but also presents an opportunity to develop critical mass and complementarity to ensure EU preparedness. On attracting and training talents, respondents support the need to invest in developing Europeans' skills through initial and lifelong learning across all socioeconomic sectors. As for agriculture, the European farmers' and agro-cooperatives' association, COPA-COGECA, points in its [statement](#) to the specific needs of rural areas, not least in terms of state-of-the-art infrastructure to develop and attract talents. Regarding the improvement of the innovation policies framework, a fair share of responses, such as the Research Institutes of Sweden's [answer](#), insist on the short-term need to provide specific updates to the EU State aid framework revision. The concept of 'testing and experimentation infrastructure', for instance, should be distinguished from 'technology infrastructure'.

Following the adoption of the Commission communication, several pan-European organisations provided further suggestions, highlighting the central role of universities. The League of European Research Universities (LERU) issued an [opinion](#) stressing the expertise of universities, not least through their technology transfer offices, in providing integrated support to their start-up

ecosystems, including access to finance. More broadly, LERU recalls the need to preserve the functioning of the single market, access to which is deemed another driver for scaling up.

In a [statement](#) on the communication, the Guild of the European Research-intensive Universities stresses the multi-faceted role of universities in strengthening innovation ecosystems and place-based innovation. On the design of regulatory sandboxes, in particular, it mentions universities' capacity to provide specific services, such as safe environments and suitable infrastructure and expertise, to develop and test new technologies and systems.

In its [opinion](#), the European Association of Research and Technology Organisations (EARTO) highlights the value added of the cooperation between research organisation and industry. It insists, in particular, on the need to strengthen public procurement to steer and increase demand in R&D systems. EARTO considers that the distinction between pre-commercial procurement (design phase) and public procurement of innovation (deployment phase) under current EU law might not facilitate involvement of start-ups and small and medium-sized enterprises from the design to the implementation phases.

MAIN REFERENCES

Edler J., Blind K., Kroll H. and Schubert T., [Technology sovereignty as an emerging frame for innovation policy – Defining rationales, ends and means](#), Innovation Systems and Policy Analysis No. 70, Fraunhofer Institute for Systems and Innovation Research, 2021.

Evroux C., [Important projects of common European interest: state of play](#), EPRS, European Parliament, April 2022.

[Key factors behind productivity trends in EU countries](#), Occasional Paper Series No. 268, European Central Bank, 2021.

Ragonnaud G., [The EU chips act: securing Europe's supply of semiconductors](#), EPRS, European Parliament, July 2022.

ENDNOTES

¹ As defined by the UN System of National Accounts (SNA): Business enterprises (referred to within the SNA as the corporate sector); general government; households; and non-profit institutions serving households (NPISHs), see [Oslo Manual 2018](#), Organisation for Economic Co-operation and Development (OECD) and Eurostat.

² See [Key factors behind productivity trends in EU countries](#), ECB, 2021, in particular, Charts 19 and 20.

³ T. Velardo, '[3. Capitalism without capitalists. Bankers, capitalists & entrepreneurs in Schumpeter's theory](#)', *Cahiers d'économie politique*, Vol. 80, No 1, 2022, pp. 61-89.

⁴ These are: 1) aerospace and defence; 2) agri-food; 3) construction; 4) cultural and creative industries; 5) digital; 6) electronics; 7) energy-intensive industries; 8) energy-renewables; 9) health; 10) mobility – transport – automotive; 11) proximity, social economy and civil security; 12) retail, 13) textiles, and 14) tourism.

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