EUROPEAN
COMMISSION

Brussels, 18.3.2024
COM(2024) 121 final

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

On the implementation of the New European Innovation Agenda

REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

On the implementation of the New European Innovation Agenda

1. INTRODUCTION – THE NEW EUROPEAN INNOVATION AGENDA IN ACTION

1.1. Purpose of the report

The Commission Communication on the New European Innovation Agenda (NEIA) ([1]) was adopted on 5 July 2022. The NEIA aims to position Europe at the forefront of the new wave of deep-tech innovation, developing new technologies to address pressing societal challenges, and bringing them to the market. Deep-tech innovation is about innovation rooted in cutting-edge science, technology and engineering. This type of innovation often combines advances in the physical, biological and digital spheres and has the potential to deliver transformative solutions in the face of global challenges.

In order to provide the best environment for deep-tech innovation to thrive in Europe and for innovative companies to grow, the NEIA outlines **25 actions grouped under five flagship areas** 1) funding scale-ups; 2) enabling innovation through experimentation spaces and public procurement; 3) accelerating and strengthening innovation in European innovation ecosystems across the EU and addressing the innovation divide; 4) fostering, attracting and retaining talent; and 5) improving policy-making tools.

As stated in the conclusions of the NEIA, '**The Commission will monitor and report on the progress and impact of the actions** identified in this Communication by 2024, in close cooperation with the representatives of Member States in the European Innovation Council (EIC) Forum'. This report delivers on that commitment, by focusing on the state of play and outputs of the various actions, while a longer timeline will be needed to fully evaluate their impact. Since its inception, the Commission has regularly issued updates on the NEIA's progress on a dedicated section of the Europa website ([2]). Regular updates have also been provided to: Member States and Horizon Europe Associated Countries at the meetings of the EIC Forum ([3]), as well as to the EIC Board, to the relevant

([1]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions of 5.7.2022 COM (2022) 332 final.

([2]) https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en.

([3]) https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/eic-forum_en.

configuration of the Programme Committee of Horizon Europe and to the EU institutions and bodies. ([4])

18 months following its adoption, all the 25 core actions announced in the NEIA have either been completed or are ongoing. In addition, a number of **additional actions** supporting the NEIA have been launched by the Commission or other EU institutions since the adoption of the NEIA. Finally, Member States and Associated Countries have announced ([5]) in the framework of the EIC Forum, **more than 200 initiatives supporting the NEIA at national level** with legislative actions, policy initiatives or funding schemes. This report also provides examples of these supporting actions.

Based on the progress made and on the evolving European and global context, this report identifies the next steps for the implementation of the NEIA.

1.2. An evolving European and global context

The landscape of innovation is in a state of rapid and continuous transformation and since the adoption of the NEIA, both the global and the European context have changed significantly.

At a global level, **the major economic players** have significantly **ramped up investments and initiatives** to bolster domestic innovation. The United States has adopted both the Inflation Reduction Act, setting out plans for almost USD 400 billion in investment in green and digital projects ([6]) and the CHIPS and Science Act (worth USD 280 billion) in the area of semiconductors. The US is also supporting innovation hubs throughout the country and spreading the so-called ARPA ([7]) model to boost innovation in transport infrastructure, energy, and health. China is equally making significant efforts to promote innovation, for instance through the 'Made in China 2025' initiative. In recent years, high-income countries (such as Saudi Arabia) and emerging middle-income economies (such as Indonesia, Turkey, India, Vietnam, Brazil, the Philippines and Iran) have all improved their position in the Global Innovation Index rankings ([8]).

These developments are paving the way for reinforcing or challenging existing technological leaderships at a global level in key technologies such as batteries, hydrogen, photovoltaics, wind energy, space & propulsion technologies, quantum and chips. In this context, the growing and interconnected challenges linked to boosting **competitiveness**, accelerating the **green and digital transitions** and ensuring both **open**

([4]) See Chapter 3.1.
([5]) Member States and Associated Countries are actively supporting New European Innovation Agenda! (europa.eu).
([6]) See Commission Communication COM(2023) 684 final for a report on EU policy initiatives for the promotion of investments in clean technologies.
([7])ARPA (American Rescue Plan Act) is a financial programme supporting technologies in specific sectors that might not otherwise be pursued via high-risk, high-gain research involving government labs, private industry, and universities. Following the success of this model in the area of defence (DARPA), the US has created additional agencies on the same model: ARPA-E for energy, ARPA-H for health and ARPA-I for transport infrastructure.
([8]) See WIPO (World Intellectual Property Organization), Global Innovation Index 2023. For instance, compared with 2020, Saudi Arabia gained 18 positions (from 66th to 48th) in the global ranking, Indonesia 24 (from 85th to 61st) and Turkey 12 (from 51st to 39th). EU Member States have mostly maintained their previous positions during this time (between Sweden ranking second and Romania ranking in 47th place), but 12 of them saw a slight decrease in their innovation index ranking in these 3 years.

strategic autonomy ([9]) and **economic security**, prompted the EU to launch new initiatives and instruments following the NEIA's adoption. These include the Green Deal Industrial Plan ([10]), and concrete initiatives under it such as the Net-Zero Industry Act ([11]) or the Critical Raw Materials Act ([12]), as well as the European Economic Security Communication ([13]). The EU Chips Act ([14]) has been adopted by the co-legislators in 2023 and the Strategic Technologies European Platform (STEP) ([15]), aiming to boost investments in critical technologies in Europe, was adopted in February 2024. A new initiative to support industrial leadership in advanced materials was also adopted in February 2024 ([16]). In all these initiatives, the importance of innovation, including **deep-tech innovation**, is emphasised because of its crucial role in future and emerging supply chains, as highlighted by the Commission President in her State of the Union speech in September 2023 ([17]).

2. STATE OF IMPLEMENTATION OF NEIA ACTIONS IN THE FIVE FLAGSHIP AREAS

2.1. Funding for deep-tech scale-ups

Under this flagship area, the NEIA aims at tackling the obstacles that prevent investment and growth for deep-tech scale-ups. Because of their capital-intensive nature, information asymmetry (with investors less knowledgeable than those working in deep-tech) and long lead times ([18]), deep-tech startups need substantial equity investment to reach their full potential. However, Europe's capital markets, characterised by a dependency on bank lending, continue to be insufficiently tech savvy, lack a broad investor base ensuring high supply of capital or are not sufficiently connected to provide the capital base such companies need. ([19])

The EU needs to mobilise existing but currently **untapped sources of private capital** (such as European pension funds, which are currently decreasing their already-limited investments in private capital ([20]), as well as asset managers and insurance companies) towards innovative companies, including through venture capital (VC) funds. Moreover,

([9])The concept of Open Strategic Autonomy was introduced in the Commission´2021 Strategic Foresight Report, COM/2021/750 final'.
([10]) Commission Communication of 1.2.2023 COM(2023) 62 final.
([11]) Commission proposal for a regulation of the European Parliament and of the Council of 16.3.2023 COM(2023) 161 final.
([12]) Proposal for a regulation of the European Parliament and of the Council establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724 and (EU) 2019/102.
([13])Joint Communication to the European Parliament, the European Council and the Council on the European Economic Security Strategy, Join (2023) 20 final.
([14]) Regulation (EU) 2023/1781 of the European Parliament and of the Council 13./9./2023.
([15]) Regulation (EU) 2024/795 of the European Parliament and of the Council of 29 February 2024 establishing the Strategic Technologies for Europe Platform (STEP)
([16])Commission Communication of 27 February 2024 on Advanced Materials for Industrial Leadership COM(2024) 98 final
([17]) https://ec.europa.eu/commission/presscorner/detail/en/speech_23_4426.
([18]) https://dealroom.co/reports/the-european-deep-tech-report-2023.
([19]) Growth investments beyond series-C equity rounds are dominated by US/Asia actors and sovereign wealth funds. Compared to Europe, the US has 10-15 times more VC funds with a size of at least EUR 1 billion, and these funds of at least EUR 1 billion in size are needed to be able to deploy tickets of EUR 50+ million supporting the late scaling-up of deep-tech ventures.
([20]) European pension funds have made just 60 commitments into private capital funds in Europe in 2023, almost half their commitment in 2022 when they made 113 commitments, according to PitchBook data.

to tackle the untapped potential of VC talent in terms of gender ([21]), Europe needs to harbour a more **inclusive and diverse** investment ecosystem for deep-tech startups. ([22])

Completed NEIA actions

The Commission proposal for the **Listing Act** ([23]), adopted in December 2022, aims at simplifying listing requirements - mostly for companies on EU capital markets- to reduce costs and increase legal certainty for issuers, while safeguarding investor protection and market integrity. The Listing Act also puts forward minimum harmonisation of national regimes allowing multiple-vote share structures, to enable smaller companies, including startups, in all Member States to raise larger amounts of funds by issuing shares of their companies, while retaining control over management decisions post-listing. The co-legislators have finalised the negotiations early 2024 and the publication of the act is expected in the course of this year.

The Commission proposal for a directive on a **debt-equity bias-reduction allowance** (DEBRA) ([24]) on corporate income tax was adopted in May 2022. The objective is to address the asymmetric tax treatment currently existing in most Member States between debt and equity financing in which debt is treated more favourably than equity. This proposal would incentivise businesses to fund growth/scaling-up by raising equity instead of borrowing. The discussions on the proposal have been suspended in Council in November 2022. The Commission calls on the Council to swiftly resume discussion on the Commission's proposal.

The European Institute of Innovation & Technology (EIT) **Women2Invest programme** was launched in 2022. It seeks to help women with backgrounds in science, technology, engineering, arts and mathematics (STEAM) to start careers in venture investment. Two groups of 131 beneficiaries from 25 European nationalities have already followed 8-week internships in VC funds under the programme. Additional groups will be selected in 2024-2025.

Ongoing NEIA actions

The expansion of the **European scale-up action for risk capital (ESCALAR)** mechanism under the InvestEU programme aims at mobilising venture-capital funding for high growth scale-ups. In particular, the initiative aims at encouraging more involvement of risk-averse investors (such as pension funds and insurance companies) in scale-up VC funds, by reducing their risk in exchange for capping the potential returns they can receive. In particular, it aims to attract untapped sources of institutional capital by providing favourable co-investment opportunities in VC funds.

([21]) Only 5% of European VC investments are currently made in mixed teams and only 2% in female-only ones.
([22]) Evidence shows that diverse teams make better investment decisions. See 'Gender Smart Financing Investing In & With Women: Opportunities for Europe', https://economy-finance.ec.europa.eu/publications/gender-smart-financing-investing-and-women-opportunities-europe_en or 'Why diverse teams are smarter' by Harvard Business Review, 2016, https://hbr.org/2016/11/why-diverse-teams-are-smarter.
([23]) Proposal for a Regulation of the European Parliament and the Council COM/2022/762 final.
([24]) Proposal for a Council Directive on laying down rules on a debt-equity bias-reduction allowance and on limiting the deductibility of interest for corporate income tax purposes, COM(2022) 216 final, 2022/0154 (CNS) of 1.5.2022.

In May 2023, the Commission met a group of European institutional investors who confirmed their interest in ESCALAR-type products. This led the European Investment Fund (EIF) ([25]) and InvestEurope ([26]) to organise a follow-on workshop to promote a dedicated call, ([27]) that was launched in Autumn 2023. The call aims at selecting eligible financial intermediaries to become ESCALAR Financial Intermediaries and the selection should be completed in 2024.

An EIC pilot programme is also being developed to create a **European innovation gender and diversity index**. The programme will seek to measure the gender and diversity gap in investment in deep-tech startups. The project ([28]) is advancing, with the first results expected by the end of 2024.

Additional actions

Under Horizon Europe, the **European Innovation Council (EIC)** ([29]) is helping Europe work towards achieving its deep-tech ambitions, namely to turn excellent European deep-tech research into innovations and to deploy radical deep-tech innovations at scale. The EIC is successfully delivering on these ambitions by identifying ground-breaking ideas emerging from the research base and building a critical mass of capability that links researchers with innovators, investors, SMEs, and corporations in strategic areas such as quantum technologies, innovative space technologies and services, cell and gene therapies, hydrogen and battery technologies.

The EIC is the largest deep-tech venture capital (VC) investor in Europe ([30]) and provides a unique combination of traditional public-grant and patient, direct-equity investment in companies. This is helping to address a critical gap in Europe where VC is too small and fragmented. Importantly, by providing such investment in partnership with private investors, the EIC is also helping to develop Europe's deep-tech investor base and make use of investors' specialised domain knowledge and networks of private investors to help scale-up EIC-supported companies.

Following just over a year of operations, investment decisions have now been made by the EIC Fund for over 200 companies worth well over EUR 1 billion in total. These investment decisions have 'crowded in' EUR 3.5 of additional private investment for each euro of investment through the EIC into high potential startups and SMEs. EIC-funded companies have also been successful in securing significant levels of follow-on financing and seeing their valuations increase considerably, with well over 100

([25]) The EIF implements ESCALAR under InvestEU.
([26]) https://www.investeurope.eu.
([27])https://www.eif.org/InvestEU/escalar-call-for-expression-of-interest/index.htm.
([28]) HORIZON-EIC-2022-GENDER-01-01. ([28]) HORIZON-EIC-2022-GENDER-01-01.
([29]) With a budget of EUR 10.1bn over 7 years, the EIC regularly runs three distinct grant calls: EIC-Pathfinder, EIC-Transition and EIC-Accelerator. Within the latter, the EIC Fund is a specific venture-investment instrument, assisted by the European Investment Bank as investment advisor.
([30]) The European Innovation Council Fund: the biggest European deep tech investor - European Commission (europa.eu).

companies now achieving 'centaur' ([31]) valuations following the provision of EIC support.

In February 2023, the European Investment Bank Group set up the **European Tech Champions Initiative (ETCI),** aimed at providing late-stage, larger-scale venture investments in deep-tech scale-ups. The ETCI is expected to make 10-15 investments in large VC/growth-capital funds (with approx. EUR 1 billion in assets under management). The goal is to mobilise more than EUR 10 billion of private investments into innovative companies in their growth stage. The ETCI Fund, managed by the EIF under a mandate from the European Investment Bank (EIB) and participating Member States ([32]), has secured EUR 3.75 billion of public funds. The EIF is already supporting four EU-based funds ([33]) while complementarities with existing EU funding instruments ([34]) are sought.

The **Startup Europe** ([35]) initiative strengthens networking opportunities for deep-tech scale-ups and ecosystem builders to accelerate the growth of the European startup scene.

The **Green Deal industrial plan for the net-zero age**, published in February 2023, includes a pillar on promoting faster access to sufficient funding aimed at mobilising public and private financial resources to support the green transition. The Net-Zero Industry Act includes the creation of **skills academies** to rapidly enhance the skills of the European workforce in key net-zero sectors, building on the success of initiatives like the **European Battery Alliance Academy** managed by the EIT. The EIT is extending this approach with the implementation of the **European Solar Academy**.

Moreover, the **Innovation Fund**, supporting projects in innovative low-carbon technologies, has been extended and reinforced. ([36]) The **Strategic Technologies for Europe Platform (STEP)**, adopted in February 2024, aims to boost investments in critical technologies in Europe, including by facilitating cumulative or combined funding from several EU instruments.

The **SME relief package**, published in September 2023, includes measures to improve access to finance for SMEs, such as making it easier to access sustainable finance and public-procurement markets ([37]).

The Commission has actively engaged in **promoting the NEIA and European innovation ecosystems in the US**, visiting Silicon Valley with a large group of business and academic representatives. The key objective is to attract talents, innovators and investors into the EU, so that European-based startups can develop and grow.

([31])i.e. a valuation of at least USD 100 million.
([32]) To date: Spain, Germany, France, Italy, Belgium and the Netherlands.
([33])Atomico Growth VI, FSI II and Keensight Nova 6, plus an agreement that is in the process of being closed.
([34]) Including InvestEU, the EIC, ESCALAR and the IPO (Initial Public Offer) Initiative.
([35]) Startup Europe (HORIZON-EIE-2024-CONNECT-01-02) - European Commission (europa.eu).
([36]) In 2023 new sectors, a new financial instrument and a reinforced budget have been introduced following the Emission Trading System Revision
([37]) https://single-market-economy.ec.europa.eu/news/unleashing-potential-europes-small-businesses-2023-09-28_ https://digital strategy.ec.europa.eu/en/policies/startup-europe.

Member States and Associated Countries have also announced a number of **national initiatives** supporting improved funding for deep-tech scale-ups ([38]). For example, **the 'Zukunftsfonds' initiative in Germany** strengthens financing opportunities in the capital-intensive scaling phase of startups with various instruments, including a deep-tech & climate fund and a fund for venture-tech growth financing ([39]).The '**Fondo Nazionale Innovazione',** run in Italy by the national promotional bank Cassa Depositi e Prestiti, is using direct and indirect investments to promote the development of the domestic innovation ecosystem, including programmes of acceleration, technology transfer hubs, green and digital transition and support to companies from regions lagging behind ([40]). The '**Innvierte' programme,** run by the CDTI in Spain, is also promoting venture investments and co-investments in strategic technology sectors including telecoms, artificial intelligence (AI), robotics, semiconductors, cybersecurity, aerospace, defence, energy storage, quantum and nuclear technologies, nanotechnologies, biotechnologies, advanced materials, and advanced manufacturing systems ([41]). The **NCBR Investment Fund (NIF)** in Poland acquires shares in enterprises implementing projects resulting from scientific research or development ('portfolio companies') in cooperation with co-investors ('accredited funds'), to create a stable, long-term investment platform for technology projects ([42]).

2.2. Enabling deep-tech innovation through experimentation spaces and public procurement

Framework conditions – including regulations – are important factors for the development and uptake of innovative products and processes. Together with the further expansion of innovation procurement, the creation of innovation-friendly regulatory frameworks is the main priority of this flagship area. The important role of such frameworks, in particular regulatory sandboxes, has also been explicitly recognised by the European Council since the adoption of the NEIA ([43]).

Completed NEIA actions

In July 2023, the Commission issued a **staff working document** ([44]) to clarify the nature and role of available experimentation tools (especially **regulatory sandboxes**, but also **testbeds** and **living labs**), providing guidance on how the EU and national governments can support and engage innovators in the regulatory process. The document showcases existing examples of experimentation spaces from Europe and beyond, with a special focus on the energy sector, in line with the RePowerEU plan ([45]).

The **revised State Aid Framework for Research, Development and Innovation** (RDI) was adopted in October 2022 to simplify the rules applied by EU Member States and to

([38]) Flagship 1: Funding for deep tech scale ups (europa.eu).
([39]) https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Internationales_Finanzmarkt/zukunftsfonds.html.
([40]) https://www.cdpventurecapital.it/cdp-venture-capital/en/home.page.
([41]) https://www.cdti.es/en/node/889.
([42]) https://nifasi.pl/en/.
([43]) See European Council Conclusions, 23 March 2023.
([44]) Commission Staff Working Document 'Regulatory Learning in the EU, Guidance on Regulatory Sandboxes, Test-beds and living labs in the EU, with a focus section on energy', (2023) 277/2 final of 29.8.2023.
([45]) COM(2022) 230 final of 18.5.2022.

allow, under certain conditions, public support for testing and experimentation infrastructures required to develop, test and upscale new technologies.

In March 2023, the Commission adopted a targeted **amendment to the General Block Exemption Regulation (GBER)** to further facilitate, simplify and speed up support for the EU's green and digital transitions ([46]). The new rules facilitate the implementation of certain projects involving beneficiaries in several Member States, such as important projects of common European interest, in the research and development field, by increasing both the permitted aid intensities and the notification thresholds ([47]). For instance, in December 2023, seven Member States were authorised to mobilise up to €1.2 billion in public funding – spurring a further €1.4 billion in private investments – to support research, development and initial industrial deployment of European innovations in cloud and edge technologies ([48]). The provisions of the amended GBER have been prolonged until the end of 2026.

Since January 2023, the Commission has been co-funding together with Member States, four **testing and experimentation facilities** (TEFs) under the Digital Europe Programme. ([49]) TEFs offer a combination of physical and virtual facilities to allow technology providers across Europe to test and experiment at scale and in real-world environments state-of-the-art AI solutions, including both software and hardware products and services, including robots. European-wide access to the TEFs is facilitated by a dense network of more than 200 **European Digital Innovation Hubs**, funded through a combination of the Digital Europe Programme with national and regional resources.

Ongoing NEIA actions

A number of projects on **open-innovation test beds in the area of hydrogen and advanced materials ([50])** are being carried out with the support of Horizon Europe ([51]). The projects aim at providing access to physical facilities, capabilities, and services to support the development of a vibrant clean-hydrogen economy.

In 2023, the Commission launched a call for the provision of a **specialist advisory service on innovation procurement** under Horizon Europe ([52]). The selected projects are expected to kick-off in Q2 2024. The advisory service will act as an intermediary between public procurers and innovative suppliers.

([46]) Commission Regulation (EU) 2023/1315 of 23 June 2023 amending Regulation (EU) No 651/2014.

([47])i.e. the amount of aid above which triggers a requirement to notify the Commission.

([48])IPCEI Next Generation Cloud Infrastructure and Services (IPCEI CIS), was jointly notified on December 5, 2023 by seven Member States: France, Germany, Hungary, Italy, the Netherlands, Poland, and Spain.

([49])These projects relate to Agri-Food, Healthcare, Manufacturing and Smart Cities & Communities. They will be supported for 5 years with an overall budget of EUR 220 million.

([50]) Open-innovation test beds for advanced materials – https://op.europa.eu/en/publication-detail/-/publication/0aaf1e05-2082-11ee-94cb-01aa75ed71a1/language-en/format-PDF/source-289339785.

([51]) Horizon Europe 2022 work programme for cluster 4 (HORIZON-CL4-2022-RESILIENCE-01-20, 'Climate Neutral and Circular Innovative Materials Technologies Open Innovation Test Beds') and Horizon Europe 2023 work programme for cluster 5 (HORIZON-CL5-2023-D2-01-06, 'Open Pilot Line/Test Bed for hydrogen').

([52]) European Innovation Ecosystems work programme 2023-2024.

Additional actions

The **Innovation-Friendly Regulations Advisory Group (IFRAG)**, composed of 11 experts, was appointed by the Commission at the end of 2022. Its role is to provide upstream policy advice on new technologies. It focused in 2023 on: (i) the use of emerging digital technologies in the public sector, and in particular virtual worlds, by looking at their implication for the EU regulatory landscape; and (ii) applications in areas such as citizens' involvement in decision-making. The IFRAG concluded its mandate in February 2024 and will publish its findings in Q2 2024.

Once adopted, the **Net-Zero Industry Act** will promote regulatory sandboxes for strategic innovative net-zero technologies. ([53])

Once adopted, the **AI Act ([54])** will help to create a legal framework for AI that is innovation-friendly, future-proof and resilient to disruption, including by reducing the regulatory burden on SMEs and startups. The AI Act will encourage national authorities to set up regulatory sandboxes, and sets a basic framework for governance, supervision and liability. Furthermore, the Commission proposed in January 2024 a new package of measures, including setting up of **AI factories**, to boost innovation and startups, including in areas such as testing, evaluation, and validation of large-scale AI models ([55]).

Open-innovation test beds are crucial for implementing the Commission communication on **advanced materials for industry leadership ([56])** and will be the object of a pilot programme for a European approach to investments in **technology infrastructures.**

Govtech4all (Incubator) ([57]) brings together national GovTech initiatives in a consortium of 21 digital agencies from 14 European countries to foster a single European Union GovTech market and promote interoperability and new models of public sector innovation. It aims at exploring, through piloting and experimentation, the cross-border implementation of emerging technologies in the public sector, with a special focus on startups and innovative SMEs.

Horizon Europe continues to increase both knowledge and activities in **innovation procurement for health**, with the Procure4Health Network launching two calls in 2024 for twinning to widen the use of the instrument across Europe. Furthermore, the Horizon

([53])The Act supports in particular 8 strategic net zero technologies: i) solar photovoltaic and solar thermal technologies; ii) onshore wind and offshore renewable energy; iii) batteries and storage; iv) heat pumps and geothermal energy; v) electrolysers and fuel cells; vi) biogas/biomethane; vii) carbon capture and storage (CCS); and viii) grid technologies (which also include electric vehicles smart and fast charging.

([54])Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts, (COM/2021/206 final).

([55]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on boosting startups and innovation in trustworthy artificial intelligence, of 24.1.2024, COM(2024) 28 final.

([56]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Advanced materials for industrial leadership, of 27.2.24, COM(2024) 98 final

([57])4-year project, funded under Digital Europe.

Europe 2024 work programme includes a pre-commercial procurement topic on the greening of healthcare systems, with a budget of EUR 15 million.

Member States and Associated Countries announced a number of **national initiatives** supporting experimentation spaces and public procurement ([58]). For example, the **'free technological zones'** in Portugal consist of regulatory sandboxes or living labs under the monitoring of the National Innovation Agency (ANI). The **Innovation procurement** action in Estonia or Sweden's programme of **'cheques for innovation procurement'** aim at increasing the take-up of innovation procurement through special advisory services, sharing best practices, supporting development and implementation of innovative solutions in the public sector. The **innovation procurement portal** set up in Italy will match the demand for and supply of innovation, encouraging collaboration between the public administration, companies, startups and research institutions.

2.3. Accelerating and strengthening innovation in European innovation ecosystems across the EU and addressing the innovation divide

The innovation strength of Europe relies to a large extent on the diversity and dynamism of its regional ecosystems. Under this flagship area, the NEIA addresses three specific goals: (i) strengthening regional innovation ecosystems on the basis of local 'smart specialisation' strategies; (ii) reducing the regional innovation divide that persists across Europe ([59]) in spite of several EU and national actions ([60]) ([61]); and (iii) incentivising better innovation collaboration between regions in their common areas of smart specialisation to create and strengthen value chains across Europe.

Completed NEIA actions

Developing and consolidating **synergies between cohesion-policy programmes and Horizon Europe** are among the key actions to maximise the impact of EU intervention in this area. The Commission published the guidance document on **synergies between Horizon Europe and the European Regional Development Fund programmes ([62])** in 2022 to help managing authorities make better use of available funding opportunities to foster innovation and the uptake of advanced technologies in their regions.

Ongoing NEIA actions

The **Regional Innovation Valleys (RIVs)** action aims to stimulate and exploit the full innovation potential of EU regions, including in deep-tech innovation, in view of addressing EU's burning societal challenges and addressing disparities in innovation performance. Its objective is to identify up to 100 regions committed to concentrate their research and innovation efforts on specific priorities and to strengthen their coordination

([58]) Flagship 2: Enabling deep tech innovation through experimentation spaces and public procurement - European Commission (europa.eu).
([59])See Regional Innovation Scoreboard.
([60]) Including EUR 56 billion from the Cohesion Funds dedicated to research and innovation and EUR 3 billion from Horizon Europe dedicated to widening access to R&I excellence.
([61]) See Regional Innovation Scoreboard.
([62])O.J. C421/7 of 4.11.2022.

with other regions. Priority areas are food security, digital transformation, energy, healthcare and circular economy.

Regions can get the "RIV" label via different channels: 1) regions selected under a **call for expression of interest,** launched in March 2023 by the Commission and the Committee of the Regions, with 170 applicants ([63]) across 140 regions ([64]); 2) regions selected under the **first coordinated calls under Horizon Europe and the European Regional Development Fund (I3)**, for a total budget of EUR 122 million ([65]): over 50 proposals were received with nearly 1000 participants from 25 Member States and 6 Associated Countries**.**

In parallel, the action on **doubling the number of the so-called hydrogen valleys** is ongoing. After the last selection run in 2023, there are currently 55 hydrogen valleys featuring in the Mission Innovation Hydrogen Valleys Platform, which was revamped in May 2023. In March 2023, the Commission signed a joint declaration on hydrogen valleys ([66]). The concept of hydrogen valleys will also be extended to cover **all renewable energies** through a distinct topic under Horizon Europe.

The action to set up a **one-stop-shop for innovation ecosystem players** is ongoing. The one-stop-shop will: (i) provide a virtual platform to interested stakeholders to highlight the demand for and supply of innovative solutions, as a first step coming from Horizon Europe; (ii) provide access to key research results; (iii) support the circulation of ideas; and (iv) connect stakeholders. The one-stop-shop will provide information on innovation challenges and opportunities (technology and market trends, intellectual property, demand levels, etc.) and make it easier to identify services and funding opportunities. Reflections are currently ongoing on how to provide the simplicity, accessibility and functionalities that would best serve the needs of the diversity of innovation stakeholders.

In June 2023, the Commission launched the **EIC Scale-Up 100 initiative**. Its goal is to identify, promote and support the growth of 100 promising European deep-tech companies with the potential to become 'unicorns' ([67]). Those future deep-tech champions will be selected from the top performing recipients of EIC financial schemes, other national and European innovation programmes and elsewhere. The participating companies will be selected from 10 'market opportunity' areas ([68]) closely linked to European policy priorities. The selection of the first group will take place in April 2024. The EIC Scale-up Club will also engage 400 stakeholders in each market-opportunity

([63]) See the Regional Innovation Valley Matchmaking map containing the database of eligible applicants.
([64]) Regions are being selected that demonstrate their commitment to: (i) improving the coordination and consistency of their R&I investments and policies towards key EU priorities; (ii) engaging in interregional collaboration to develop innovation; and (iii) strengthening and interconnecting their regional innovation ecosystems.
([65]) EUR 60 Million from Horizon Europe (European Innovation Ecosystem) and EUR 62 Million from European regional Development Fund (Interregional Innovation Investment Instrument).
([66]) Together with Hydrogen Europe, Hydrogen Europe Research and the European Hydrogen Valleys Partnership.
([67]) A 'unicorn' is a company exceeding USD ()([67]) Exceeding €1 billion in valuation.
([68]) Next generation computing, digital security & trust, new space, cardiovascular therapies, new biotech platforms, smart mobility, renewable energies, batteries & energy storage, clean fuels & hydrogen, and agro & food tech.([68]) Next Generation Computing, Digital Security & Trust, New Space, Cardiovascular Therapies, New Biotech Platforms, Smart Mobility, Renewable Energies, Batteries & Energy Storage, Clean Fuels & Hydrogen and Agro & Food Tech.

area and will facilitate new connections and partnerships with lead investors, advisers and relevant agencies.

Additional actions

Under Horizon Europe, the **European Innovation Ecosystems** programme provided some EUR 24 million in funding to interregional projects bringing together almost 150 partners across Europe to support funding scale-ups, innovation procurement, and innovation ecosystems.

In 2023, the **European Research Area (ERA) Forum** set up a sub-group bringing together Member States' representatives in charge of R&I policy and cohesion policy administrations. The aim of the sub-group was to facilitate future synergies through the exchange of information and policy updates to stimulate concrete actions, inspired by the example of the **transfer of European Regional Development Fund (ERDF) funding to Horizon Europe** in two Member States. ([69]) The Commission also launched two pilot projects to develop, in close contact with the Committee of the Regions, the concept of **ERA hubs**. The aim of the ERA hubs is to develop and test a set of specifications and a methodology to help regions assess, benchmark and upgrade their R&I ecosystems to achieve minimum quality criteria on: (i) internal coordination; (ii) the provision of supporting services; and (iii) interconnection with other ecosystems. Furthermore, in the context of the "Widening" part of Horizon Europe,

In January 2023, the Commission launched the **Plug-In Scheme**, a new mechanism that fosters closer collaboration between the EIC and national innovation programmes. Thanks to it, a project awarded funding under a national programme (certified as a 'plug-in' programme) can participate via a fast track to the EIC accelerator calls.

In the area of energy, the EU continued to be actively involved, together with 23 countries, in **Mission Innovation** ([70]) a global initiative focused on innovation in clean energy. This initiative was at the origin of the first catalyst partnership announced at COP28 ([71]) in which EU funds support companies with potential to reduce the green premium of clean products and solutions in hydrogen, sustainable aviation fuels, energy storage, CO2 capture and the decarbonisation of energy. Mission Innovation also runs the Clean-Hydrogen Mission to develop 100 'clean-hydrogen valleys' worldwide, co-led by the European Commission.

([69]) Malta and Lithuania. ERDF funds were or will be used to grant EIC, ERA widening or MSCA applicants.
([70])Mission Innovation (MI) is a global initiative of 23 countries and the European Union, with the aim of accelerating effort in innovation in clean energy globally. It was launched at COP21, and today MI members represent over 95% of global government investment in clean-energy research and innovation. Partner organisations include the IEA, IRENA, Breakthrough Energy, the World Bank, the World Economic Forum, the Global Covenant of Mayors and the First Movers Coalition. For the next decade, MI members are concentrating their efforts around impact-oriented, public-private missions, with ambitious and inspirational goals that accelerate the pathway towards the Paris Agreement goals and net zero.
([71]) EU–Catalyst partnership (europa.eu).

Furthermore, the **Task-Force on climate-neutral technologies in energy-intensive industries** produced a report ([72]) in 2023 analysing around 200 EU-funded demonstrators for net-zero technologies in energy-intensive industries in the EU.

In October 2023, the Commission issued a Communication ([73]) on the revision of **the strategic energy technology (SET) plan** to strengthen the SET plan's role in coordinating European and national R&I strategies for low-carbon energy. In particular, a new working group on hydrogen has been set up to implement the strategic agenda of the ERA pilot on green hydrogen ([74]).

In the area of Artificial Intelligence (AI), in addition to the AI Act and its proposals on innovation-friendly regulations ([75]) the Commission is working to assess the **impact of AI on research and innovation**, through an opinion under the Scientific Advice Mechanism ([76]).

Furthermore, a network of more than 200 **European digital innovation hubs (EDIHs)** covering all regions of Europe ([77]) aims to promote the broad uptake of AI, high-performance computers, cybersecurity and other digital technologies. They help companies to innovate new products and services using AI and help to make these products and services competitive. The innovation package for AI innovation and startups ([78]) introduces AI factories ([79]) and other financial and operational measures that will boost AI innovation and startups, like providing access to world-class High Performance Computing to researchers and SMEs active in AI via the EuroHPC Joint Undertaking.

The **Chips Act**, which entered into force on 21 September 2023, aims to boost Europe's technological leadership by facilitating the transfer of knowledge and by promoting the industrialisation of innovative technologies by European businesses ([80]).

The CASSINI Space Entrepreneurship Initiative is the Commission's action to support entrepreneurs, startups and SMEs in the space industry, including New Space, during

---

([72])Scaling up innovative technologies for climate neutrality. This report was accompanied by an interactive tool showing the innovative demonstrators on a map: Demonstrators scaling up innovative technologies for climate neutral-industries around Europe | Research and Innovation (europa.eu).

([73])COM(2023) 634 final.

([74]) Expert groups of the agenda process (2022), Strategic Research and Innovation Agenda, Key findings and conclusions of the agenda process for the European research and innovation initiative on green hydrogen, Final version (https://www.bmbf.de/bmbf/shareddocs/downloads/files/SRIA_green_hydrogen.pdfhttps://www.bmbf.de/bmbf/shareddocs/downloads/files/SRIA_green_hydrogen.pdf).https://www.bmbf.de/bmbf/shareddocs/downloads/files/SRIA_green_hydrogen.pdf).

([75]) See flagship area 2.

([76]) https://scientificadvice.eu.

([77]) De Nigris, S., Kalpaka, A. and Nepelski, D., Characteristics and regional coverage of the European Digital Innovation Hubs network, Publications Office of the European Union, JRC134620.

([78]) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on boosting startups and innovation in trustworthy artificial intelligence, of 24.1.2024, COM(2024) 28 final.

([79]) Under the Joint Undertaking on High PerformancePerforming Computers.

([80]) The 'Chips for Europe' initiative within the Chips Act, to be run by the Chips Joint Undertaking, will be supported by EUR 3.3 billion of EU funds, which is expected to be matched by funds from Member States. It will support activities such as: (i) new advanced pilot production lines to accelerate innovation and technology development; (ii) the development of a cloud-based design platform; (iii) the establishment of competence centres; (iv) the development of quantum chips; and (v) the creation of a Chips Fund to facilitate access to debt financing and equity.

2021-2027 ([81]). It should accelerate the growth of startups and SMEs in all sectors of the space industry, with the goal of enhancing business-friendly ecosystems, bolstering business capabilities in space market segments, strengthening critical supply chains and allowing the EU to achieve a greater degree of strategic autonomy. CASSINI includes an EUR 1 billion of EU seeds and growth fund, hackathons and mentoring, challenges, in-orbit demonstration and validation, a business accelerator, partnering and matchmaking.

Horizon Europe funds research and innovation to address the rural-urban innovation divide. In 2023, more than EUR 25 million have been programmed to fund projects supporting the rural innovation ecosystem and two EU partnerships have been launched ([82]). Furthermore, the **EU Mission "A soil deal for Europe"** aims at establishing 100 living labs and lighthouses to lead the transition towards healthy soils by 2030. In 2023, EUR 60 million have been invested in the first calls for living labs.

Under the **Common Agriculture Policy (CAP)**, over 3 200 European Innovation Partnership on Agriculture Productivity and Sustainability (EIP-AGRI) Operational Groups have been supported and additional 6 600 are planned by Member States in their CAP Strategic Plans for the period 2023-2027 to co-create practical solutions for agriculture, forestry and rural communities in innovation projects at local level.

In December 2022, the **Council recommendation on the guiding principles for knowledge valorisation** ([83]) was adopted to set out common policy principles and measures for national, regional and local policy makers to transform R&I results into solutions that benefit society. The guiding principles are: (i) to engage all actors in R&I ecosystems; (ii) to focus on connections and co-creation between actors; and (iii) to emphasise entrepreneurial skills and practices. ([84])

In addition, two "**communities of practice" on industry-academia collaboration ([85]) and on citizen engagement** for knowledge valorisation were set up by the Commission, bringing together more than 300 stakeholders from universities and private and public organisations, including civil society ([86]). They were active between March and June 2023. ([87])

([81]) The initiative is open to all areas of the EU Space Programme, and covers both upstream (i.e. nanosats, launchers, etc. and downstream (i.e. products/services enabled by space data, etc.). The CASSINI ecosystem consists of all the space-based startups and SMEs that benefit from and participate to the CASSINI supporting activities, provided by the Commission and its agencies (e.g., EUSPA, the European Innovation Council and SMEs Executive Agency, the European Health and Digital Executive Agency).

([82])Including one on agroecology living labs and research infrastructures.

([83])Council Recommendation (EU) 2022/2415 of December 2022 on the guiding principles for knowledge valorisation (OJ L 317, 9.12.2022, p. 141).

([84]) In March 2023 the Commission adopted two recommendations on the Code of practice on the management of intellectual assets and the Code of practice on standardisation to support the implementation of the guiding principles and provide hands-on guidance for stakeholders.

([85])Commission Recommendation (EU) 2023/499 of 1 March 2023 on a Code of Practice on the management of intellectual assets for knowledge valorisation in the European Research Area, (OJ L 69, 7.3.2023, p. 75).

([86]) These communities (groups addressing topics of common interest) prepared inputs for the Codes of practice on industry-academia co-creation and citizen engagement for knowledge valorisation. These two Codes will introduce new strategic approaches for stakeholders to proactively seek for common interests to jointly produce and valorise extract value from knowledge. They will help to: (i) create an enabling environment and thriving conditions for co-creation; (ii), establish interactive models; and (iii) better match the supply and demand for innovation.

([87]) The Communities prepared inputs for the **Codes of practice on industry-academia co-creation and citizen engagement for knowledge valorisation**. The Codes will introduce new strategic approaches for stakeholders to proactively seek for common

Also, Member States and Associated Countries announced a number of **national initiatives** to boost innovation ecosystems. For example, the **regional business lighthouses** in Denmark focus on cultivating future positions of strength for Danish businesses within the green sector (bio-solutions, water technology, CO_2 capture), life sciences, and robotics through support for specific projects. The '**Cervera' network grants** in Spain also directly support regional/local ecosystems and strengthen the innovation capacities of SMEs by contracting R&D activities to knowledge-generating centres or carrying out R&D projects in collaboration with these centres. In Germany, the federal agency for disruptive innovation **(SPRIND)** runs several projects to support and accelerate innovative ideas including a competition for innovators. The **Hydrogen Center** is an organisation seeking to improve access to research infrastructures in Slovenia and Austria. It is a good example of cross-border cooperation supported by EU regional funds and national resources.

2.4. Fostering, attracting and retaining deep-tech talent

The capacity to nurture, retain and attract talented and skilled individuals remains a priority for Europe, as also stressed during the 2023 European Year of Skills. To nurture talent, it is essential to make efforts to increase education in science, technology, engineering, arts and mathematics (STEAM) and entrepreneurial skills, especially among women. To retain talented people, new opportunities and interesting growth prospects need to be developed and promoted. To attract talented people from other continents – in part to fill the skills gap in certain technological sectors – the EU can further promote itself in the global arena and facilitate 'circular mobility' ([88]) opportunities. The EU is complementing Member States' actions in this area through a wide variety of policy initiatives ([89]) and EU-funded programmes ([90]), including the actions launched by the NEIA in this flagship area.

Completed NEIA actions

The **EIT deep-tech talent initiative** (DTTI) ([91]) is an ambitious scheme aiming to offer training opportunities to 1 million deep-tech talents by 2025. Launched in October 2022, the initiative ([92]) has so far involved 106 education and training providers, enterprises, financial partners, and institutional partners that have committed to train more than 700 000 people ([93]). The recruitment of stakeholders to join the pledges will continue and events and calls for proposals will be launched starting in 2024.

---

interests to jointly produce and valorise knowledge. They will help create enabling environment and thriving conditions for co-creation, establish interactive models and better match the supply and demand for innovation.

([88])As opposed to brain drain, circular mobility is an approach where individuals spend some part of their career abroad before going back in their Country of origin

([89]) Bologna and Lisbon process, ERA, European Education Area, Skills Agenda.

([90])Next Generation EU, Erasmus+, Erasmus for young entrepreneurs, European Social Fund, Digital Europe Programme, MSCA, ERC.

([91]) https://www.eitdeeptechtalent.eu/.

([92]) It also includes a dedicated platform featuring training courses, the 'DTTI Radar' (an interactive tool on emerging technologies), a prize and an annual conference.

([93]) Source: https://www.eitdeeptechtalent.eu/.

Launched in 2022 by the EIC, the **Women Entrepreneurship and Leadership Scheme** ([94]) provides training and networking opportunities for women-led startups. To date, the scheme has supported almost 200 women-led EIC beneficiaries, including some EIT-funded companies. EUR 10-15 million is dedicated every year to these calls. The Commission will launch new calls under the 2023-2024 Horizon Europe work programme.

The **Education and Innovation Practice Community**, gathering around 700 stakeholders from academia, private and public organisations in all EU Member States and several non-EU countries, was set-up in October 2022, in cooperation with the OECD. The first strand of work, including peer learning activities and analytical reports, focused on strengthening higher education-school partnerships for green and digital innovation. The second strand supports competencies for innovation in mainstream higher education.

The Erasmus+ Alliances for Innovation was launched, and the development of deep-tech skills has been identified as a priority for 2023. This will aid and enhance the growth of incubators within higher education institutions, working closely with the entrepreneurial sector. The objective is to help student entrepreneurs to transform their ideas into viable businesses, aligning with the goals outlined in the European strategy for universities. Selected projects are currently starting their work. In 2023, 32 projects were selected in several sectors, including AI, gaming, manufacturing and deep-tech innovation. The calls for proposals under the 2024 ErasmusPlus work programme will maintain and strengthen the focus on deep-tech skills.

The Digital Europe programme is focusing on advanced digital skills. **Digital Europe calls to train experts in key-digital capacity areas** were launched in November 2023 ([95]): one focusing on strengthening skills in semiconductors and the other on "Cybersecurity Skills Academy" ([96]). Additionally, the call "Boosting digital skills of young people, in particular girls", targeted the development of digital skills from an early age.

Ongoing NEIA actions

The **Innovation Talent Pool platform** will facilitate the mobility of skilled individuals to and within Europe through international recruitment, by supporting matchmaking with EU-based employers that are unable to find the talent they need in Europe. The first phase of the platform (a new section on the Euraxess portal ([97]) open to non-EU nationals) was launched in March 2023. It includes: (i) information on funding opportunities; (ii) information on the EU 'Blue Card' immigration visa; (iii) contact points in 43 European countries; and (iv) a digital toolkit for startups helping them to

([94])EIT & EIC Women Entrepreneurship and Leadership Programme | EIT (europa.eu).
([95]) Funding & tenders (europa.eu).
([96]) the "Specialised education programmes in key capacity areas" called for bachelor's and master's programmes as well as self-standing modules in key digital areas such as AI, data science, cybersecurity, Internet of Things, cloud computing, quantum technologies, blockchain, and robotics.
([97]) EURAXESS | (europa.eu) a one-stop shop for researchers.

launch a business in the EU. In the second phase, the platform will offer a matchmaking tool for innovators, entrepreneurs and talented workers across the globe who wish to create, work and live in Europe.

Stock options represent an important incentive for employees to work in companies that offer them. The EIC Forum **working group on stock options** started work in March 2023 with the participation of EIC Forum members (Member States and Associated Countries), EIC Board members, external stakeholders and Commission representatives. Based on the outcome of future working group meetings, the EIC Forum will consider drawing up a list of good practices and proposals to tackle barriers to employee stock options across the EU in 2024.

The **Next Generation Innovation Talents Scheme** has been launched in 2023 and the first quarter of 2024. This is an internship scheme which will fund about 600 innovation internships for researchers and students over a 2-year period in companies supported by the EIC and EIT, covering all Member States. It will be implemented in collaboration with the EIT, ERC, Marie Sklodowska-Curie Action, and Horizon Europe Research Infrastructures.

Additional actions

Several additional actions have been launched in the last 18 months, especially in **AI and digital skills**, to train Europeans, expand the talent pool in Europe, and develop advanced digital skills for the next generation of innovators. These actions include the **European Skills Agenda**, the **Digital Education Action Plan**, the **Digital skills and jobs coalition**. Also, the **Digital Europe** programme, focusing on the existing gap in advanced digital skills, has selected 36 projects by the end of 2023 to enhance the training opportunities for acquiring advanced digital skills and to boost the number of ICT graduates as well as ICT specialists and professionals in specific sectors with advanced digital skills ([98]).

In 2022, the **EIT's HEI (Higher Education Institutions) Initiative** announced its first call for proposals with a special focus on deep tech ([99]). Sixteen projects, involving 100 HEIs and 79 non-academic organizations, were selected, each receiving up to EUR 750,000 to enhance innovation capacity, particularly in deep tech.

To boost innovation in Europe's female-led deep-tech sector, the **Women TechEU** scheme offers early-stage financing to support the initial steps in the innovation process, and the growth of companies. So far, it has funded 130 women-led deep-tech startups,

([98])In 2024 two additional calls for actions will be launched under "Digital Europe", one for the continuation of the "Digital Skills and Jobs Platform" and the second to support "Girls and women in digital" by providing insights into the gender gap in the ICT professions in the EU.

([99])The call required that applicants showed how they would build innovation capacity through the integration of deep tech talent-fostering activities.

and the next edition ([100]) will help women-led deep-tech startups to grow into tomorrow's tech leaders.

In the area of green skills, the **EIT Girls Go Circular Project,** addressing primary and secondary schools, has trained over 37 000 girls in 23 countries on circularity subjects, and will soon be broadened to include all Member States.

As outlined in the **European strategy for universities** adopted in 2022, the development of a European framework for diversity and inclusion was proposed, including on gender gaps, to identify challenges and solutions for universities. To strengthen the participation of women and girls in STEAM studies and careers, the Commission launched a roadmap of activities in 2022 and 2023, including the creation of a manifesto for gender-inclusive STEM and STEAM education and careers, that will be implemented with the support of Horizon Europe Cluster 2 ('Culture, Creativity and Inclusive Society') ([101]).

Also, the **European Universities alliances** are instrumental in implementing the European strategy for universities including for closing the gender gap and increasing the proportion of women holding full professorship or leadership positions. Actions include the development of support platform like the "Women in Tech" Manifesto, networks such as the Female Founder Network or projects with pre-university education to raise the attractiveness of STEAM careers ([102]).

To attract, retain and promote the mobility of talented workers – including, but not limited to the innovation sector – the Commission adopted in November 2023 a **skills and talent mobility package**. The package comprises a series of new measures designed to make the EU more attractive to talent from outside the EU, and to facilitate mobility within the EU. For R&I careers specifically, the Commission has approved a **competence framework for R&I skills ResearchComp([103])** while the proposal on a **European framework to attract and retain research, innovation and entrepreneurial talent** in Europe was adopted in December 2023 as a Council recommendation ([104]). The adoption of this framework underscored ([105]) the significance of inter-sectoral mobility in achieving these objectives and the importance of the NEIA in this context. Furthermore, an ERA talent platform is being developed in 2024, which will provide access for talented workers to multiple resources for R&I careers (including to Euraxess, Resaver ([106]) and the planned Observatory on R&I careers).

In parallel, Member States and Associated Countries announced a number of **national initiatives** to nurture, retain or attract innovation talent. For example, the **AI academy**

([100])https://eismea.ec.europa.eu/programmes/european-innovation-ecosystems/women-techeu_en.
([101]) https://cordis.europa.eu/project/id/101132652.
([102])The alliances also promote STEM disciplines for example with STEM Innovation Contests for students to solve real-world challenges in cooperation with STEM-related industries.
([103])https://research-and-innovation.ec.europa.eu/jobs-research/researchcomp-european-competence-framework-researchers_en#what-is-researchcomp.
([104])Council Recommendation of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe (C/2023/1640).
([105])Council Recommendation of 18 December 2023 on a European framework to attract and retain research, innovation and entrepreneurial talents in Europe (C/2023/1640).
([106])RESAVER is a Penson Fund addressed to researchers with European mobility RESAVER Home | RESAVER.

run in Belgium to develop deep-tech skills in AI for researchers and companies will boost academic careers in AI areas. The **female innovators programme** in Austria provides targeted support for highly qualified female researchers and innovators in areas including leadership, entrepreneurship and networking. The **tech visa** in France, the **startup residence programme** in Malta, and the **startup visa scheme** in Cyprus all seek to attract international tech talent by providing a simplified procedure and support for people working in the tech ecosystem. Sweden also issued a call to a**ttract, integrate and retain international excellence,** providing financial support for employers to recruit research talent and Marie Sklodowska-Curie Fellows. In the Republic of North Macedonia, a '**fab lab' ([107]) and 'maker spaces'** have been set up to provide young people with the conditions for developing innovative products, services or processes.

2.5. Improving the tools for innovation policy-making

The diverse and evolving landscape of innovation definitions, policies, and data among the 27 Member States are in the focus of the fifth flagship of the NEIA. NEIA actions in this area aim at: (i) facilitating a common approach on some key features to improve coordination and cooperation; and (ii) improving on-demand capacity support for Member States in their efforts to boost domestic innovation ecosystems and policies.

Completed NEIA actions

A report on **definitions** related to startups, scale-ups and deep-tech innovation was produced in March 2023. Building on this report, a study to create a pilot European startup scoreboard will be launched in 2024. Based on this study, a set of indicators will be drawn up that may be used to update future European Innovation Scoreboards ([108]).

Ongoing NEIA actions

The **EIC Forum** gathers representatives of Member States and Associated Countries to exchange best practices and improve coordination. It regularly meets both in plenary sessions and in thematic working groups ([109]). Based on this work, the EIC Forum adopted annual policy orientations in 2022 ([110]) and 2023 ([111]). The Commission will continue to consolidate the role, working arrangements and visibility of the EIC Forum, to strengthen its position as a high-level platform that both facilitates the coordination of innovation policies and provides early advice to the Commission on strategic innovation policy issues.

Additional actions

The Commission is also helping Member States and regions to design and implement more effective and impactful innovation policies through the **Technical Support**

([107]) Fab labs (fabrication laboratories) are small scale workshop with open access for digital initiatives
([108]) https://op.europa.eu/en/publication-detail/-/publication/04797497-25de-11ee-a2d3-01aa75ed71a1.
([109]) they discuss subjects such as innovation policy, innovation procurement and data, employee stock options or the EIC Plug-In.
([110]) https://op.europa.eu/en/publication-detail/-/publication/71293c89-75ed-11ed-9887-01aa75ed71a1\.
([111]) https://op.europa.eu/en/publication-detail/-/publication/d120bc6d-9efa-11ee-b164-01aa75ed71a1.

Instrument (TSI) ([112]) and the **Horizon Policy Support Facility** (PSF) ([113]). The TSI has supported 13 Member States ([114]) in various innovation-capacity-building and innovation-advisory projects, such as "Overcome barriers to innovation in regional entrepreneurship ecosystems" in Spain or the "Startup ecosystem strategy" in Romania. The PSF has provided practical support both to specific Member States[115] for their domestic efforts and to groups of countries with the PSF mutual learning exercise ([116]). The PSF will continue to support the design and implementation of structural reforms in Member States, including through the use of the new, more flexible PSF Open instrument and peer policy learning thanks to the PSF-Challenge.

To strengthen innovation-driven territorial transformation, the pilot action **Partnerships for Regional Innovation (PRI)** ([117]) was launched in May 2022 by the Commission in cooperation with the Committee of the Regions. It was accompanied by the publication of a PRI playbook ([118]) presenting policy tools and practices common in Europe and beyond. As a result of the pilot, an 'action book' ([119]) on innovation for place-based transformation has been published.

For the past two years, the **Joint Research Centre** of the Commission (JRC) has been supporting the EIC in building its strategic intelligence capacity through the development and use of foresight and other future-oriented approaches, by capturing insights on emerging technologies and disruptive innovations. ([120]) This process, through a participatory multi-stakeholder approach, provides, among other outputs, expert-based evidence to support EIC funding prioritization.

At **international level**, the EU is working closely with partner countries and regions on innovation cooperation for mutual benefit, such as under the Trade and Technology Council with the US. Other examples include: the African Union-EU Innovation Agenda, that supports the uptake of research results focused on: public health, green transition, innovation, technology and capacities for science, to foster jobs and growth and to share technology and expertise; the EU-India Trade and Technology Council, boosting bilateral cooperation in green and clean energy with a focus on R&I cooperation, standards, and investments, aimed at facilitating trade in these technologies; and the revised EU-CELAC roadmap for R&I will have a strengthened, with an innovation dimension.

The NEIA is implemented in the context of a large international toolbox, including Green Alliances and Partnerships, Raw Material Partnerships, Digital Trade Agreements and Digital Partnerships. In fact, most sectors of the European economy require trans-national

([112])TSI under Next Generation.([112]) TSI under Next Generation.([112]) See https://ec.europa.eu/research-and-innovation/en/statistics/policy-support-facility

([113]) See https://ec.europa.eu/research-and-innovation/en/statistics/policy-support-facility

([114]) Italy, Spain, Bulgaria, Slovakia, Czechia, Malta, Poland, the Netherlands, Germany, France, Lithuania, Portugal, Slovenia.

([115]) Including Croatia, Czechia, Greece and Romania.

([116]) Concerning, for example, knowledge valorisation, industrial decarbonisation, and missions.

([117]) 74 territories, including 4 Member States and 63 regions, took part in the pilot. See: https://s3platform.jrc.ec.europa.eu/pri.

([118]) Pontikakis, D., Gonzalez Vazquez, I., Bianchi, G., Ranga, L., Marques Santos, A., Reimeris, R., Mifsud, S., Morgan, K., Madrid Gonzalez, C. and Stierna, K., Partnerships for Regional Innovation Playbook, EUR 31064 EN, Publications Office of the European Union, Luxembourg, 2022 available at https://dx.doi.org/10.2760/775610.

([119])https://publications.jrc.ec.europa.eu/repository/handle/JRC135826.

([120])This includes direct support to EIC activities, from short to medium term regular operations and strategy, and considering key events such as the Horizon Europe mid-term review and the development of the next Framework Programme.

digital inputs, that are fundamental for their business models, processes and innovation pipelines, as well as international connectivity, which is crucial to ensure that they can operate at a global scale. To that end, the EU has concluded free trade agreements containing digital trade provisions, including data flows. The EU is also currently negotiating specific digital trade agreements with partners such as South Korea and Singapore.

Cooperation with China on innovation actions under Horizon Europe ([121]) has been suspended, pending progress in the discussions on framework conditions for innovation under the EU-China Joint Roadmap for Science, Technology and Innovation.

The EIT has also been strengthening its activities in the Western Balkan economies, Turkey as well as Ukraine to build-up their innovation capacity and, establish connections with their European counterparts. ([122])

In the past 18 months, Member States and Associated Countries announced several **national initiatives** to develop tools and instruments to optimise the performance of their innovation ecosystems. For example, the **Observatory on Innovation** in Czechia, an independent entity to monitor, analyse, evaluate and produce intelligence on innovation and competitiveness, supports decision-making on public policy. In Austria, the **Startup Council** and the **Startup Dealroom**, an online platform, provides an overview of all startups and investors active in the country with daily updates. The **Deep-tech Startups Observatory** in France continuously collects and analyses data related to the French deep-tech landscape, providing information on: (i) where deep-tech is happening, in what industrial sectors and with what technologies; (ii) the funds raised by deep-tech companies; and (iii) the impact of deep-tech innovations on turnover and employment.

3. INSTITUTIONAL DIALOGUE, STAKEHOLDER INVOLVEMENT AND COMMUNICATION

3.1. Interactions with other EU institutions

The dialogue and interactions with other EU institutions and bodies has been continuous since the launching of the NEIA.

The **Council** discussed the NEIA under its various presidencies in both 2022 and 2023. For instance, Council Conclusions under the Czech Presidency ([123]) underlined the importance of adapting to the new wave of innovation and emphasised the need to boost synergies among existing funding programmes and initiatives.

Council Conclusions under the Spanish Presidency ([124]) focused on regional ecosystems, measures to close the innovation divide, and innovation procurement. In particular, the Council called for more actions at national level and invited the Commission to further

([121])Based on Article 22(6) of the Horizon Europe Regulation, the cooperation is suspended for the Work Programme 2023-24 on innovation close-to-market actions.
([122]) See in particular the EIT Jumpstarter programme.
([123]) Council Conclusions on the New European Innovation Agenda, 2 December 2022.
([124]) Council Conclusion on strengthening the role and impact of research and innovation in the policymaking process in the Union, 8 December 2023.

explore ways to support innovation procurement. A conference on this subject will take place in 2024 under the initiative of the Belgian Presidency ([125]).

The NEIA was the subject of an oral question with debate in the plenary session of the **European Parliament** in October 2023 ([126]). On that occasion, several members of the Parliament from various political groups called for more investment in innovation, greater synergies between programmes, more opportunities for SMEs in innovation, and more opportunities for women in innovation. They deplored that Europe is lagging behind the US, South Korea, Japan and China.

The **Economic and Social Committee** has issued an opinion on introducing a European stress test for innovation ([127]) for the new policy initiatives in this area in order to strengthen European innovation ecosystems. The **Committee of the Regions** is contributing to the debate on regional innovation ecosystems and has actively backed the 'regional innovation valleys' initiative, which is partially built on the Partnerships for Regional Innovations initiative.

Furthermore, the Commission has engaged in a structured dialogue with the **European Investment Bank Group** to discuss how the latter can best contribute to the first flagship area of NEIA, including through the InvestEU programme, ESCALAR and the European Tech Champions initiative.

3.2. Dialogue with stakeholders

The implementation of the NEIA actions has been accompanied by a constructive dialogue with stakeholders from the innovation sector. In particular, the 'Coalition of the Willing' ([128]) composed of more than 80 members from public and private organisations, was set up with the purpose of enriching the NEIA with additional complementary initiatives taken in national, local, or private contexts. The aim was to facilitate collaboration and give visibility to best practices. As part of this work, the Coalition of the Willing announced nearly 80 actions in support of the NEIA.

3.3. Communication activities and events on NEIA actions

Several communication activities have been carried out to promote the NEIA and its added value across Europe, including to the innovation community, policy makers, the financial actors and the wider public. Since the adoption of the NEIA, the Commission has organised or participated in more than 100 events across Europe (often in cooperation with Member States) and beyond, including the first European Innovation Days in Silicon Valley in March 2023 ([129]). The dedicated Europa website section ([130]) is constantly updated and the Commission carries out ad hoc communication activities,

([125]) March 19-20 2024, during the 2024 R&I week in Brussels.
([126]) Question for oral answer O-000038/2023 to the Commission by Cristian-Silviu Buşoi on behalf of the Committee on Industry, Research and Energy.
([127]) https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/introducing-european-innovation-stress-test.
([128]) https://www.coalitionofthewilling.eu.
([129]) See flagship 1, within 'additional actions'.
([130]) The New European Innovation Agenda - European Commission (europa.eu)

including press and social media actions on the occasion of specific events or new developments of the NEIA ([131]). The NEIA has also been a regular item on the agendas of the R&I enhanced dialogues that the Commission organises with Member States, as well as on the agendas of Joint Committees' meetings with the Horizon Europe Associated Countries.

4. NEXT STEPS AND CHALLENGES AHEAD

The implementation of the NEIA is progressing well. Among the 25 actions set out in the NEIA ([132]) 13 have been completed and 12 are ongoing. In parallel, as explained in this report, several additional actions at both European and national level support the implementation of the NEIA and contribute to its objectives. The completion and full implementation of the NEIA, together with enhanced coordination and exchange of good practices with and amongst Member States, will constitute important contributions to boost European innovation and competitiveness.

The Commission will continue to monitor and report on the progress and impact of the actions identified in the NEIA. This will be done in close cooperation with the EIC Forum. In parallel, the Commission will continue to boost its dialogue with innovation actors, also with a strengthened communication and advocacy strategy on the NEIA, called 'Innovation Made in Europe'.

([131]) Examples: the publication of the regional 'innovation valleys' calls; the adoption of proposals for DEBRA Directive and Listing Act; the publication of the guidance document on regulatory sandboxes, etc.

([132]) See List of actions in Annex 1.

ANNEX I - List of actions in the NEIA

Title (Flagship – Actions)		Completed on
Flagship: Funding for deep-tech scale-ups		
(1)	Directive on debt-equity bias-reduction allowance (DEBRA) on corporate income tax, Commission proposal	Q2 2022
(2)	Listings Act, Commission proposal	Q4 2022
(3)	Expansion of the European Scale-Up Action for Risk Capital (ESCALAR) mechanism	Ongoing
(4)	EIC WP 2022 Pilot European innovation gender and diversity index	Ongoing
(5)	EIT Women2Invest Programme	Q4 2022
Flagship: Enabling deep-tech innovation through experimentation spaces and public procurement		
(6)	Guidance document on regulatory sandboxes	Q3 2023
(7)	Open-innovation test bed in renewable hydrogen	Ongoing
(8)	Launch Testing and Experimentation Facilities for testing AI innovation	Q1 2023
(9)	Revised State Aid Framework for Research and Development and Innovation	Q4 2022
(10)	Launch of specialist advisory service on innovation procurement	Ongoing
Flagship: Accelerating and strengthening innovation in European innovation ecosystems across the EU and addressing the innovation divide		
(11)	Set up and connect regional deep-tech innovation valleys	Ongoing
(12)	Commission notice on synergies between Horizon Europe and European Regional Development Fund programmes	Q3 2022
(13)	Double the number of hydrogen valleys in the EU	Ongoing
(14)	Set up a one-stop shop for players in innovation ecosystems	Ongoing
(15)	Launch the ‘Scale-up 100’	Ongoing
Flagship: Fostering, attracting and retaining deep-tech talents		
(16)	Launch EIT deep-tech talent initiative	Q4 2022
(17)	Launch innovation intern scheme	Ongoing
(18)	Launch an EU talent pool to help businesses, including startups, to find talent from outside the EU	Ongoing
(19)	Set up Women Entrepreneurship and Leadership scheme	Q4 2022
(20)	Exchange of best practice on startup employees’ stock options	Ongoing
(21)	Community of practice on education and innovation	Q4 2022
(22)	Launch Erasmus+ Alliances for Innovation	Q2 2023
(23)	Launch Digital Europe call to train experts in future-oriented fields	Q3 2022
Flagship: Improving policy-making tools		
(24)	Report on definitions related to startups, scale-ups and deep-tech innovation	Q1 2023
(25)	Strengthen the role of the European Innovation Council Forum	Ongoing