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REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

First biennial report on the implementation of the Global Approach to research and innovation

1. INTRODUCTION

In a global context characterised by heightened geopolitical tensions and the resulting increased fragmentation of the world's supply chains, the European Union faces the challenge of diversifying and substituting sources of supply for critical raw materials and clean energy. It also needs to boost its own capacity for technological sovereignty in close relationship with reliable partners, thereby ensuring its open strategic autonomy.

The Green Deal industrial plan[1] acknowledges the need to massively increase the technological development, manufacturing and installation of net-zero products and energy supply in the next decade. Europe is a leading player in innovation and has world-leading scientists and researchers. Building on these strengths, the Commission works with partners to develop and deploy net-zero technologies, with an open but assertive approach.

In its Communication on the Global Approach to research and innovation (R&I)[2], the Commission presented a strategy to deepen international R&I cooperation based on openness and respect of fundamental rights and values. The Council reaffirmed the EU's commitment to openness in international R&I cooperation, while pursuing a level playing field and balanced reciprocal openness[3] and the European Parliament emphasised the need to develop rules-based multilateral cooperation, in which R&I should play a pivotal role[4].

The Global Approach Communication is implemented through modulating bilateral cooperation with individual countries, pursuing reciprocal openness and a level playing field. At the same time, the Global Approach Communication supports multilateral partnerships to deliver new solutions to global challenges and increase EU's resilience. It is instrumental for the Global Gateway[5], the EU's strategy to boost investment around the world in digitalisation, climate and energy, transport, health, education and research.

This is the first biennial report taking stock of progress towards the Global Approach Communication's objectives. It provides a snapshot of the EU position in international R&I cooperation across thematic areas. It also includes a reflection on science diplomacy to further integrate the Global Approach to R&I into the EU's foreign and security policy[6].

2. REAFFIRMING EU COMMITMENT TO INTERNATIONAL OPENNESS AND FUNDAMENTAL VALUES IN RESEARCH AND INNOVATION

The EU developed a common set of **principles and values for R&I** and launched a **multilateral dialogue with partner countries and international fora** on values and principles for international R&I cooperation.

The EU reaffirmed its commitment to lead by example to **preserve openness** in international R&I cooperation, while putting in place restrictive measures when needed. It successfully

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[1] COM (2023) 62 final.
[2] COM (2021) 252 final.
[3] Council conclusions on the Global Approach to research and innovation, 28/09/2021, document 12301/21.
[4] Resolution on a global approach to research and innovation, 6 April 2022, 2021/3001(RSP).
[5] Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, The Global Gateway, JOIN (2021) 30 final.
[6] See point 34 of Council Conclusions on the Global Approach to research and innovation.

2.1 Values and principles in international R&I cooperation

The Global Approach Communication states that fundamental values and principles underlying international R&I cooperation should be discussed with international partners through a multilateral dialogue. This approach was endorsed by the Council in three sets of R&I-related Council conclusions[7], as well as by the Marseille Declaration[8] on international cooperation in R&I. The Commission hosted the **inaugural meeting of the multilateral dialogue** in virtual format on 8 July 2022, attended by representatives from 46 countries[9] and several international organisations and European stakeholder organisations.

The dialogue is being **implemented through workshops** focused on R&I values and principles[10], aiming to discuss common terminology, share experience on practical implementation and identify good practice. The discussions take stock of and build on the Pact for R&I in Europe[11] and work in international fora such as G7, G20, the Global Research Council, the OECD and UNESCO. The output from the workshops will be consolidated through 'stock taking' meetings, held in the course of 2023, and a ministerial event in 2024 with the envisaged participation of representatives of countries and organisations involved in the multilateral dialogue.

The EU has also been particularly active in defending **academic freedom**, notably through the Inspireurope+ project financed through Marie Skłodowska-Curie actions (MSCAs) under Horizon Europe. The project aims to facilitate transnational cooperation by strengthening and spreading good practice in supporting researchers at risk, due to for instance the consequences of the COVID-19 pandemic, the forceful takeover of Afghanistan by the de facto Taliban regime or internal repression in or forced departure from Russia as a result of their opposition to the country's war of aggression against Ukraine[12].

The EU is leading the way in promoting and adopting **open science** practices through international collaboration initiatives, such as the European Open Science Cloud. The European Open Science Cloud initiative is also involved in bi-regional and bilateral cooperation, such as exploring potential links with the African Open Science Platform. The EU also contributes to international alignment and collaboration on open science by co-chairing a dedicated G7 working group. Further international alignment of policies, rules and action is still needed for open sharing of scientific knowledge and research data and for

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[7] Council conclusions on the Global Approach to research and innovation of 28/09/2021, document 12301/21; on the future governance of the European Research Area (ERA) of 26/11/2021, document 14308/21; and on principles and values for international cooperation in R&I of 10/06/2022, document 10125/22.

[8] Organised under the French Presidency of the Council, the Marseille conference on the Global Approach to R&I took place on 8 March 2021. It resulted in the adoption of the Presidency's declaration on international cooperation in R&I.

[9] These are EU Member States, countries associated to Horizon Europe and countries with a science and technology cooperation agreement with the EU.

[10] These values and principles are those set out in the Council conclusions of 10 June 2022, document 10125/22. The workshops are co-designed and co-organised with Member States and/or international partners and stakeholder organisations, in close cooperation with the ERA Forum Sub-Group on the Global Approach.

[11] Council Recommendation (EU) 2021/2122 of 26 November 2021 on a Pact for R&I in Europe.

[12] For more information: Inspireurope+.

principles guiding changes to research assessment, for example under the Coalition for Advancing Research Assessment.

Science diplomacy[13] plays today an ever greater role, due to a number of factors such as: the increasing complexity of global challenges, pressures on global commons, the impact of emerging technologies, the global security context, in particular with the Russian war of aggression against Ukraine, and the quest for EU's open strategic autonomy and technological sovereignty. **Science diplomacy efforts in the EU remain largely uncoordinated, lacking synergies and an EU-wide approach**[14]. Such shortcomings create vulnerabilities in a rapidly changing geopolitical, scientific and technological environment, with other international actors using science diplomacy in a much more targeted manner.

The Council also called on the Commission and the European External Action Service to develop a European science diplomacy agenda in its conclusions on the Global Approach and on the future governance of the European Research Area (ERA). From discussions held in the ERA Forum Sub-Group on the Global Approach and with different groups of stakeholders, four pillars of science diplomacy emerged[15] and discussions are continuing on this basis, both within EU institutions and with relevant stakeholders.

2.2. The international dimension of Horizon Europe and its association policy

International R&I cooperation is vital for ensuring access to talent, knowledge, infrastructures and markets worldwide, for effectively tackling global challenges and for implementing global commitments. The EU is a major catalyst for the internationalisation of R&I, with Horizon Europe – the EU's framework programme for research and innovation – attracting top researchers, innovators and knowledge-intensive companies[16].

Openness to the world is a trademark of Horizon Europe. Collaborative projects can include partners from all over the globe. Except for a few cases, partners from low- and middle-income countries are automatically eligible for EU funding, while industrialised countries are generally expected to bring their own funding to projects.

In the first two biennial Horizon Europe work programmes (for 2021-22 and 2023-24), around 21% of all collaborative research topics actively encouraged international cooperation. Specific initiatives were also launched, targeting cooperation with Africa and Southern Mediterranean countries. Marie Skłodowska-Curie actions (MSCAs) are the most international component in Horizon Europe[17] and are essential in establishing international

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[13] Science diplomacy is understood here as the direct or indirect use of science, scientific evidence and scientific cooperation to advance diplomatic goals. This term includes science, technology, engineering and mathematics, as well as social sciences and humanities.

[14] Tools for an EU Science Diplomacy, Luxembourg: Publications Office of the European Union, 2017.

[15] Using science diplomacy to tackle geopolitical challenges in a fragmented, multipolar world; Making European diplomacy more strategic, effective and resilient through scientific evidence and foresight; Strengthening science diplomacy in EU and Member States' delegations and embassies and fostering global science diplomacy outreach; Building capacity for European science diplomacy.

[16] European Commission, Impact assessment accompanying the proposal for a Regulation of the European Parliament and of the Council establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, SWD (2018) 307.

[17] Marie Skłodowska-Curie Actions represents about 50% of the Horizon Europe's total participations from third country organisations. For many countries, over 50% of their total participations in Horizon Europe

partnerships between R&I organisations. Among individual researchers selected under MSCA postdoctoral fellowships, 38% are from outside the EU[18]. Anchored among others to the UN Sustainable Development Goals, Horizon Europe's missions have a strong international dimension[19] (see section 4).

Under Horizon Europe, the EU has continued to finance transnational access to research infrastructures, including those run by the Commission's Joint Research Centre[20], for users from third countries. The EU promotes international access programmes within the G7 Group of senior officials on global research infrastructures[21]. In 2022, the Commission and the Member States supported the Brno Declaration[22], which aims to foster a global ecosystem of research infrastructures.

Whereas previous Framework Programmes have been open for the association of countries neighbouring the European Union, Horizon Europe, for the first time, offers the possibility to associate third countries located anywhere in the world, which have a good capacity in science, technology and innovation[23] and share common values with the EU. New Zealand is the first country beyond the EU's direct vicinity with which association negotiations were finalised in December 2022. Negotiations with Canada are ongoing and the launch of negotiations with the Republic of Korea was announced at the EU-Korea Summit in May 2023. The possible launch of negotiations is also under consideration with Japan.

In the EU neighbourhood, Horizon Europe confirms the possibility of association to the programme for third countries belonging to the European Free Trade Association (EFTA) which are members of the European Economic Area, for acceding, candidate and potential candidate countries, as well as for European neighbourhood policy countries. There are so far 16 countries already associated to the programme: Albania, Armenia, Bosnia and Herzegovina, the Faroe Islands, Georgia, Iceland, Israel, Kosovo[*], the Republic of Moldova, Montenegro, North Macedonia, Norway, Serbia, Tunisia, Türkiye and Ukraine[24]. The EU is further working on the conclusion of the association process with the UK, and formal negotiations with Morocco are ongoing.

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projects occurs through MSCA: USA (77.5%); Argentina (76.5%), Indonesia, Singapore, New Zealand (75%); Japan (66.7%); Australia (62.2%); Chile (57.1%); Canada (54.1%).

[18] This is based on the first data from Horizon Europe. In addition, the Commission has also launched a dedicated action on fostering international cooperation in MSCA (MSCAdvocacy), assessing for instance framework conditions for cooperation in researchers' training and mobility with countries that have a bilateral science and technology cooperation agreement in force with the EU.

[19] Regulation (EU) 2021/695 of the European Parliament and the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013, (– the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013), see Article 8 thereof.

[20] See: Open access to JRC Research Infrastructures (europa.eu)

[21] GSO – Group of Senior Officials (GSO) on global Research Infrastructures (gsogri.org)

[22] Brno Declaration on Fostering a Global Ecosystem of Research Infrastructures (icri2022.cz)

[23] Reference is made to third countries fulfilling the criteria established in Article 16(1)(d) of the Regulation (EU) 2021/695 of 28 April 2021 establishing Horizon Europe.

[*] This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo declaration of independence.

[24] Ukraine is also associated to the Euratom Research and Training programme.

3. REBALANCING THE EU'S GLOBAL APPROACH TO R&I: TOWARDS A LEVEL PLAYING FIELD AND RECIPROCITY

The EU set out **joint commitments with prioritised partners**, such as the United States of America (US), Canada, Japan, India, Southern Mediterranean countries, and the African Union, to implement framework conditions designed to secure a level playing field and promote shared values (see more details in Section 5 below).

The Commission implemented Article 22(5) and (6) of the Horizon Europe Regulation[25] to safeguard the **EU strategic assets, interests, autonomy or security**. It developed guidelines on foreign interference, guiding principles on knowledge valorisation, a **code of practice for the management of intellectual assets** and **a code of practice on standardisation**[26].

The COVID-19 pandemic and the fast-changing geopolitical context have revealed the severe risks associated with EU's dependencies in several strategic sectors[27]. This calls for attention to be paid to how technological capacity is distributed across major economic players[28]. **Technological sovereignty** requires both the scientific knowledge necessary to build, operate and understand critical technologies, and access to the components and materials needed to transfer the technologies from the laboratory to the market[29].

Article 22(5) of the Horizon Europe Regulation makes it **possible to limit participation** to legal entities established in Member States or in specified associated or other third countries as identified in the work programme to safeguard the EU's strategic assets, interests, autonomy or security. Restrictions can also be applied to entities established in countries that are eligible but are directly or indirectly controlled by a non-eligible country or by an entity established in a non-eligible country. Participation was limited under Article 22(5) for 49 topics in the 2021-22 work programme and for 31 topics in the 2023-24 work programme, accounting for 4% and 3.5% respectively of these work programmes' budgets.[30] The provisions of Article 22(5) were used for topics relating to **quantum research**, **space** and **critical raw materials**. The use of Article 22(5) is exceptional and duly justified.

Where appropriate and duly justified, Article 22(6) of the Horizon Europe Regulation allows for the insertion of **additional eligibility criteria** to take account of specific policy requirements or the nature and objectives of the action. The Commission has made use of this Article with third countries where it was deemed that the framework conditions ensuring a level playing field in R&I cooperation were not in place.

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[25] Regulation (EU) 2021/695 of 28 April 2021 establishing Horizon Europe.

[26] Commission Recommendation (EU) 2023/498 of 1 March 2023 on a Code of Practice on standardisation in the European Research Area and 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.

[27] See inter alia: EU research and innovation and the invasion of Ukraine: Main channels of impact (europa.eu)

[28] Crespi, F., Caravella, S., Menghini, M., & Salvatori, C. (2021). European Technological Sovereignty: An emerging framework for policy strategy. Intereconomics, 56(6), 348-354.

[29] Edler, J., Blind, K., & Frietsch, R. (2020). Technological Sovereignty: From Demand to Concept. Available at: https://www.isi.fraunhofer.de/en/presse/2020/presseinfo-11-Technologiesouveraenitaet.html.

[30] In addition, the European High-Performance Computing (EuroHPC) Joint Undertaking made use of Article 22(5) in one action in its 2023 work programme, one action in its 2022 work programme, and two actions in its 2021 work programme.

In order to ensure that actions carried out under Horizon Europe comply with the applicable security rules according to Article 20(1) of the Horizon Europe Regulation, the Commission implemented a **security screening procedure** for projects involving sensitive or classified information, or information or materials subject to national security restrictions. The current geo-political situation led to an increasing demand for security screening procedure for projects across Horizon Europe.

The Commission published guidelines on **tackling R&I foreign interference**[31]. This document outlines best practices for supporting EU higher education institutions and research performing organisations in safeguarding their academic freedom, integrity and institutional autonomy, as well as their research findings and assets. Within the G7 SIGRE Working Group[32], the Commission, together with like-minded partners, developed common research security principles.

To boost the value generated from knowledge, the Council adopted a Recommendation on **guiding principles for knowledge valorisation**[33]. The scientific community's awareness about intellectual asset management, including intellectual property (IP) rights, is required for promoting effective use and deployment of knowledge, and for making access to and sharing of IP-protected assets easier. To enhance collaboration on global standards, the Commission can pursue increased coordination with like-minded partners, drawing on the Commission recommendations on the **code of practice for the management of intellectual assets** and on the **code of practice on standardisation**[34].

4. POOLING GLOBAL EFFORTS TO TACKLE GLOBAL CHALLENGES TOGETHER

4.1. Leading global efforts towards a just green transition

The EU contributed to the adoption of the **Kunming-Montreal Global Biodiversity Framework** at the UN Conference on Biodiversity (COP 15) on 18 December 2022 and to the agreement on the UN High Seas Treaty in the Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction on 4 March 2023. It signed the **All-Atlantic Ocean Research and Innovation Alliance's Declaration** to foster ocean research cooperation in the Atlantic and the 3rd **Arctic science ministerial joint statement** to further support Arctic research. It also strengthened its involvement in **mission innovation**; and continued to promote its leading role in supporting **multilateral R&I cooperation** to deliver science-based solutions for sustainable land, ocean and soil management, agriculture and food systems, resource efficiency and circular economy, bioeconomy, climate, forestry and biodiversity policies, and Earth observation.

The Commission also set up an international knowledge management platform to share

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[31] European Commission, Tackling R&I foreign interference, 14 January 2022. This is also being addressed in the work of the EU Knowledge Network on China.

[32] G7 Working Group on the Security and Integrity of the Global Research Ecosystem, Common values and principles on research security and research integrity, June 2022.

[33] Council Recommendation (EU) 2022/2415 of 2 December 2022 on the guiding principles for knowledge valorisation.

[34] For instance, international collaboration on Eurocodes standards for structural engineering allows improving regulatory capacity and quality of infrastructure.

information about standards, guidance and funding opportunities under the **New European Bauhaus initiative**.

To **deliver on the European Green Deal**, further scientific advancements are critical to protect and restore natural capital, decarbonise the economy and industry with chemicals and materials that are safe and sustainable by design, prevent and reduce pollution, modernise our infrastructure and increase its resilience, protect public health and well-being, and design sustainable food and water systems. As part of its efforts to foster a fair, green and inclusive transition and in line with the **Global Gateway strategy[35]** and other international commitments, the EU also supported its partner countries to access environmental data and monitor and report on progress through initiatives aimed at strengthening knowledge and capacities and reinforcing the science-policy interface.

The Joint Communication on international ocean governance[36] underlined the need to build up ocean knowledge to protect and sustainably manage the oceans. With this goal in mind, the Commission signed a political declaration[37] on behalf of the EU establishing the new **All-Atlantic Ocean Research and Innovation Alliance** with Argentina, Brazil, Canada, Cabo Verde, Morocco, South Africa and the US. Reflecting the international scope of the Horizon Europe **'Restore our Ocean and Waters by 2030' mission**, international cooperation activities are carried out within the mission's Atlantic-Arctic Lighthouse and Mediterranean Lighthouse, as well as with Black Sea partner countries.

Under **Mission Innovation**,[38] the Commission promoted the acceleration of the clean energy transition in line with the European Green Deal. By co-leading the Clean Hydrogen mission, the Commission intends to increase the cost-competitiveness of clean hydrogen by reducing its end-to-end costs and by developing at least 100 hydrogen valleys worldwide by 2030. With the support of the Horizon Europe 'Climate-neutral and smart cities' mission, the Commission also co-leads the Urban Transitions mission to work with 300 cities worldwide to strengthen their net-zero visions, scale action and accelerate implementation.

At multilateral level, the Commission provided **evidence-informed support for policy making**, shaped the agendas and contributed to the work of a number of organisations, including: the Group on Earth Observations – on making better use of European Earth observation assets (like Copernicus); the International Bioeconomy Forum and other multilateral cooperation forums – on bioeconomy; the Intergovernmental Panel on Climate Change – on climate science; the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services and the UN Convention on Biological Diversity[39] - on biodiversity; the International Resource Panel and the Global Alliance on Circular Economy and Resource

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[35] Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, The Global Gateway, JOIN/2021/30 final.

[36] Joint Communication to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, Setting the course for a sustainable blue planet - Joint Communication on the EU's International Ocean Governance agenda, JOIN(2022)28 final.

[37] SKM_80822071310280 (allatlantic2022.com)

[38] Mission Innovation is a key international forum, gathering countries responsible for 90% of public innovation funding for energy.

[39] The Commission will also support the establishment of a Global Knowledge Support Service.

Efficiency[40]; the UN Food Systems initiative; and the UN Global Soil Partnership through the Horizon Europe 'A soil deal for Europe' mission.

Under the **New European Bauhaus** (NEB), the Commission set up an international knowledge management platform to share information about standards, guidance and funding opportunities in order to integrate the dimensions of sustainability, inclusion and aesthetics/quality of experience in buildings and public spaces. Certain initiatives are open to entities from third countries, subject to different conditions of participation: the New European Bauhaus Community, the NEB Lab, the New European Bauhaus Prizes, and the NEB funding opportunities under EU programmes[41].

4.2. Promoting the digital transition

> The EU strengthened joint research activities notably in **key digital technologies** and in **smart networks and services**, including with the adoption of the Single Basic Act establishing the joint undertakings under Horizon Europe[42]. The EU developed **international digital partnerships** with Latin America, Japan, the Republic of Korea and Singapore, in line with the Communication on the 2030 Digital Compass[43] (see also section 5).

The EU is strong in industrial research and development, in particular in the automobile, information and communication technology, and health sectors, and has a solid tradition in quantum research and robotics. While the EU is strong in advanced manufacturing and advanced materials, it is necessary to **reduce strategic dependencies in key technological fields and value chains**, such as artificial intelligence, big data, cloud computing, cybersecurity, secure communications, robotics and micro-electronics. Regulation, governance and standardisation of digital technologies will be critical factors in maximising digital opportunities, while reducing the challenges or threats they pose[44].

The EU supports developing and emerging countries, with particular attention to Africa, fostering digital connectivity through **digital economy packages** financed through **Team Europe initiatives**[45]. These packages are designed to promote a human-centric model of digital development. The EU has also increased its support for **broadband roll-out and connectivity projects** and set up regional data centres for the provision of space-based services in **Africa, Latin America and the Caribbean, and Asia**, in line with the Global Gateway strategy[46]. Progress was also achieved in the establishment of Digital for

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[40] At the 5th UN Environment Assembly, a landmark resolution was adopted, paving the way for a global legally binding agreement on plastics pollution.

[41] New European Bauhaus: beautiful, sustainable, together. (europa.eu)

[42] Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe and repealing Regulations (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 560/2014, (EU) No 561/2014 and (EU) No 642/2014, (OJ L 427, 30.11.2021, p. 17).

[43] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, 2030 Digital Compass: the European way for the Digital Decade, COM(2021) 118 final.

[44] Cagnin, C., Muench, S., Scapolo, F., Störmer, E., Vesnic-Alujevic, L. Shaping and securing the EU's open strategic autonomy by 2040 and beyond. Publications Office of the European Union, Luxembourg, 2021.

[45] Team Europe Initiative combine resources of the EU, Member States, financial institutions and private sector.

[46] The expansion of BELLA (Building the Europe Links with Latin America) or the Copernicus centres in Latin American countries and the Philippines are clear examples.

Development (D4D) Hub[47] regional branches, notably in Africa, Latin America and the Caribbean, and the Asia and Pacific regions. With the launch of the Digital Alliance with Latin American and the Caribbean states in 2023, the EU reinforced the bi-regional digital partnership to address the digital divide and achieve inclusive digital transformation in the region.

By establishing partnerships and coalitions with like-minded countries, the EU can shape ethical, safe and inclusive international technology standards[48]. **The EU has been a global trendsetter in international discussions** on data protection (General Data Protection Regulation, Data Governance Act), on platform economy (Digital Services Act, Digital Markets Act), on a human-centric trustworthy artificial intelligence (Artificial Intelligence Act) and on rights and freedoms online (Media Freedom Act, Declaration for the future of the internet, European Declaration on digital rights and principles). It has negotiated in multilateral bodies[49] to improve the functioning of the digital economy globally and to project EU values worldwide. It promotes a global, open, stable and secure cyberspace based on respect of international law and of non-binding norms, rules and principles of responsible state behaviour.

4.3. Strengthening cooperation on global health

> The Commission adopted the **EU global health strategy** and the first **state of health preparedness report**, contributing to the medium- and long-term agenda on health security and preparedness and strengthening health system.
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> The Commission promoted international coordination of the EU-funded European platform trials through the Trials Coordination Board. It continued cooperation with the **Access to COVID-19 Tools Accelerator** (ACT-A), funded research on COVID-19 and other infectious diseases, and supported the **Coalition for Epidemic Preparedness Innovations** (CEPI).
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> The EU established the third programme of the **European and Developing Countries Clinical Trials Partnership** (EDCTP) as a joint undertaking under Horizon Europe, to tackle infectious diseases and public health emergencies in sub-Saharan Africa.

The **EU global health strategy**[50] identifies R&I as key enablers for better health, together with digitalisation and a skilled labour force. This strategy was accompanied by the first state of health preparedness report[51], which highlights the progress made in the fields of **preparedness and response**, including in international R&I cooperation, since the start of the COVID-19 pandemic, focusing in particular on medical countermeasures.

The Commission continued its cooperation with the **Access to COVID-19 Tools Accelerator (ACT-A)**[52] and with like-minded international health R&I funding organisations, within and outside Europe, through European partnerships and international

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[47] https://d4dhub.eu/
[48] Council Conclusions on EU Digital Diplomacy, document 11406/22.
[49] E.g., G7, G20, OECD, International Telecommunications Union, International Organization for Standardization, International Electrotechnical Commission, Institute of Electrical and Electronics Engineers.
[50] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7153
[51] https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7154
[52] https://www.who.int/publications/m/item/act-accelerator-outcomes-report--2020-22

alliances[53]. The Commission stepped up preparations for new European partnerships with international partners[54] and continued to support international engagements at regional level, such as the EU-Africa PerMed initiative between the EU and African countries[55].

The 'Global Health EDCTP3' is the third programme of the **European and Developing Countries Clinical Trials Partnership** and is established as a joint undertaking under Horizon Europe[56]. With a growing membership currently including 15 European and 25 African countries, the joint undertaking aims to accelerate the clinical development of new or improved health technology products for the identification, treatment and prevention of poverty-related and neglected infectious diseases, including (re-)emerging diseases, in sub-Saharan Africa. All Global Health EDCTP3 grants require beneficiaries to ensure that the products or services developed thanks to clinical studies are made available, affordable and accessible to the public on fair and reasonable terms.

4.4. Promoting innovation

The Global Approach Communication recognises the importance of international cooperation in innovation and promotes win-win international innovation partnerships with countries and regions that offer reciprocal openness to entrepreneurship and investment, for example with stakeholders in the US (Silicon Valley) and in Africa (AU–EU innovation agenda).

The international dimension of the **new European innovation agenda**[57] contributes to fostering, attracting and retaining talent worldwide and involving key international partners in the implementation of relevant initiatives. This requires an improved framework for attracting foreign entrepreneurs, including more favourable treatment of equity, simplified listing procedures, more capital available from institutional investors and more opportunities for women in venture investment.

The EU's global outreach in innovation is further strengthened by the activities of the European Institute of Innovation and Technology (EIT), which has recently updated its strategic framework[58] to align it with the Global Approach Communication. At the same time, the European Innovation Council (EIC) is promoting its overseas trade fairs programme, which helps EIC beneficiaries to promote their commercialisation strategy in foreign markets and make use of business opportunities at the most popular international trade fairs.

5. MODULATING COOPERATION WITH PRIORITY COUNTRIES AND REGIONS

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[53] Notably: the informal network of Heads of International health Research Organisations; the Global Research Collaboration for Infectious Disease Preparedness; the Global Alliance on Chronic Diseases, the International Rare Diseases Research Consortium, and the International Consortium for Personalised Medicine. The Commission also supported the Epidemic Intelligence from Open Sources (EIOS) initiative.

[54] This includes: the Joint Programming Initiative on Antimicrobial Resistance and a new future European partnership on Antimicrobial Resistance; Joint Programming Initiative on Neurodegenerative Diseases, European Joint Programme on rare diseases and a new future European partnership on rare diseases.

[55] EU-Africa PerMed project aims at building links between Europe and Africa in Personalised Medicine.

[56] https://www.globalhealth-edctp3.eu/

[57] Communication from the Commission to the European Parliament, the Council , the European Economic and Social Committee and the Committee of the Regions, A New European Innovation Agenda, COM(2022) 332 final.

[58] 20190605-gb57-17-strategic_framework_for_eit_community_global_outreach_activities.pdf (europa.eu)

More than 20% of topics under Horizon Europe specifically **targeted international cooperation**, fostering **synergies with other EU programmes**, in particular the Neighbourhood, Development and International Cooperation Instrument (NDICI).

Due to the consequences of Russia's war of aggression against Ukraine, the Commission focused on **dedicated support measures for Ukraine** and facilitated its participation in Horizon Europe and Euratom, including the set up a Horizon Europe office in Kyiv. The EU-Ukraine science and technology cooperation agreement was renewed in 2022 making it effective as of 8 November 2019 for a period of five years.

For the first time ever, all **Western Balkans** partners are now associated to Horizon Europe. Relations focus on implementation of the Western Balkans agenda on innovation, research, culture, education, youth and sport[59].

Based on current discussions on the **joint roadmap for EU-China cooperation in science, technology and innovation**, the EU and China will cooperate on two research flagships in areas of mutual interest, while having a restricted approach on innovation-related actions.

Together with the African Union (AU), the EU has developed a draft **joint AU-EU innovation agenda** and endorsed the **Union for the Mediterranean** ministerial declaration. It launched a dedicated 'Africa Initiative' and 'Mediterranean Initiative' under Horizon Europe, each with a total EU investment of around EUR 300 million.

The EU has stepped up bilateral relations with the **United States** through the EU-US Trade and Technology Council, with **Canada, New Zealand** and the **Republic of Korea** notably through negotiations on association to Horizon Europe, with **Japan** including in the context of the Japanese G7 Presidency in 2023, and with **India** with the launch of the EU-India Trade and Technology Council.

The Commission has continued to implement the **EU-CELAC**[60] **strategic roadmap on science, technology and innovation for 2021-2023** and will discuss future cooperation in the second half of 2023. The EU has also endorsed a 2023-2027 plan of action to implement the **ASEAN-EU strategic partnership** and committed to promoting cooperation in the **Indo-Pacific**, including with Australia, Republic of Korea, New Zealand and Singapore.

5.1. Strengthening cooperation with industrialised non-EU countries and emerging economies

Cooperation with the **United States** has been significantly strengthened in line with the ambition set out in the Global Approach Communication and in the Joint Communication on a new EU-US agenda for global change[61]. The EU-US summit in June 2021 formally launched the EU-US Trade and Technology Council (EU-US TTC), which led to new and active work streams in standards-setting, quantum and artificial intelligence and research

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[59] EU and the Western Balkans launch a joint strategy to strengthen cooperation in innovation, research, education, culture, youth and sport (europa.eu)
[60] CELAC is the Community of Latin American and Caribbean States.
[61] Joint communication to the European Parliament, the European Council and the Council, A new EU-US agenda for global change, JOIN(2020)22 final.

relating to climate and clean technology. An active work steam on electro-mobility and interoperability with smart grids under the EU-US TTC working group on climate and clean tech prepared recommendations for public electro-mobility charging infrastructure.

In line with the multifaceted approach of the Joint Communication 'EU-China - A Strategic Outlook'[62], the Commission has further stepped up its effort to re-calibrate **R&I cooperation with China**. Discussions are ongoing on a joint roadmap for the future of EU-China cooperation in science, technology and innovation, including on a set of framework conditions. The scope of EU-China R&I cooperation reflects the fact that systemic rivalry has gained in importance and that discussions on the roadmap show positive results on research-related framework conditions[63] but a lack of progress on innovation-related framework conditions.[64] Consequently, in the **2023-2024 Horizon Europe work programme**, EU-China R&I cooperation continues through two research flagship initiatives, one on food, agriculture, and biotechnology, and one on climate change and biodiversity. However, given the significant concerns regarding the use of intellectual property generated under Horizon Europe, Article 22(6) of the Horizon Europe Regulation has been applied to prevent the participation of Chinese entities in innovation actions[65].

With **Canada**, **Australia** and **New Zealand**, cooperation continued in areas of mutual priority, such as health and the green and digital transitions. In line with the EU strategy for cooperation with the Indo-Pacific, the Commission has concluded international digital partnerships[66] with **Japan**, the **Republic of Korea** and **Singapore**. Cooperation with **India** has gained momentum with the launch of an EU-India Trade and Technology Council[67] that will focus on digital, green and clean energy technologies, as well as on trade and resilient value chains. India has also agreed to set up a co-funding mechanism for specific topics in the 2023-24 Horizon Europe work programme.

EU-Brazil R&I cooperation saw the five-year renewal of the bilateral scientific and technological agreement and the signature of an administrative arrangement with three Brazilian research funding agencies to establish a co-funding mechanism for Brazilian entities participating in Horizon Europe. **EU-Mexico** bilateral cooperation allowed the launch of the 'Puerta Horizonte Europa-Mexico', which provides support and co-funding for Mexican participation in Horizon Europe, while an administrative arrangement with **Argentina** on Copernicus is expected to be signed in 2023. The bilateral **EU-Chile** science and technology cooperation agreement was tacitly renewed until 2027.

5.2. Integrating cooperation within the EU's neighbourhood

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[62] Joint communication to the European Parliament, the European Council and the Council, EU-China: a strategic outlook, JOIN(2019)5 final.

[63] These include open science, research ethics and integrity, mobility of researchers, and gender equality in R&I.

[64] These include intellectual property rights, pre-normative research, conformity assessment and standardisation, access to government procurements, fair and transparent regulatory frameworks.

[65] Innovation actions are actions with a high level of technological development and closer to the market.

[66] Key topics included in the scope of each Partnership: Semiconductors supply chain resilience; 5G/6G; Cybersecurity; Platforms, Data and AI regulation; Digital Trade; Digital identity and digital signatures; Closing the digital skills gap and digital inclusion.

[67] EU-India: new Trade and Technology Council (europa.eu)

The implementation of the **Western Balkans** agenda on innovation, research, culture, education, youth and sport progressed well. The agenda aims to promote scientific excellence and to reform the region's education systems, creating opportunities for youth and helping prevent brain drain. For the first time ever, all Western Balkans partners are associated to Horizon Europe.

At the first Union for the Mediterranean ministerial conference on R&I, three R&I roadmaps on health, climate change and renewable energy were endorsed[68]. The 2023-24 Horizon Europe work programme launched a 'Mediterranean initiative' targeting climate change and renewable energy, and encouraging the participation of entities established in **Southern Mediterranean countries**. R&I cooperation continues through the Mediterranean Lighthouse of the Horizon Europe mission 'Restore our Ocean and Water by 2030', the BlueMed initiative, the Sustainable Blue Economy Partnership and the Partnership for Research and Innovation in the Mediterranean Area (PRIMA)[69].

In light of Russia's war of aggression against Ukraine, **Eastern Partnership regional R&I cooperation** proved to be more important than ever for promoting in the region the values and principles for R&I. The R&I dimension of the Eastern Partnership aims to boost the innovation capacities of partner countries by integrating them more with EU R&I systems, given the European perspective of Georgia, Moldova and Ukraine.

R&I cooperation with **Switzerland** and the **United Kingdom** continues; in the latter case, cooperation opportunities would be further enhanced after the conclusion of its Horizon Europe association process.

5.3. Deepening EU partnerships with Africa, Latin America and the Caribbean, and Southeast Asia

The Commission has delivered on its commitment to boost support for R&I cooperation with Africa, by developing a draft **joint AU-EU innovation agenda** together with the African Union (AU) Commission and Member States. This agenda was acknowledged in the final declaration of the 6th EU-AU summit of Heads of State and Government in February 2022, was discussed in a stakeholder dialogue in November 2022 and was endorsed at a senior officials' meeting on 4 May 2023. Following the successful 'Africa Initiative' under the 2021-22 Horizon Europe work programme, the Commission has adopted a new 'Africa Initiative II' under the 2023-24 Horizon Europe work programme[70]. In addition, the Commission launched the Africa Knowledge Platform[71], a gateway to data and information on Africa's social, economic and environmental development, to support integrated analysis for policy making.

The **Global Gateway Africa-Europe investment package**, which was announced at the above-mentioned 6th EU-AU summit, supports the AU-EU innovation agenda, regional

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[68] UfM-Ministerial-Declaration-RI-EN-270622.pdf (ufmsecretariat.org)

[69] See respectively: http://www.bluemed-initiative.eu/, https://bluepartnership.eu/, and PRIMA: Partnership for Research & Innovation in the Mediterranean area (prima-med.org)

[70] For example, the Commission continued the development of the Long-Term Joint EU-African Union Research and Innovation Partnership on Renewable Energy and extended its scope to renewable hydrogen.

[71] Africa Platform (europa.eu)

centres of excellence on green transition in Sub-Saharan Africa, Earth observation and space technologies, and investments in education and digital connectivity[72]. Flagship initiatives are being developed in line with the priorities of the NDICI[73], such as the EU-AU Data Flagship, the African-European Digital Innovation Bridge, the EurAfrica Gateway to connect Africa's coasts, and the future network of fibre-optic cables to improve regional digital infrastructures in Western, Eastern and Southern Africa. Other examples are the Team Europe initiatives on manufacturing and access to medicines, vaccines and health technology; on sexual and reproductive health and rights in Sub-Saharan Africa; on health security/OneHealth; digital health and public health institutes.

For the **Community of Latin American and Caribbean States (CELAC),** the focus has been on implementation of the EU-CELAC strategic roadmap on science, technology and innovation for 2021-2023[74]. The first EU-CELAC summit of Heads of State and Government in 8 years will take place on 17-18 July 2023 and will be followed by a senior officials meeting of the EU-CELAC joint initiative on R&I in the second half of 2023, paving the way for a ministerial meeting on research and innovation.

The Joint Leaders' Statement[75] at the **EU-ASEAN Commemorative Summit** on 14 December 2022 called for deepening collaboration in education, science, technology and innovation. It also endorsed the 2023-2027 Plan of Action to implement the ASEAN-EU Strategic Partnerships[76], which highlights green technologies, space and marine areas as priorities for R&I cooperation. The EU has announced the launch of a EUR 10 billion investment package under the Global Gateway in the ASEAN region through a Team Europe approach, contributing to EU objectives in the Indo-Pacific region.

5.4. Consequences of the Russian war of aggression against Ukraine

The Russian war of aggression against Ukraine is a violation of international law, undermining both European and global security and stability. The **EU decided not to engage into further R&I cooperation with Russian entities**. The participation of Russian public entities in ongoing or future projects were terminated.[77] Sanctions and measures exclude all legal entities established in Russia, Belarus, or in non-government controlled territories of Ukraine from participation in the programme in any capacity. However, natural persons established in Russia, Belarus, or in non-government controlled territories of Ukraine may still participate in Marie Skłodowska-Curie Actions allowing **people-to-people contacts** with

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[72] Digital connectivity focuses on connecting Europe and Africa via submarine cables, Africa's regions via fibre optic backbones and unserved regions via satellite communication, and on supporting digital innovation ecosystems in the region.

[73] Regulation (EU) 2021/947 of the European Parliament and of the Council of 9 June 2021 establishing the Neighbourhood, Development and International Cooperation Instrument – Global Europe.

[74] EU-CELAC 2021-2023 Strategic Roadmap

[75] eu-asean-leaders-statement.pdf (europa.eu)

[76] Plan of Action to Implement the ASEAN-EU Strategic Partnership (2023-2027).pdf (europa.eu)

[77] 117 participations from Russian (public or public-related) entities were terminated mainly based on the fifth sanction package, see Article 5l of Council Regulation (EU) No 833/2014 of 31 July 2014 concerning restrictive measures in view of Russia's actions destabilising the situation in Ukraine (OJ L 229, 31.07.2014, p.1). This article foresees some exceptions, for example in the field of space and nuclear cooperation. 37 Belarussian participations in Horizon Europe were terminated in 2022, based on Council Regulation (EU) 2021/1986 of 15 November 2021 amending Regulation (EC) No 765/2006 concerning restrictive measures in respect of Belarus.

the Russian and Belarussian scientific community to be maintained. In this context, the situation of Russian and Belarussian scientists who are in difficulties because they oppose the war or the regime is acknowledged, in line with the G7 science ministers' communiqué of June 2022[78].

The Commission focussed on setting up **dedicated support measures for Ukraine**[79] and facilitated Ukraine's participation in Horizon Europe and Euratom calls. A dedicated fellowship scheme, MSCA4Ukraine, supports displaced researchers from Ukraine and enables them to continue their research activities in the EU. The EU-Ukraine science and technology cooperation agreement was renewed in 2022, for 5 years with retroactive effect from 8 November 2019. In line with the evolving political context, the Commission will continue to coordinate with the Member States and advocate for the role of R&I in the political and operational frameworks linked to Ukraine's recovery and reconstruction, as also underlined by the G7 science and technology ministers' communiqué of May 2023[80].

6. CONCLUSIONS

This first biennial report on the implementation of the Global Approach to R&I shows that the EU has made significant progress in implementing the actions identified in the Global Approach Communication and in strengthening Europe's position in the world. The EU preserved openness in international R&I cooperation and promoted a multilateral dialogue on values and principles. It successfully implemented the new provisions for the association of non-EU countries to Horizon Europe. The EU developed joint commitments with international partners, helping to shape global governance. It assertively safeguarded its strategic assets, interests, autonomy and security, while enhancing the EU open strategic autonomy. The EU used its leading role in promoting multilateral R&I cooperation to deliver science-based solutions to promote the fair green and digital transitions and health security, preparedness and response to crises, while developing international partnerships to reduce strategic dependencies in key technological areas and value chains. It established international innovation partnerships with countries and regions that offer reciprocal openness to entrepreneurship and investment.

Against the backdrop of a complex and dynamically evolving geopolitical environment, exacerbated by the Russian war of aggression against Ukraine, the Global Approach to R&I proved its effectiveness and relevance and continues to be the appropriate strategic framework for international R&I cooperation. Science and technology are taking an increasingly important role in foreign policy. More synergies have to be sought with the EU external action, in particular with the Global Gateway. In addition, a further reflection on how to promote science diplomacy in Europe should be considered. Finally, the Commission will continue monitoring the implementation of the Global Approach Communication and will report to the Council and the European Parliament in the second biennial report due in 2025.

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[78] Microsoft Word - G7 Science Ministers Declaration_20220613 (bundesregierung.de)
[79] ERA4Ukraine offers an overview of all existing actions at European and national level, including MSCA4Ukraine, ERC job offers and the JRC-EUI (European University Institute) fellowship scheme.
[80] https://www8.cao.go.jp/cstp/kokusaiteki/g7_2023/230513_g7_communique.pdf