

# 2018 Report on the Implementation of the Strategy for International Cooperation in Research and Innovation

as annexed in the Impact Assessment of the Commission's  
Proposal for Horizon Europe

# Implementation of the Strategy for international cooperation in R&I

The strategy for EU international cooperation in research and innovation (R&I) published in 2012<sup>1</sup> supports the objectives of strengthening the EU's R&I excellence, attractiveness and economic and industrial competitiveness, tackling global societal challenges, and supporting the EU's external policies, including enlargement, neighbourhood, trade and development policies.

It makes a significant contribution to the implementation of the Commission priority on 'Europe as a stronger Global Actor' and is crucial for delivering on the 'Open to the World' priority of the EU's R&I policy.

These were as follows: 1) There is significant room for improvement of the international dimension of Horizon 2020, in particular through work programme (WP) topics of sufficient scale and scope that are specifically devoted to international cooperation; 2) The Commission shall remain proactive in ensuring good framework conditions for international cooperation, notably including extended co-funding mechanisms; 3) Further action shall be taken to widen participation and strengthen the EU's role in global multilateral fora; 4) Stronger synergies with the actions of Member States shall be sought including by means of structured policy coordination and opening of joint programmes to international participation; 5) Science diplomacy shall be used more extensively as an influential instrument of the EU's external policies; and 6) The communication strategy shall be refined to ensure global awareness of EU science and technology (S&T) strengths and its role in international R&I cooperation.

## 1 Reinforcing the international dimension of the EU R&I Framework Programme

The international dimension of Horizon 2020 has been reinforced as part of priorities set for the last part of the programme covering commitments in 2018 to 2020.

Since the last progress report, Joint S&T Cooperation Committee meetings have been successfully organised with a range of countries<sup>2</sup>. In addition, Regional policy dialogues have notably included a Ministerial meeting with the Western Balkans, a Ministerial conference on strengthening Euro-Mediterranean cooperation in R&I, an Eastern Partnership summit, an EU-African Union high-level policy dialogue, and two EU-CELAC senior officials meetings. Multilateral work was also undertaken to ensure the coordination of the G7 Science Ministerial and Carnegie meetings.

Agreements at the S&T cooperation dialogues and high level policy dialogues have continued to serve as a basis for priority-setting in Horizon 2020 programming, continuous efforts have been undertaken to ensure that activities agreed effectively materialise, and multi-annual roadmaps for targeted international cooperation with twelve countries and six regions have been updated on a regular basis to reflect the latest status<sup>3</sup>.

Increased attention to and support of international participation in Horizon 2020 projects have been provided with the launch in October 2017 of the 2018-20 WP with more than 30 flagship initiatives

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<sup>1</sup> COM(2012)497

<sup>2</sup> USA, China, India, Japan, South Korea, Brazil, Argentina, Chile, Russia, Australia, Algeria, Tunisia, Egypt, Jordan, Ukraine and South Africa.

<sup>3</sup> See <http://ec.europa.eu/research/iscp/index.cfm?pg=countries> and <http://ec.europa.eu/research/iscp/index.cfm?pg=regions>

of large scale and scope on topics dedicated to international cooperation in areas of mutual benefit, comprising a total budget of over 1€ billion.

Examples of large Flagship initiatives include the EU-Africa Partnership on Food & Nutrition Security & Sustainable Agriculture, the EU-China Food, Agriculture and Biotechnology flagship initiative, acceleration of energy innovation through the Mission Innovation initiative, large call on human data storage with Canada, multilateral cooperation on greener and safer aviation and road transport automation, climate action in support of the Paris Agreement, multilateral cooperation on 5G and on nanosafety, and international cooperation on migration challenges.

The latest statistics on participation of entities from non-associated international partner countries in Horizon 2020 grant agreements for collaborative actions<sup>4</sup> show only a slight improvement as a result of actions in the 2016-17 WP: 24 % of WP topics are flagged for international cooperation, 2.5 % of all participations are from third countries, 0.9 % of EU contribution go to third-country participants, 12.0 % of all grant agreements include one or more partners from third countries, and €44 million per year is invested by third-country participants in Horizon 2020 projects. 2.3 % of all European Research Council (ERC) Principal Investigators have come to EU MS/AC from non-associated international partner countries; 17.3 % of all grantees of Marie Skłodowska-Curie Actions (MSCA) Individual Fellowships and almost 30 % of participations in MSCA Research and Innovation Staff Exchange come from third countries making it the most international scheme in Horizon 2020<sup>5</sup>.

For some types of action, partners from third countries are not part of the Horizon 2020 grant agreement, but sign separate (coordination) agreements. Notably, until end-2017, Horizon 2020 has launched 21 joint, coordinated and twinning calls with third countries that have led to projects with 220 European participations and a similar number of participations from non-associated third countries. Furthermore, participation of third country research programme funders in ERA-NET Cofund actions is at 5%, reflecting a similar share in the projects funded by these actions.

The Commission's Joint Research Centre (JRC) has strengthened its collaboration with international partners. Close links with partners in Horizon 2020 Associated Countries have been consolidated, e.g. via technology-transfer support to the Western Balkan countries and new arrangements with the Research Council of Norway. The JRC has concluded new arrangements such as with the USA Department of Energy, the Chinese Academy of Sciences, and the Japanese Institute for Advanced Industrial Science and Technology, and extended partnerships such as with the USA National Oceanographic and Atmospheric Administration, the South African Space Agency, and the Brazilian Ministry of Science, Technology, Innovation and Communications. The JRC has also pursued its cooperation with multilateral organisations such as United Nations Organisation, World Bank and the Organisation for Economic Co-operation and Development (OECD). Engaging internationally has positive effects. Horizon 2020 data shows that the success rate of proposals increases when the consortium takes on board international partners and international co-publications are on average more often cited than other publications.

The significant number and size of international cooperation flagship initiatives launched for the last part of Horizon 2020 are expected to result in a step-change improvement in international

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<sup>4</sup> Source: CORDA, May 2018. Includes all Horizon 2020 actions, except those under ERC, MSCA, Access to risk finance, EIT, JRC, and topics using the SME Instrument.

<sup>5</sup> MSCA account for more than half of all third country participations in Horizon 2020 and around 80% of all US participations. Since 2014, almost 140 nationalities have received MSCA funding and around one in four MSCA fellows are researchers attracted to Europe from countries outside the EU Member States or the Horizon 2020 Associated Countries.

involvement, be it through participation in Horizon 2020 projects, through coordinated calls, or through contributions to global multilateral initiatives.

The Commission has also continued to monitor and assess the implementation of Horizon 2020 Association Agreements and to examine measures to improve and develop cooperation. This has been done through Joint Committee meetings as well as through policy support to assist with reform agendas.

Assessments have been carried out for the Associated Countries for which the review clause was applicable. These assessments looked at Horizon 2020 budget absorbed versus contributions made to the EU budget, as well as progress towards the ERA priorities, number of researchers in the country, participation in Horizon 2020 proposals and projects, and success rate of these proposals. In case of a large degree of underperformance, the assessments also analysed the root causes of this and suggested remedies.

For the next Framework Programme, the Commission proposes to extend openness for association, beyond EU enlargement, EEA countries and ENP countries, to include all countries with proven science, technology and innovation capacities to make cooperation and funding of joint projects as smooth as possible. It is also proposed to intensify support to international large-scale flagship initiatives, partnerships, bilateral and multilateral initiatives and joint programmes and calls, so as to increase access to researchers, knowledge and resources worldwide and optimise benefits from cooperation. The programme should continue to fund entities from low-mid income countries, and to fund entities from industrialised and emerging economies only if they possess essential competences or facilities.

## **2 Improving the framework conditions for engaging in international cooperation**

The Commission has remained proactive in creating a level playing field for researchers from across the world to cooperate smoothly with each other.

Notably, the Commission has continued to encourage and assist industrialised and emerging economies in increasing the scope and improving the functioning of mechanisms for funding the participation of their researchers in Horizon 2020.

For instance, at the 3rd EU-China Innovation Cooperation Dialogue in June 2017 agreement was reached to renew and extend the co-funding mechanism for the Chinese government to support entities from China in Horizon 2020 projects for the period 2018-20. In India, the Ministry of Earth Science has set up its own co-funding mechanism, following the path of the Ministry of Science and Technology.

Many S&T Cooperation dialogues have also discussed reciprocal access to science, technology and innovation (STI) resources, supported by monitoring, data collection and analysis. Concrete outcomes include, for example, a new Guide for EU stakeholders on Chinese national STI funding programmes that was published in January 2018.

Other bilateral and regional S&T cooperation dialogues have also tackled priorities for improvements in framework conditions. For example, in September 2017 a ministerial meeting of the Western Balkans Platform on R&I discussed how to increase national R&I capacities and progress towards integration into the European Research Area; and the two EU-CELAC senior officials meetings in 2017 resulted in a policy advice initiative for CELAC countries, a bi-regional initiative to strengthen the management of and access to research infrastructures, a bi-regional call on cancer research, and an extension of the EURAXESS initiative to all CELAC countries.

New structures supporting European research, innovation and business organisations to establish connections and a foothold in third country markets have been established. Early 2017 grants were awarded to launch the first nodes of a Network of European R&I Centres and Hubs in the USA, China and Brazil.

Smooth mobility of researchers is another important framework condition. In addition to activities under MSCA, the Commission has supported ERC Implementing Arrangements that have now been signed with funding bodies in ten countries around the world: USA, South Korea, Argentina, Japan, China, South Africa, Mexico, Brazil, Canada, and India.

The multi-annual roadmaps for targeted international cooperation contain more detailed information on framework conditions in place for each country/region and the priorities for future improvements.

### **3 Leading multilateral initiatives - working with international organisations on global challenges**

Action has been taken to strengthen the EU's role in global multilateral initiatives and to leverage investments in solutions to global challenges of high priority for the EU.

In February 2017, the Commission took over the chairmanship of the Steering Committee of the Mission Innovation initiative on clean energy research. It is leading two Innovation Challenges and is actively engaged in the five remaining ones. The initiative is also growing in terms of its membership, in particular from the EU Member States. Calls for proposals designed for Mission Innovation-related activities have been introduced in the 2018-2020 WP of Horizon 2020 for a total amount of nearly €150 million.

In addition, as part of the efforts towards structuring marine research cooperation, a new South Atlantic R&I Flagship Initiative was signed in July 2017 to improve the scientific knowledge of marine ecosystems and the links between oceans and climate change, food and energy systems, as well as the dynamics of the Atlantic Ocean and its interconnected circulation systems from Antarctica to the Arctic. The All Atlantic Ocean Research Alliance Flagship and the Future of Seas and Oceans Flagship have been allocated more than €80 million in the 2018-2020 WP of Horizon 2020.

Global health issues have remained top of the agenda. Multi-lateral initiatives such as the International Rare Diseases Research Consortium, the International Human Epigenome Consortium and the Global Alliance for Chronic Diseases, have continued their active role with calls published under SC1. The Coalition of Epidemic Preparedness Innovation, CEPI, was launched in January 2017. At the end of 2016, through the Global Research Collaboration for Infectious Diseases Preparedness, the EU mobilised substantial political, financial and scientific resources to help the people affected by the Zika virus and to contain, control, treat and ultimately defeat it. The 2018-2020 WP of Horizon 2020 contains topics with a combined budget of more than €250 million that will go to projects contributing to global health multilateral initiatives. The EC has continued with the contribution to the Human Frontier Science Programme, an international funding organisation for multi-disciplinary life science frontier research of 15 countries over four continents.

As climate change and the environment are global issues, EU action has continued to be coordinated with international and multilateral processes such as the Group on Earth Observation (GEO) and the Belmont Forum. Active EU involvement in these platforms has contributed to setting global agendas to implement jointly, and their feedback has been used to inform strategic

programming at EU level. For example, the 2016-17 WP of Horizon 2020 included three Belmont Forum topics: sustainable urbanisation, transformations to sustainability, and biodiversity scenarios.

Moreover, the Commission has continued to play an important role in intergovernmental bodies such as the International Panel on Climate Change (IPCC) and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). EU projects have contributed substantially to stocktaking and knowledge generation: for example, EU action plays a key role in the development and aggregation of climate change models in coordination with the IPCC.

The Commission also continued its active role in international bodies such as the OECD and the G7/G20. For example, the joint Commission-OECD survey on STI policies, the Commission participation in a range of thematic working parties of the OECD, and the contribution of several Commissioners in the G7 Innovation Week in Italy in September 2017.

#### **4 Reinforcing the partnership with Member States**

Synergies with Member States' actions have been strengthened notably by involving third countries in joint programmes.

In particular, the Partnership for Research and Innovation in the Mediterranean Area, PRIMA, was launched in early 2018, following adoption of the PRIMA Basic Act by the co-legislators and putting in place international agreements regulating the participation of third countries that are not associated to Horizon 2020. Work is now underway to devise new R&I approaches to improve water availability and sustainable agriculture production in a region heavily distressed by climate change, urbanisation and population growth. The partnership will be financed through a combination of funding from participating countries (currently €274 million), and a €220 million contribution from the EU through Horizon 2020.

The second European and Developing Countries Clinical Trials Partnership Programme, EDCTP2, supported by nearly €700 million in EU funds, has so far launched 31 calls for proposals resulting in 125 grants worth € 264 million to accelerate the clinical development of medical interventions for poverty-related diseases in Sub-Saharan countries. In addition, projects granted € 157 million from calls in 2017 are about to start.

The EC supported Member States led initiative International Consortium for Personalised Medicine, ICPeMed, set up in 2016, which includes several non-EU partners among the current 40 members. Canada is already on board and discussions are ongoing to include institutions from Brazil, South Africa and other countries. In an effort to join forces on the fight to anti-microbial resistance, the Joint Programming Initiative on Anti-Microbial Resistance has opened up to Third countries: Argentina, Canada, Egypt, India, Japan, South Africa and South Korea have recently joined it.

The international dimension of ERA-NET Cofund actions, supporting public-public partnerships in their implementation of joint activities and topping-up of a trans-national call for proposals, has also increased. Nearly half involve third countries as full partners, and more than two-thirds include activities dedicated to establishing partnerships with third countries, e.g. through additional joint calls or through global multilateral initiatives.

The Strategic Forum for International Scientific and Technological Cooperation, SFIC, has continued its work to further develop, implement and monitor the international dimension of the ERA. In particular, in 2017, the Forum issued opinions on international cooperation in the context of the mid-term review of Horizon 2020 and the preparation of the 9<sup>th</sup> EU Framework Programme for R&I, as well as on gender aspects in international R&I cooperation.

Part of the strategic advice from SFIC also includes reports on instruments for the implementation of international S&T cooperation agreements and other international S&T cooperation activities at EU and national level. Furthermore, the Forum has continued contributing to the implementation of the ERA Roadmap, fostered peer-learning activities, and carried on work on geographic initiatives such as for China and for Brazil.

## **5 Intensifying the synergies with the EU's external policies**

The Joint S&T Cooperation Committee meetings and Regional Policy Dialogues have been instrumental for R&I to feature prominently in several Summit discussions and conclusions, including, inter alia, those with the Eastern Partnership countries, with India and with the African Union. This is also a result of continuously close interactions between the Commission and the European External Action Service.

Further integration of the Western Balkans into existing EU knowledge networks and support for R&I capacity building for an effective participation in the EU's Framework Programmes are part of the Action Plan in support of the transformation of the Western Balkans issued in February 2018. Centres of Excellences set up with Horizon 2020 support are attracting researchers, contributing to combating brain drain in the region, and they have a direct economic impact, triggering growth through innovation, enabling joint R&I activities across borders and contributing to building trust, reconciliation and stability in the region.

The strategy has also stayed closely coordinated with EU neighbourhood policies. For instance, the EU4Innovation initiative was presented as a key deliverable of the 5<sup>th</sup> EaP Summit in November 2017. The initiative combines all EU activities that support the development of Eastern Partnership countries' innovation capacities, notably those funded under Horizon 2020 and the European Neighbourhood Instrument, bringing new mobility opportunities and fostering research-industry partnerships amongst others.

Science diplomacy action has continued as an important part of the strategy. For example, in May 2017 the SESAME synchrotron, the first major international research infrastructure in the Middle East, started operating in Jordan. With financial support to its construction, the EU has been a major contributor to SESAME, which also contributes to foster a culture of peace and cooperation through science in the region. Other examples include R&I activities with Iran in the context of the EU-Iran Renewed Partnership. Horizon 2020 has extended its support to projects analysing cases and instruments of science diplomacy and devising tools and processes for science diplomacy as part of EU external action.

Cooperation with development policies has continued. For instance, in October 2017 the 4th EU-African Union High level Policy Dialogue on Science, Technology and Innovation took stock of results of the partnership on Food, Nutrition Security and Sustainable Agriculture integrating capacity building and innovation processes and adopted the roadmap towards a new partnership focused on climate services, renewable energy and energy efficiency.

Finally, EU international S&T cooperation has been used to enhance the EU's influence on common positions within international fora that are defining global targets and regulations in various thematic fields. For example, EU-supported research has often provided the foundation for international maritime safety rules for global shipping which are applied via the International Maritime Organisation.

## 6 Refining the communication strategy

The Commission has continued to refine its communication strategy and strengthen its monitoring of the strategy.

In particular, the Service Facility in support of international R&I cooperation policy development, priority-setting and implementation started operating early 2017 and is now providing services for awareness raising and training, support to National Contact Points, organisation of R&I events, set-up of R&I, business and policy partnering platforms, and thematic and geographical analysis and monitoring activities.

In addition, the Commission, in close cooperation with the EU Delegations, have continued promoting Horizon 2020, raising the profile of the EU as an excellent destination for R&I and promoting the 'Open to the World' policy priority. Special emphasis has been put on the use of multipliers and on taking advantage of existing events.

Monitoring of the implementation of the strategy in Horizon 2020 has been upgraded through the 'International Cooperation' dedicated view of the Horizon 2020 Dashboard, providing real-time values of the international cooperation indicators and more.

## 7 Conclusions

The dominance of international collaborative research in knowledge production and the emergence of new countries as major R&I players are accelerating. This calls for further strengthening of action to ensure that the EU has access to, and benefits from, the world's best talents, expertise and resources.

Moreover, EU international cooperation in R&I policy should contribute to the EU's economic policy objectives, enhancing EU's external competitiveness, creating a level playing field and opening up new markets for European companies via innovative solutions, making use of economic diplomacy tools where appropriate. Synergies with EU external policies should also contribute to the EU's development policy objectives, help build R&I capacity, and support diffusion and uptake of innovation.

The increasing scope and interconnectivity of global societal challenges require more international joint action and coordination of agendas. Instruments for EU support to global multilateral initiatives should be improved, and partners from the rest of the world should increasingly be invited to join EU efforts as an integral part of initiatives in support of EU action for sustainable development.

In the further implementation of the strategy, priority should be given to activities that facilitate the collaboration of European researchers with their counterparts worldwide, enable international mobility of researchers and ensure access to research infrastructures globally, so as to ensure reinforced EU R&I excellence and the creation and diffusion of high-quality knowledge in the EU.

International openness of the innovation eco-systems promotes a level playing field, opens markets for European companies and enhances supply and demand of innovative solutions. Further activities under the strategy should extend support to joint and coordinated funding of global industrial research and innovation cooperation, so as to strengthen EU economic and industrial competitiveness.

Using the EU R&I Framework Programme as a key vehicle for cooperation, activities under the strategy should continue to promote and integrate cooperation with international partner countries based on mutual benefit. Priorities should be identified based on thematic and geographical strategic intelligence and foresight of S&T capabilities, market opportunities and impact on EU competitiveness, contribution to international commitments, and framework conditions for cooperation.

In short, openness to the world remains a strategic priority for EU R&I policy as it reinforces R&I excellence, strengthens competitiveness, and helps solve global societal challenges in support of EU external action. Hence, the objectives of the strategy stay pertinent and further activities are needed to ensure that the EU benefits from latest developments.