

A decorative header image featuring several interlocking gears in various colors (orange, red, green, purple) against a dark blue background with a grid pattern. Each gear contains a white icon: a target, a person, a star, and a hand pointing at a screen.

International R&I cooperation policies have to keep up with new challenges

Global exchange in the field of research and innovation (R&I) is becoming increasingly important. This affects not only multinational companies, but also the academic field and politics. Policies that support the internationalisation of research and innovation are, however, sometimes lagging behind global dynamics and changing geopolitical frameworks. They are often only regarded as an appendix to national R&I policies and are sometimes only marginally aligned with national R&I programmes and instruments. At the same time, however, in the face of climate change, the rapidly increasing reduction in biodiversity and the overuse of global resources, the pressure is increasing to address global challenges that will not stop at the EU border. Thus, international R&I policy will also be measured in terms of its contribution to solving these global challenges.

Research and innovation are increasingly interlinked internationally, aided by rapidly developing information and communication technologies. Global challenges require global effort and dialogue with international partners. In this context, the aim of the Mutual Learning Exercise (MLE) on National Strategies and Roadmaps for International Cooperation in Research and Innovation was to foster a policy exchange on the various national approaches towards international cooperation in research and innovation. The exercise allowed for comparisons in terms of policymaking and help identify inspiring novel practices, while covering topics such as design and development of national strategies for international cooperation in research and innovation, implementing toolbox and framework conditions.

Although there is considerable variation among the participants of this MLE in terms of scope, scale and capacities, in quite some countries domestic instruments to support R&I internationalisation are small-scale and one-sidedly geared towards academic mobility and bottom-up basic research. On the other hand, it has become common sense that multilateral cooperation between the EU Member States, countries associated to Horizon 2020 and their national partners should be expanded to create a larger impact, but how to do this in practice is currently not very clear. Bilateral activities are still the predominant type of international R&D cooperation and questions of global sustainability are only starting to become explicit priorities in international R&I cooperation, whereby it is important to emphasize that challenge-oriented R&D must not come at the expense of open and bottom-up research.

Changing perceptions

The consistently positive perception of international R&D cooperation during the past decades is giving way to a more selective and critical approach. Martina Hartl, the Chair of the Strategic Forum for International Cooperation (SFIC) and MLE participant puts it like this: *"International research cooperation is taking place in an increasingly contested environment. While, on the one hand, cooperation helps to tackle societal challenges and create common knowledge, there is also competition for markets, talents and economic exploitation of results. The MLE has greatly helped in understanding the main motives and strategies for international cooperation in STI in the different countries. It has also helped finding common areas of interest where a future cooperation could benefit both the Member States and Europe."*

A more differentiated approach in international R&I cooperation is also expressed by the assertion of good principles and standards, such as open access, research integrity, research ethics, gender equality, or the exclusion of dual use research cooperation in international R&I cooperation policies. The addition of innovation into the portfolio of international research cooperation policies has further challenged its traditional academic focus. *"In contrast to the public good character of basic research, innovations create not only winners but also losers, and specific strategies and new instruments are required to contain negative effects from innovation-relevant international research cooperation"* confirms Klaus Schuch, Rapporteur of this IPR. Economically relevant principles, such as compliance with competition standards like IPR, are becoming increasingly

important. This also refers to the question of with which country or which agency reliable cooperation can and should be established.

An extended scope and more coordination efforts ...

In view of these changes and challenges, the overall purpose of this Mutual Learning Exercise was to increase the capacity of EU Member States and Associated Countries to formulate and implement relevant National Strategies and Roadmaps for International Cooperation in Research and Innovation, and thereby create favourable conditions for the production of new knowledge. Representatives of ministries in charge of international R&I cooperation and/or research and innovation funding agencies from 15 EU Member States and Associated Countries were participating in this MLE. Most of these countries have an internationalisation Strategy or Roadmap which targets both countries inside and outside Europe. The following objectives are focused upon, in order of priority, in their strategies: excellence in research (1), science diplomacy (2), development of the European Research Area (3), global challenges (4), and innovation (5).

An observable trend is that challenge-driven and innovation related objectives are becoming more and more important. At the same time, it is a special challenge to combine academic knowledge production, challenge orientation and business driven innovation in international R&I cooperation. The broadening of the scope of international cooperation in R&I has many implications. An obvious requirement is cross-government coordination and an increased involvement of stakeholders from funding agencies, academia and business. Also, more coordination activities during implementation processes are necessary, while stakeholder engagement in partner countries is most often considered to be the responsibility of the partner country. Totti Könnölä, independent expert in the MLE, suggests that a *"challenge-driven approach to international R&I cooperation calls for tightening horizontal policy coordination and widening stakeholder engagement. Towards this end, foresight can offer a structured process for aligning different objectives and practices when exploring and addressing common challenges."*

... but a difficult implementation

Science, Technology and Innovation (STI) agreements are still frequently used as a tool for promoting international cooperation in R&I and for science diplomacy, although their explicit purpose for science diplomacy, beyond having an agreement, remains vague. In some countries operational links between Ministries for Foreign Affairs and those responsible for international R&D promotion are still quite weak. The STI arrangements are usually bilateral and it is very rare that two or more European countries are involved. There are examples of so-called 'empty shell'-agreements where implementation has failed because of inactivity due to changing political situations, lack of budgets or decreased interest from R&I communities. These agreements, however, are not considered as severely problematic, because they still can be aroused to serve the purpose of scientific diplomacy or other objectives. Moreover, there is no indication that the number of STI agreements will decrease in the future.

While the MLE participants acknowledge that Europe nowadays is facing global systemic changes and challenges, the SDG Agenda is not given precedence over nationally prioritized goals. In fact, operationalisation of the SDGs for international R&I cooperation at Member States' level is currently still in the experimental stage. *"MLE participants judge some SDGs to be more in focus at the EU level than in the individual countries"* says Gunnel Gustafsson, Chair of this MLE and assumes, that *"the inclusiveness characteristic of the SDGs may presuppose an international approach that is easier to accomplish at EU level than at national level"*. Nevertheless, challenge-driven cross-border collaboration is increasingly being reflected in activities at inter-ministerial level and sometimes at inter-agency level as well.

The MLE exercise clearly showed that new value-based principles and requirements are emerging in international R&I cooperation and that this development is fortified by the attention on challenge-driven international cooperation in R&I. Also, the increasing number of STI agreements, the awareness of the importance of social impact, multidisciplinary research activities and cross-industry connections are to some extent considered to be caused by increased emphasis on challenge-driven international cooperation in R&I.

Most MLE participants also consider multi-stakeholder funding partnerships with private and third sector entities relevant, but few of them report that their country is experienced in developing these, especially with a view to international R&I cooperation.

The way forward

The focus of this MLE on design and development, tools, and framework conditions for formulation and implementation of National Strategies and Roadmaps for International Cooperation in R&I fills an important knowledge gap and constitutes a basis for making it possible for the MLE participants to gain information on good practices and priorities within areas of relevance for them. Patries Boekholt, independent expert in the MLE, says that *"... it is well known that for cross-border policy learning, the national context matters. Nevertheless, it is encouraging to see how policy-makers*

from different countries can take inspiration from good examples of international R&I collaboration implemented in another MLE country.”

The conclusions of the MLE participants point to several issues:

First, the strategies and roadmaps for international R&I cooperation need to be updated with clear intervention logics. Upcoming issues, such as SDGs and challenge-driven R&I, innovation and normative “good principles”, need to find their place in international R&I cooperation policies. This calls for co-designed approaches, effective cross-government coordination and multi-level participation processes in policy planning and implementation. As regards the latter, also investments in relationship management and stakeholder engagement at home and abroad are necessary.

Second, strategic alignment of domestic R&I policies to meet the broadening R&I internationalisation rationales has to be enhanced and sufficient resources for multilateral R&I coordination and internationalisation activities need to be secured. This should go hand-in-hand with improved policy intelligence tools such as foresight and more and better efforts to monitor and evaluate international R&I cooperation policies.

Science diplomacy should be valorised and more effectively operationalised, but also funding partnerships with private and third sector entities explored. More could be done multilaterally between the EU Member States and the Associated Countries than is today. For this it would be conducive to empower SFIC to play a more active role in the coordination of joint R&I internationalisation activities.

For further information:

The Final Report of the PSF Mutual Learning Exercise on National Strategies and Roadmaps for International Cooperation in R&I <https://rio.jrc.ec.europa.eu/library/mle-national-strategies-and-roadmaps-international-cooperation-research-and-innovation-5>

The PSF Mutual Learning Exercise on National Strategies and Roadmaps for International Cooperation in R&I: <https://rio.jrc.ec.europa.eu/en/policy-support-facility/mle-national-strategies-and-roadmaps-international-cooperation-research-and>

About the PSF:

Seeking to improve the design, implementation and evaluation of research and innovation policies, the PSF provides expertise and practical support to Member States in a number of ways: Peer Reviews of national R&I systems, Specific Support to policy reforms, and project-based Mutual Learning Exercises to improve policy-making and implementation. It is founded under Horizon 2020, the EU’s research and innovation programme.