



CARISMA

Innovation for Climate Change Mitigation

Policy brief Government-led Collaboration on climate mitigation R&D
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Government-led international research and innovation collaboration in climate mitigation: Practical guidance for policymakers

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As collaborative research and innovation (R&I) initiatives have the potential to advance climate technology transfer across borders, in particular in developing countries, European governments have put in place various initiatives to facilitate deployment of climate technologies. In the CARISMA project, such initiatives were mapped in a background report, and discussed in a workshop involving stakeholders from government, industry, academia and international organisations.

Based on these inputs, this Policy Brief summarises general lessons and recommends governmental policy makers to:

- > Improve coordination and communication between the partners' government agencies to help manage expectations and achieve more concrete objectives.
- > Improve documentation and follow-up.
- > Clarify what constitutes a successful R&I initiative, e.g. in terms of potential impact on GHG emissions and technology transfer.
- > Develop a user-friendly online database in which member states can present their initiatives and projects deriving from them in order to prevent overlap, increase synergies and simplify analysis.

CARISMA Project started in February 2015 and received funding from the European Horizon 2020 programme of the EU under the Grant Agreement No. 642242. CARISMA intends, through effective stakeholder consultation and communication to ensure a continuous coordination and assessment of climate change mitigation options and to benefit research and innovation efficiency, as well as international cooperation on research and innovation and technology transfer.

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Introduction

An important goal of many R&I collaboration initiatives funded by EU member states is to support international transfer of mitigation technologies, in particular to developing countries. The CARISMA mapping of selected initiatives of national governments on international climate technologies R&I cooperation¹ showed a variety of diverse initiatives, differing in scope, objectives and actors involved. This Policy Brief aims to give an overview to policy-makers on the way government-led international R&I cooperation in the field of climate technologies is designed and conducted.

The CARISMA mapping of selected initiatives complements earlier mappings such as those carried out under the UNFCCC². However, envisaging a comprehensive overview of these initiatives is highly challenging due to the decentralised and uncoordinated nature of R&I cooperation.

This Policy Brief is based on the background report "Mapping and analysis of climate mitigation research and innovation initiatives"³, produced for the CARISMA project by CEPS and Radboud University, which lists over 10 government-led initiatives. Moreover input from stakeholders (as voiced at the CARISMA workshop "research and innovation collaboration on climate change mitigation technologies between Europe and emerging economies", held in Amsterdam on 20 February 2017) have been considered for this Brief.

Context of climate change mitigation R&I initiatives

The UNFCCC and the Paris Agreement (Article 10) have emphasised the need for climate technology collaborative R&D (See the full list of decisions of the Conference of the Parties (COP) related to technology development and transfer on the UNFCCC Climate Technology pages⁴). Several governments have responded to these with R&I collaboration initiatives. However, governments often have different interpretations of what collaborative R&I initiatives are, which leads to several different goals ranging from promotion of European exports to encouraging knowledge exchange and strategic energy planning. As an illustration, Box 1 compares two initiatives and shows that initiatives that fall under the general umbrella of government-led R&I cooperation can have very different objectives and *modi operandi*. While the "Sino-Danish Renewable Energy Development Programme" focuses primarily on capacity building to create an independent authority for renewable energy, the "Indonesian-Swedish Initiative for Sustainable Energy Solutions" is principally aimed at testing and promoting given technologies. National initiatives, unless purely academic, tend to promote domestic technologies into new markets, a feature they do not share with multilateral approaches⁵.

¹See Lindner, S., Alberola, E., Alessi, M., Behrens, A., Clochard, G.-J., de Coninck, H. and K. Tuokko (2017) "International R&I collaboration on mitigation – Examples of international climate change mitigation research and innovation collaboration between the European Union and developing countries", CARISMA Working Document Series No. 5 (to be made available on the CARISMA website: <http://carisma-project.eu/>)

²UNFCCC (2010) Report on options to facilitate collaborative technology research and development, FCCC/SBSTA/2010/INF.11.

³See footnote 1.

⁴See UNFCCC Climate Technology webpages: <http://unfccc.int/ttclear/negotiations/decisions.html>, last accessed on 2 May 2017.

⁵See footnote 1.

Box 1. How do we define government-led R&I initiatives? Two examples.

Sino-Danish Renewable Energy Development Programme

- > *Actors involved:*
Government agencies and researchers.
- > *Main objectives:*
 - Capacity building to enhance Chinese government agencies' capacity in managing the renewable energy sector.
 - Creation of a Chinese Renewable Energy Centre, bundling and further developing the existing expertise and management experience
 - Supporting renewable energy technology innovation, development and transfer via an innovation support facility funding the co-operation of Chinese and Danish companies and organisations

Indonesian-Swedish Initiative for Sustainable Energy Solutions

- > *Actors involved:*
Government agencies and local authorities, research institutes, and Swedish and Indonesian businesses.
- > *Main objectives:*
 - Promote knowledge exchange through research and innovation pilot projects.
 - Support testing and developing of Swedish environmental technology solutions.
 - Promote Swedish environmental technology solutions to the Indonesian market and for Indonesian investments in Swedish solutions through a Business Accelerator Programme

Lessons and challenges identified from the case-studies review

While this Policy Brief is based on the preliminary mapping of a limited number of government-to-government R&I initiatives, the analysis allows us to identify a number of issues and general recommendations. Based on this, we identify three key areas of recommendations on: (1) mutual benefit and alignment of the initiatives' aims and communication, (2) what constitutes a successful R&I initiative, and (3) standard requirements at the EU level for Member States to present their initiatives.

1. Additional objectives beyond the initiatives' aims

While EU Member State and developing country governments engage in numerous joint R&I initiatives, their objectives within the initiatives can differ due to different political priorities. For example, while the core objective of a joint R&I initiative on climate change mitigation may be to explore the potential for emissions reductions, partners in developing countries often focus on economic development as a key priority, while developed countries may focus on promoting their nationally developed mitigation technologies.

The value-added of such initiatives may also be viewed at the political level as an opportunity to initiate a dialogue, or to explore potential future collaborations between governments in developed and developing countries. As such, the specific (climate change mitigation or capacity building) goals become less important than the overarching objective to start a joint collaboration. In contrast with, for example, R&I collaborations at EU level, government-initiated R&I initiatives often begin without an initial framework, thus projects may be designed with the main purpose of creating a base for further collaboration at governmental and/or at the non-governmental level without placing in-depth emphasis on other tangible results.⁶

As a result, the real drivers and motivations behind these initiatives may not be as clear-cut as expressed in the project proposals. In fact, the inputs obtained through project practitioners pointed to the fact that discrepancies and mismatches may occur in the way the projects are focused and carried out by the national experts of the partner countries. In addition, misunderstandings on the level of access to the technologies (components of which may be protected by intellectual property rights, IPRs) or maturity of the technologies may occur (i.e. that technologies cannot be used beyond the project's duration). For example, while the country providing the technology may be

focused on its testing and demonstration, the partner country may be more interested in mastering and manufacturing the technology itself. Such lack of common understanding may lead to project deadlocks resulting in changing or downplaying the stated objectives. This can also affect the possibility of a follow-up, leading to projects remaining incomplete or isolated.

Recommendations:

- *Finding the mutual benefit:* Better coordination and communication between the partners' government agencies. The objectives of partners should be made explicit, as improved transparency may help to develop projects that are more in line with these.
- *Improving documentation and follow-up:* A better reporting of the projects' results through reports, final workshop, webinar, movie or presentation, or simply through checklists, could improve the institutional memory, and allow for better possibilities to develop a follow up and create synergies with other initiatives.

2. Understand what success means

Our analysis of R&I projects funded by EU member states shows that few of them follow strict tendering, reporting and evaluation processes, and that ex-post evaluations are rarely undertaken. In those cases where an evaluation is carried out, results are not publicly available. A reflection into what would constitute a successful R&I initiative would contribute to understanding what action by EU governments is impactful in the field of climate change mitigation. Suggestions for indicators of success were put forward by stakeholders, and included, for instance, the ability of the initiative to acquire funding both from the EU member state and third country partner, and the level of commercialisation of products.

In order to identify features that constitute a successful approach, one can look at the features of EU level R&I programmes – which typically have thorough measuring and reporting requirements and for which information is in general more transparent and easily accessible. Individual projects within these programmes follow a tender procedure with clearly defined objectives. The proposals need to explain the process and the expected results, with milestones and verifiable objectives. EU programmes produce regular reports and describe progress, problem encountered and remedial actions, and the final results are published. Such steps would allow to better understand, compare and evaluate those national initiatives. By following such general standards for procurement and evaluation, the level of clarity and transparency would improve, as well as the focus and results of projects.

⁶We can see this in the "Sino-Danish Renewable Energy Development Programme" (see background report), where once the dialogue and capacity has been established, the funding for the next phase ("Boosting RE in China") was provided by a non-governmental actor.

A way to measure the success of R&I initiatives in the field of climate change mitigation relates to their potential to reduce greenhouse gas (GHG) emissions in the long term and to advance climate technology transfer across borders, e.g. by making technology suitable for local conditions, or by developing key capabilities for operating the technologies in developing countries. Evidence on the extent to which these goals were met is rarely reported either by the initiatives and single projects websites or other means. Project stakeholders consulted brought up the following difficulties related to measuring the success of projects.

First, completed projects may not be followed-up. This may lead to uncertainty whether project results are taken up by local actors or whether technologies used during the project period (e.g. demonstrated in a pilot, which is often a central element in R&I initiatives) are diffused as commercially viable solutions. Second, while the emission reductions of, e.g., a technology pilot project can be directly measured (assuming monitoring and verification procedures are in place), its indirect (knock on) mitigation impacts are more difficult to ascribe to the project. In addition, many developing countries rarely have in place the infrastructure for monitoring and verification of emission reductions.

Some projects (such as Geoforafri⁷) use models to estimate the climate change mitigation impacts of R&I initiatives while others list (e.g. on their websites) success stories of product commercialisation stemming from their work (such as the Sino-Danish Renewable Energy Development Programme described in Box 1). In the absence of other means, R&I projects should aim to provide estimations of their long-term GHG impacts and the advancement in technology transfer. A plan on measuring success may be considered when eligibility of projects to acquire funding is assessed as is done for EU R&I funded projects.

Recommendations:

- In the project design stage, be clear about output (during the project) and impact (beyond the project) and have tools in place to measure both output and impact.
- As part of the project design, create incentives for partners to continue collaboration in follow-up projects, so that project impacts based on project outputs can be actively pursued as a team.
- Carry out a reflection into what constitutes a successful R&I initiative, and identify a variety of standards for success, including potential impact on GHG emissions and technology transfer: This could contribute to understanding which R&I actions by EU governments are impactful.

⁷See footnote 1.

3. Mapping of government-to-government initiatives: Challenges encountered

The CARISMA team encountered difficulties in mapping government-to-government initiatives in Europe as a database of bilateral initiatives between EU member states and third countries does not exist. Neither is there a common definition of the scope of an R&I collaboration. The reason for that is that there are no standard requirements at the EU level for member states to present their R&I initiatives, which are therefore to be found only at the national level and often in the national language only, making the search and analysis complex to undertake. In addition, there is often no information on who funded an initiative, how much funding was allocated, and on the results, including an assessment of the impacts of the individual projects.

The lack of such a database is also detrimental to determining the overall impact of such initiatives and thus the impact of combined EU actions, and to building up policy coherence in the area of climate change mitigation and international cooperation. Potential synergies and possibilities to learn from other experiences, as well as economies of scale arising from better coordination, may be lost. The objective to improve policy coherence of EU external policies and member states' own actions is recognised at EU level where there is a significant drive to develop synergies and avoid duplications.

- Develop an online database to register initiatives on R&I for climate change mitigation: This would facilitate collaboration and help develop synergies as interested parties could find ongoing initiatives. This could be built on the CARISMA-initiated "ClimateChangeMitigation" portal .
- Start with an EU-level database on a voluntary basis: The use of such a database should be encouraged. A successful example is the European Climate Adaptation Platform (CLIMATE-Adapt), which objective is to help local authorities in EU member states to find out about best practices and collaborate;
- Make the database public and user-friendly: Information on initiatives and individual projects should be available in EU working languages (i.e. English, French and German). Search options can include type of collaboration, area of research, technologies covered, geographical areas, outcomes (e.g. potential for emission reductions) and documentation created. Past initiatives and projects should be archived and remain accessible, to enable new initiatives to learn from past results.
- In the absence, there may be a need to consider whether compulsory registering could be imposed.

