



# European Added Value

of EU Science, Technology  
and Innovation actions and  
EU-Member State Partnership  
in international cooperation

*Executive Summary*



*Research and  
Innovation*



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# European Added Value of EU Science, Technology and Innovation actions and EU-Member State Partnership in international cooperation

## Executive Summary

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# 1. INTRODUCTION

This document is the executive summary of the final report presenting the study "European Added Value of EU Science, Technology and Innovation actions and EU-Member State Partnership in international cooperation". The study was commissioned by the European Commission's Directorate-General Research and Innovation through the Framework Contract (SMART 2009/0042) of DG CONNECT and was carried out by Technopolis Group in cooperation with Empirica Gesellschaft für Kommunikations- und Technologieforschung mbH. The study results should feed into future policymaking and support the achievement of the desired international Science, Technology and Innovation (STI) cooperation activities of the European Union (EU). The study outcome is based on several data collection methods, including deskwork, interviews, surveys and a small number of case studies. This study takes also stock of the work and findings of the study "International Science and Technology Cooperation in the EU's Seventh Framework Programme: the 'Cooperation' specific programme and its thematic areas", which was commissioned in parallel.

The study was prepared by Wieneke Vullings (project leader), Erik Arnold, Patries Boekholt, Neil Brown, Bastian Mostert, Monique Rijnders-Nagle, Léonor Rivoire (*Technopolis Group*), Strahil Birov, Tobias Hüsing and Simon Robinson (*Empirica Gesellschaft für Kommunikations- und Technologieforschung mbH*). Support was given by Manfred Horvat (*Technische Universität Wien*), Luca Remotti (*Intrasoft International*) and Derek Jan Fickers (*Technopolis Group*).

This summary provides an overview of the purpose and main goals of this study, the methodology, the findings and the conclusion and recommendations.

## 2. PURPOSE AND OBJECTIVES

This study explores the concept of European added value (EAV) of science, technology and innovation (STI) action carried out at the EU level or jointly by the EU and Member States (MS). So far, little work has been carried out on this topic. Not many attempts have been made to define and measure the added value and assess the means to achieve it while this could further support the justification of the Union's investments in international STI cooperation. The main goals of this study are therefore:

1. To define under which circumstances international STI cooperation objectives and actions carried out at EU level (these can either be coordinated or joint EU-Member State actions or solely EU actions) will be more effective than if carried out at national or local level, and make suggestions for defining and measuring this added value, with a specific focus on actions carried out through the EU's Seventh Framework programme for research and innovation (FP7).
2. To define the means of actions, and types of measures that might be taken at EU level (including and differentiating those which promote joint EU-MS actions) that are most effective in order to achieve the desired international STI cooperation objectives.

## 3. THE METHODOLOGY

In order to reach the objectives of this study, a number of activities have been carried out in the course of the study: Desk research, interviews, e-surveys, description of success stories and an expert workshop.

The **desk research** consisted of a literature study and analysis of the E-CORDA<sup>1</sup> database. This led to three main outputs: i) A better understanding of the EAV concept, and a conceptual framework to operationalise EAV in practice, ii) the conceptual development of a so-called 'EAV database' in which data and information were collected on a selection of actions that have been taken at EU,

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<sup>1</sup> The E-CORDA (External Common Research DATA Warehouse) database contains data on applicants/proposals and signed grants/beneficiaries with regards to the European Framework Programme for Research. For this study, an export from the E-CORDA database has been used (status May 2013).

EU-MS and MS levels. The database includes information on the objectives of over 30 specific actions, the level of governance of these actions, the geographical or thematic focus, the benefits and impacts, and existing evaluations and monitoring of data, and iii) an analysis of the international cooperation activities within the context of FP7. This was performed based on the E-CORDA database and it provided a clear insight into the different actions that are taking place – and are used – at the EU and EU-MS levels.

Furthermore, about 30 **interviews** have been carried out. Half of the interviewees represented officials of the European Commission, the other half representatives from a Member State or third country. In the interviews, the benefits and perspectives of the non-EU countries (so-called 'third countries') were included as well. Moreover, a **questionnaire** was sent to members of the Strategic Forum for International S&T Cooperation (SFIC) to provide their Member State view on a number of topics. In total, 5 Member State replies to the questionnaire were returned.

Two **surveys** have been carried out. The first one addressed National Contact Points (NCP) that have a particular focus on international cooperation (56 EU INCO-NCPs and 72 non-EU INCO NCPs). The response rate was fairly high: 48.2% for the EU-NCPs and 31.9% for the non-EU NCPs. The second survey addressed the Research Project Participants of a sample of research projects funded under FP7. This survey targeted a sample of a little over 6.000 FP7 project participants, including third country participants, and reached a final response rate of 23.3%. The INCO-NCP survey was developed jointly with the team of the other study that was carried out in parallel on the *'International Science and Technology Cooperation in the EU's Seventh Framework Programme: the specific programme 'Cooperation' and its thematic areas'*.

A limited number of **success stories** or **case studies** on STI activities and their impacts and benefits have been selected in order to get a deeper insight into what constitutes European Added Value, and particularly to study the (mutual) benefits for third countries. The cases consisted of the European and Developing Countries Clinical Trials Partnership (EDCTP); EU's relations with Latin America and the Caribbean (EU-CELAC); and the Europe-Japan Opening of a Laboratory for Integrated Micro-Mechatronics Systems (EUJO-LIMMS). These cases were compared with comparable Member State initiatives to gain a better understanding of the existence and nature of the EAV.

In mid-October 2013 an **expert workshop** was organised where comparisons were drawn between the benefits derived from EU, MS and EU-MS support to international STI. The workshop, which took place in Brussels, aimed at developing useful recommendations to the EU on the measurement and on maximisation of EAV for future international STI cooperation programme design and implementation. A total of 8 external experts participated in the workshop.

## 4. FINDINGS AND CONCLUSIONS

**International cooperation is an increasingly important area for policymaking both at the Member State level and the EU level, and since a couple of years a number of 'joint EU-MS initiatives' have been established.**

At the EU level and within FP7, most international cooperation takes place in the 'Cooperation' specific programme, which also includes the largest part of the funding. Increasingly the EU takes action jointly with MS, such as for instance the pilot actions that have been established by the Strategic Forum for International S&T Cooperation (SFIC) towards the USA, China and India, and the EU-Latin American and Caribbean States and EU-Africa Senior Officials Meeting. Other examples are the European and Developing Countries Clinical Trials Partnership (EDCTP), the Joint Programming Initiatives and coordination of national policies and activities of EU Member States and Associated Countries concerning international STI cooperation (ERA-NET and ERA-NET Plus projects). Individual Member States or groups of Member States have a range of policies and instruments in place to support international STI cooperation, in parallel to what is happening at the EU level. These include in general mobility schemes, open for extra-EU participants; specific international R&D cooperation schemes, including joint R&D projects; opening up of national STI policy instruments to foreign actors; science attachés in foreign countries; and multi- and bilateral agreements.

## **EAV is a multifaceted and changing concept**

All EU policy initiatives must respect the principle of subsidiarity as defined in Article 5 of the Treaty establishing the European Community. It is the principle whereby the Union does not take action unless it is more effective than action taken at national, regional or local level. Also for actions taken to support and stimulate science, technology and innovation this principle is of great importance. However, the concept of EAV has evolved over time.

The SFIC proposed in 2012 a **definition of European Added Value of international STI cooperation** as a way to identify a common EAV approach on the external dimension of the European Research Area (ERA). The EAV of international cooperation was defined as: *“the possibility of choosing the level of cooperation from the perspective of the mutual interest of the partner country and the MS/AC/European actor”*. According to this definition, EAV in the external dimension of ERA is achieved when EU/MS-driven international STI activities are directly related to: Scale and complexity; Coordination of the EU and MS STI potential; Enhanced European knowledge base; Economic impact, efficiency gains and financial benefits; Societal/grand challenges; and European values. SFIC also recommended that further definition of the EAV is needed, in particular identifying the benefits of EU/MS international cooperation at European level and the complementarities between the EU and MS level. Furthermore, identification of those areas where added value can be the largest (‘major’ areas of added value) is needed and the circumstances under which the outcomes of actions are most effective if carried out at EU level, or jointly with the MS.

## **EAV can vary greatly, due to a large diversity of rationales for and expected benefits of international cooperation at the EU level depending on the actor, domain and level of application**

The study shows that identifying and assessing EAV is not unambiguous. The concept of EAV has different meanings to different actors. Moreover, EAV strongly relates to the drivers and motives of these different actors for the specific actions they involve in, and consequently relates to different types of impacts and benefits for them.

**From the researcher’s viewpoint**, besides networking, the possibility of organising better consortia, including researchers with different backgrounds, increases the potential of cooperation. The demands in science and technology development for multidisciplinary, scale and cost reduction require a multilateral approach, which can be coordinated and (co-)funded by the European Commission, or jointly with a group of MS. This includes also the cooperation in large research infrastructures. A more pragmatic added value is also the leverage of additional funding through EU activities and instruments: it provides researchers with more funding opportunities for their research. Finally, best practice sharing can be an important EAV for improving future STI cooperation activities.

**From the policy perspective**, coordinating the EU and MS STI potential is a clear element of EAV. Europe needs to be a more attractive place to study and work in order to ensure that it is working with the best and the brightest. Ways to increase Europe’s attractiveness are for instance addressing framework conditions for mobility or harmonisation of pension plans. Diplomacy is also an important element of EAV for policymakers.

**From both viewpoints** (researchers and policymakers), networking is another important element of EAV. Engaging in networking activities governed at EU level assures that a greater number of potential partners can be reached in comparison to governance at MS-level. This especially applies to for instance materials research. Materials have a long value chain and are used across sectors in different applications. Moreover, research in materials is characterised by a strong specialisation in nations. Bringing actors together actively in this ‘matrix’ of values and applications, which are spread out over different countries, is especially important. In line with the previous statement, the EAV lies in finding partners and leading minds, and building personal relations through a clear portal in the EU. It provides the opportunity to link with the leading minds in Europe.

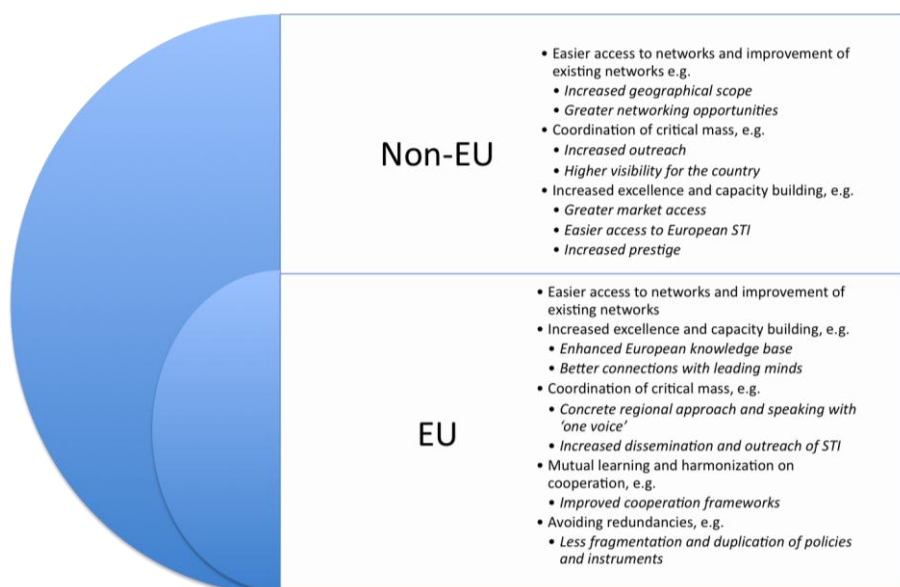
Furthermore, EAV depends largely on whether one is comparing EU or joint EU-MS actions to actions at the level of **‘larger’** MS (or countries with a higher S&T budget) versus comparing it to actions at the level of **‘smaller’** MS (countries with a smaller S&T budget). Since the larger MS have more means for international STI cooperation, the EAV is in some cases less evident than for smaller MS with fewer resources for instance.

Moreover, EAV differs for cooperation in **innovation** compared to cooperation in **research**. EAV for cooperation in innovation seems to be to a large extent sector specific. On the one hand, in certain sectors, where (trade) interests of specific MS or third countries are important and the stakes are large, EAV of innovation cooperation is less likely. On the other hand, in general, the more one moves away from the pre-competitive phase the smaller the EAV will be due to increased competition between MS, and between MS and third countries.

Thus, defining EAV needs to be based on the following questions: 1) What are the policy priorities (and for whom: policymakers, researchers, research organisations, or industry)?; Who should support it (EU or MS/Local/Regional) and in what way should it be done, if on EU level (effectiveness of spending)? Based on the EAV principles, EU action is only justified if there is a clear additional benefit from collective efforts, compared with actions by MS. Moreover, the benefits should exceed those that would have been realised in the absence of public expenditure.

**A number of 'major' areas of added value have been identified and a new EAV framework for international STI cooperation is proposed.**

Despite the diversity of EAV, the study resulted in the identification of a number of 'major areas' of added value that are summarised in the figure below for non-EU actors and for EU actors.



Source: Technopolis Group and Empirica based on desk research, interviews, surveys and case studies.

These findings led to the development of 5 so-called 'criteria for added value'. These criteria can also be used for the future monitoring and evaluation of the added value of single actions, programmes, instruments, and all other activities that have the objective to foster international STI cooperation that are valid to a greater or lesser extent for the EU and non-EU countries.

**1. Networking.** These are international STI activities (indirectly) aimed at bringing *individuals* and *organisations* together, facilitating matchmaking, partnering and networking. A clear added value for the EU and EU-MS involvement can be found in this area for policymakers, researchers and industry. Policymakers can be brought together to discuss the cooperation framework through which researchers and research organisations can cooperate. They learn from each other's best practices and worst cases, and can organise and pool funding in joint programmes. The usual suspects, often the bigger European countries, seem to have less need for this support, but the smaller countries find added value in the support in identifying the main actors and the right contact persons. The larger countries, however, still find it useful to be linked in multilateral initiatives. For researchers, improved networks can help them to identify the 'missing links' in their research consortia, or open up new ways of research funding that were not known to them before.



2. **Facilitating (European) excellence and capacity building.** This area of added value mainly supports the researchers (and to a lesser extent industry). It is the assumption that international cooperation contributes to the increase of excellence because the best minds available can find each other and work together to solve complex research questions, and they can make use of the best methods, tools and subjects available. It should also contribute to the attractiveness of European research and innovation. This includes improving STI capabilities (actors), enhancing mobility (links between actors), and increasing the research competition by for instance developing European research infrastructures.
3. **Coordination of critical mass.** This criterion is about increasing visibility and strengthening competitiveness towards third countries. An important rationale for EU action is that international STI activities that are of such scale (large of size) and complexity (largely difficult/complicated) that no single Member State can provide the necessary financial or human resources/expertise or infrastructure/equipment, need to be carried out at European level in order to achieve and develop this critical mass, and to reduce the research or commercial risk for one single country or organisation. The EAV is also based on the option to put the best complementary expertise together to address the target. It also includes the coordination of the STI potential in the Member States and in Europe as a whole and linking the best complementary expertise in Europe and beyond – allowing innovative multidisciplinary approaches. This can be related to *Internal* issues such support in reducing the gap between Europe’s regions and countries in terms of STI and integrating less-connected institutions and young researchers into European and international networks. It also includes an important *External* component, namely to contribute to increased visibility of the EU and MS STI potential in third countries (e.g. by EU branding) and a stronger position in negotiations than when acting at MS level, by speaking with one European voice, which can lead to increased influence in international fora thereby maintaining EU interests (advocacy).
4. **Fostering mutual learning and harmonisation in (and beyond) Europe,** leading to standardisation and improved knowledge, also of international STI cooperation processes and practices. This also covers efforts that ensure a common way of conducting international STI cooperation activities together with third countries, addressing issues that have to do with the *framework* conditions for these activities, practical issues such as *evaluation practices, project and programme management*, and *values* associated with integrity issues and ethics both at the level of the *international cooperation* component and at the level of the *STI* component. The EU can play an important role in providing these framework conditions and influence standards that could lead to easier access to third countries for European industry.
5. **Avoiding redundancies and acting economically and effectively.** International action at European level or EU/MS partnerships vis-à-vis third countries can result in efficiency gains by *pooling* and more efficient use of scarce public resources, *leverage* of public funding on private investment, and alignment of international STI cooperation priorities (*streamlining*), allowing avoidance of duplication and rationalisation of efforts. International STI cooperation activities at EU level can contribute to the achievement of wider EU policy goals by realisation of greater *economic* (activities focused on increasing private sector opportunities and innovation) and *societal* (activities that focus on specific societal/grand challenges that are shared across Europe and with third countries) *impacts*.

### **A lack of data prevents currently a solid assessment of EAV**

The lack of sufficient monitoring data of the current EU and joint EU-MS actions prevents a good assessment of EAV for specific actions or groups of actions. There is still only a small body of evidence of expected and achieved impacts through individual Framework Programme activities. Also, very few indicators are used with a view to monitor and evaluate the actions with a specific focus on international STI cooperation. In this study, a number of possible indicators are proposed that can be used as a starting point for measuring EAV of specific actions or instruments based on the EAV criteria and a number of EAV assumptions. Moreover, a framework is proposed to carry out a ‘EAV test’ for individual projects or actions that are under development, and to compare the level of EAV between the different projects based on the above-mentioned criteria.

## 5. RECOMMENDATIONS

A number of barriers currently prevents deeper international STI cooperation. These barriers could be tackled at EU level, such as the lack of financial means to support co-funded mutual research undertakings; a small pool of human resources for building sustainable relations with other countries; a lack of knowledge about the other countries' strengths and complementarities; the existence of duplications in policy; a lack of understanding of the working of the EU instruments; and a large administrative burden for international STI cooperation. Some of the current instruments are very effective, but strategy and operation can be better connected. INCO-Nets and ERA-Nets for instance seem to be successful instruments, tackling the needs of many. The effectiveness of STI bilateral agreements, however, is debated, as well as introducing many new instruments with the risk of increasing the bureaucracy. The link between the EU strategy and high policy objectives, and the activities that take place at the thematic level and in other parts of the EU at the operational level could, however, be stronger.

A number of existing challenges ahead have been identified:

- Ownership of the instruments and activities
- Maintaining a long-term view taking into account the dynamics various countries are in
- The continuation of joint EU-MS partnerships towards new emerging economies
- The focus on innovation and framework conditions for a more robust evidence-based monitoring and evaluation of EAV in the future

Finally, five key recommendations can be made:

1. Continue with successful actions and instruments that support funding for mutual research undertakings. Make sure that long-term planning leads to sustainability of international engagement at the national level, if needed by joint EU-MS partnerships or EU actions for a limited period. A clear vision is needed about supporting sustainable international cooperation, both at the EU as well as Member State levels.
2. Continue the support of sharing best practices and making information available through contact points or peer-learning activities with country-specific or thematic focus.
3. Explore whether it is effective and efficient to combine existing instruments, perhaps based on a thematic or geographic focus.
4. Increase the focus on the development of framework conditions for innovation in EU-third country collaborations, and explore further to what extent there is a EAV rationale for innovation activities, since this is not always obvious in increasingly competitive domains.
5. With regard to future monitoring and evaluation of EAV the following recommendations finally can be made:
  - Ensure that rationales, objectives, the EAV assumption, inputs as well as outputs and outcomes are captured at the start, mid-term and end of the projects; both for individual projects and at the level of the instruments.
  - Find a means to encourage (or strongly recommend) all actors involved in the governance of STI actions to conduct regular output and impact assessments with a focus on the international cooperation aspects. It is not about finding new but establishing realistic and comparable reporting systems amongst different actions that are very different in terms of their activities and objectives, of vastly different scales and time-spans, and involve different actors, different geographies, different governance and different funders, etc.
  - Integrate the 5 EAV criteria both in the proposal phase of the actions, as well as during their evaluation phase through an 'EAV test'. Here, other EAV assumptions can be listed and later also evaluation based on tailor-made indicators. Furthermore, it is recommended to not only assess whether the action aligns with one or more of these criteria, but also to address the following questions:

- For whom does the action provide added value?
- Is there any difference between the added value for larger and smaller countries, and for more and less developed countries?
- What are the differences between the added value for research versus innovation?
- Were there any initial EAV assumptions (ideally there should be)? What were they, and have they been achieved?



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The study objectives are to 1) define under which circumstances international Science, Technology and Innovation (STI) cooperation objectives and actions carried out at European Union (EU) level will be more effective than if carried out at national or local level, and make suggestions for defining and measuring this added value; and 2) to define the means of actions, and types of measures that might be taken at EU level that are most effective in order to achieve the desired international STI cooperation objectives. Based on desk research, interviews, surveys and case studies conclusions have been formulated on the concept of European Added Value (EAV) and a number of major areas of added value have been identified. Furthermore, a new EAV framework for international STI cooperation is proposed. Finally, recommendations are being made for the improvement of future policy making and specific instruments.

*Studies and reports*

