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Assessment of EU-EECA and EU-Russia research cooperation under the EU Framework Programmes for Research & Development

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1. OBJECTIVES

The European Neighbourhood Policy (ENP) remains the basis on which the EU works with its neighbours to achieve the closest possible political association and the greatest possible degree of economic integration.

In the globalised world cooperation in sector-specific fields is an important and expanding part the EU's external action including the renewed ENP. It covers a wide range of areas including employment and social policy, industrial policy, competition policy, agriculture and rural development, fisheries, climate change, the environment, energy security, transport, integrated maritime policy, the information society, research and innovation, education in particular higher education cooperation and mobility (through programmes like Erasmus Mundus, Tempus, Marie Curie Actions), youth cooperation, health, and culture.

Knowledge creation precisely research and technological development (RTD) is a shaping basis for up-to-date economy and measures focused towards response on the global challenges. International RTD cooperation and transfer of knowledge is essential to reinforce research capacity of involved parties, to share respective resources and risks as well as to establish a foundation for joint innovative activities.

The countries of Eastern Europe and Central Asia (EECA) are important partners of the European Union for the political, economic and social development. According to the Lisbon goal of the EU to become the worldwide leading knowledge based economy development of the European Research Area is a major policy objective. Countries of EECA have particular potentials in terms of existing research capacity in a variety of scientific disciplines and therefore there is a strong bilateral interest in enhancing the science and technology cooperation.

The EU's international cooperation activities in science, technology and innovation (STI) are realizing through the EU RTD Framework Programmes. Although the cooperation in STI between the EU and the EECA partner countries and the EU and Russia is quite strong, there is still area for further development.

The goal of the undertaken work was to study the effects and evolution of European R&D collaborations within EU-EECA and EU-Russia research networks formed under the EU 5th, 6th and 7th RTD Framework Programmes.

In order to identify the key tendencies of research cooperation between EU and EECA countries as well as EU and Russia, the assessment of EECA and Russian research centres participation within EU FP5-FP7 by country, by discipline and by type of organisation has been undertaken. Case-studies and analysis of 5 functioning EU-EECA thematic research networks, formed in the course of FP7 highlighted added value, success stories and barriers of research cooperation have been implemented.

2. MAIN RESULTS

The analysis of EU-EECA and EU-Russia project cooperation under FP5-7 in the period of 1998 – December 2012 resulted in conclusions on the key tendencies of research cooperation between the EU and EECA and the EU and Russia.

The overall number of joint S&T projects jointly implemented by EU and EECA countries has increased from FP5 to FP7. It indicates growing mutual interest of the EU and EECA in the S&T cooperation as well as in joint participation in the EU RTD Framework Programmes. The most active S&T cooperation was between EECA and EU Member States (MS) – United Kingdom (UK), Germany and France. The main three EU MS coordinators of joint projects were Germany, UK and Greece. The analysis showed intensive development of the cooperation in such priority scientific areas as Information and Communication Technologies (ICT), Environment, Health and Social Sciences and the Humanities, as well as in the area of International Cooperation (INCO).

By the number of implemented joint projects and by the number of participant organisations among EECA, Ukraine has been the main partner of the EU in all the areas of S&T cooperation. By the overall number of joint projects, the partnership between Ukraine and the EU was the most progressive in the areas of INCO and Environment.

The other three key project partners of the EU have been such EECA countries like Belarus, Kazakhstan and Georgia. Considering overall numbers of joint projects implemented in the analyzed priority scientific areas, cooperation between the EU with Belarus has developed mostly in INCO and ICT areas, with Kazakhstan – in INCO, Food, agriculture and biotechnology (BIO) and Environment; and with Georgia – in INCO, ICT and Environment. In case of such countries, as Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, number of projects carried out jointly with the EU has not increased for the period of FP5-FP7. Moreover, there has been a significant decline in the cooperation between the EU and Uzbekistan – the number of joint S&T projects decreased by half.

Active participation of Research and Higher Educational Institutions of Ukraine, Belarus, Kazakhstan and Georgia in S&T projects indicates that these states have a more developed than in other EECA countries scientific and higher educational infrastructures that could facilitate the further development of S&T partnership with EU MS.

The analysis of types of EU and EECA organisations involved into joint FP5-7 projects shows that the most intensive S&T collaboration has been between Research and Higher Educational Institutions of the EU and EECA countries. The other two groups of organisations having large number of partner contracts are various multidisciplinary organisations (OTHER) and Enterprises. It should be noted that the number of OTHER partner organisations decreased during the implementation of FP-7, and the number of Enterprises increased. The growth in the number of Enterprises among participants of joint S&T projects indicates intensification of industrial entities involvement into the S&T cooperation.

More close cooperation between EU and EECA Research, Higher Educational and Industrial Organisations could lead to further improvement of the EU-ECCA cooperation in the sphere of innovation.

At present time Russia is the most successful international S&T cooperation 3rd partner country in terms of the total number of participations in the programme, the total amount of EU financial contribution received and the number of collaborative actions launched. The overall number of projects involving Russia has significantly increased for the period of FP5-7 (from 112 to 223 projects). Russia cooperated with nearly all the EU MS within FP5-7. The major three partners of Russia were Germany, France and the UK. The three top coordinators of joint projects with Russia were Germany, the UK and the Netherlands. Since the beginning of FP5, the EU-Russia partnership was considerably developed.

On the whole, the most joint projects have been implemented in the areas of ICT, Nanotechnology and INCO areas, although there is a considerable decline in the EU-Russia project performance in the INCO area within FP7 in comparison with FP5 and FP6. There are also seen a great progress in cooperation in Environment, Transport (Aeronautics), Space and Health areas as well as a tendency of the enhancement of project collaboration in such areas as SSH, BIO and Euratom. The number of Russian participations in joint projects has been steadily growing. Analysis of types of EU and Russian organisations participated in joint S&T projects has shown that the most active have been Research, Higher Educational Organisations, and Industrial Enterprises of the both regions. It also indicates the presence of a high S&T potential in Russia for the further improvement of the international S&T collaboration with EU MS.

Case-studies and analysis of functioning EU-EECA thematic research networks formed in the course of FP7 projects contributed into identification of the effects of EU-EECA research networking including added value, success stories and barriers to EU-EECA collaboration.

Added value

Among the main three categories of as *added value* generated with research networks both EECA and EU MS partners of joint projects indicated*: a) establishment of EU-EECA research networks; b) promotion of EU Framework RTD Programme in EECA countries; c) relevance of the project research area to the country S&T priority*. The other group of added value generated in course of joint projects includes: *d) contribution to development of cooperation between research and industry; e) awareness raising on ways to organise research; f) contribution to solution of a specific problem / societal challenges that participants' countries face; g) access to complementary knowledge / material / infrastructure; and h) improvement of personal skills.*

Barriers

Among *barriers* hampering to setting-up and implementation of EU-EECA international research, FP7 project participants indicated as the most essential factors: a) *lack of financial support for international cooperation*, b) *lack of personal contacts in international research networks*, c) *difficult access to international networks and platforms for researchers*, d) *lack of information on research programmes open for cooperation*. EU and EECA researchers almost do not see such barriers for networking as lack of personal interest for international collaboration, non-recognition of international R&D cooperation for scientific promotion, and confidentiality and IPR.

Success stories

Participants of research networks highlighted that international collaboration under FP7 allowed to facilitate partnership among EU and EECA researchers and at the same time to increase level of national research. The FP7 provided significant financial support for scientific laboratories. The joint projects provided an access to cutting edge research material and techniques. They also provided the space to explore new scientific methods not implemented before. Joint FP projects support building of

a collaborative international network under a good environment. This environment made possible a fluent exchange of ideas, points of view a while constructive criticism. Essential part of networking was knowledge transfer through a number of beneficiary countries and development of cooperation with other international initiatives e.g. the Black Sea Economic Cooperation Organisation and its member states. Research teams have broadened their research connections as well as have improved their understanding of societal processes taking place in transition countries. Collaborative projects became a new interesting challenge that provided obtaining of new research skills, developing research networks and collecting new data for further research topics elaboration and publications. Joint projects also provided new data and new knowledge filling in the existing gap in the specific research areas. Research networking activities envisaged organisation of exhibitions, forums, workshops and other international events contributed significantly into knowledge and technology transfer through conclusion of memorandums of understanding between EU and EECA companies, as well as initiation of negotiations between governments regarding the agreement for cooperation in science, technology and innovations.

3. POLICY IMPLICATIONS

Policy actions focused on development of international S&T and innovation cooperation should be considered as an important part of the European Neighbourhood Policy.

Russia and the countries of Eastern Europe and Central Asia are important partners of the European Union for the political, economic and social development. According to the Lisbon goal of the EU to become the worldwide leading knowledge based economy development of the European Research Area is a major policy objective. Countries of Eastern Europe and Central Asia have particular potentials in terms of existing research capacity in a variety of scientific disciplines and therefore there is a strong bilateral interest in enhancing the S&T cooperation.

Knowledge creation precisely research and technological development (RTD) is a foundation for up-to-date economy and measures focused on responding to the global challenges. International RTD cooperation and transfer of knowledge is essential to reinforce research capacity of involved parties, to share respective resources and risks as well as to lay the basis for joint innovative activities.

The EU policies actively promote integration of the EECA and Russian scientists into the wider European Research Area. The EU's international cooperation activities in science, technology and innovation (STI) are realizing through the EU RTD Framework Programmes. Although the cooperation in STI between the EU and the EECA partner countries and the EU and Russia is quite strong, there is still space for further development.

The S&T cooperation between EU and EECA should be continued and further intensified. The environment and background of future S&T cooperation, including better harmonization of policy and practical mechanisms of its realisation should encourage the activities performance directed towards innovation and exploitation of research results.

It could be recommended to continue and deepen policy dialogue between EU and EECA countries on key issues and the framework conditions of R&D cooperation policy. The dialogues could be organised through policy dialogue platforms, forums, conferences, meetings, round table discussions and specially set up joint S&T committees, working groups and other forms. Creation of a sustainable communication and co-ordination platforms involving policy-makers of EU MS, AC and the EU neighbouring countries is recommended. Such platforms or other forms of policy-makers communication could be used to exchange information on recently developed national and international STI policies and strategies, instruments for their implementation, programmes and projects open for collaboration. The communication platforms could be focused on identification of strategic research areas of mutual interest for EU MS, AC and EECA countries as well as on

preparation of joint actions for facilitation of the partnership. In order to identify mutually beneficial strategic research areas the methodology of Foresight-study could be applied.

It is important to elaborate relevant policy and instruments in order to overcome administrative barriers making trans-national S&T cooperation difficult (visa, taxation, customs duty, intellectual property rights, etc.)

It could be recommended to improve the legal basis for cooperation (agreement between country partner and the EU in science, technology and innovations). There is no S&T agreement signed between the EU and some of EECA countries. It could be recommended to consider an opportunity and rationality to conclude separate S&T agreements between the EU and some of EECA countries in addition to existing PCA. Agreement opens wider opportunities for cooperation. The existence of the S&T agreement provides a balanced legal basis for the cooperation in specific area of mutual interest. It provides a flexible framework for developing cooperation, including the area of research-based innovation. Without agreement many limitations would affect the cooperation. For example by the reason of lack of such agreement some of EECA countries were not included into the category of International Cooperation Partner Countries that prevent their researchers to participate in the FP7 Marie Curie Action International Research Staff Exchange Scheme that resulted in lowering of collaborative contacts between EU and EECA researchers.

The present time is characterized by high mobility flows of researchers that is rooted in specificity and dynamism of research. Science is boundless and scientific mobility is an important factor for cultural and professional mutual enrichment of scientific communities. To overcome a visa barrier hindering researchers movement it could be recommended to conclude agreements between the EU and EECA countries on the facilitation of the visa issuance to the citizens of the EU and the EECA country that will simplify visa obtaining process for different categories of persons, including researchers and teaching staff, pupils and students. Consistently simplification of migration, employment and taxation rules for foreign researchers would contribute to the enhancement of researchers mobility. To increase personnel skills of researchers national policy stakeholders should set up joint EU-EECA training activities in science management as a mutual learning exercise and as a way to share the good practices already in place in several EU MS.

The EU should provide more instruments for wider involvement of EECA countries to the programmes of RTD international cooperation (e.g. Horizon 2020 and others). At the same time EECA countries should consider a provision of EU scientists with an opportunity to open access to its S&T programmes.

Organisation of sustainable exchange of up-to-date information on STI potential the most active institutions, STI system and political framework, programmes, projects, events of the countries involved in cooperation activities is very essential measure for collaboration enhancement. The information systems http://www.increast.eu/ designed under FP7 IncoNet EECA and IncoNet CA projects is a good example of information system presented data on EU-EECA S&T which would be useful to support in the future. National informational and contact points should be further supported under Horizon 2020 in order to disseminate information and consult their clients on opportunities offered by the programme for research and innovation cooperation.

To enhance research collaboration in each research area it is recommended to involve more number of multipliers who could broadly transfer knowledge through research and innovation networks in EU and abroad. Such networks are technology platforms, networks of excellence, clusters, research and industrial associations, important consortiums of researchers and companies which are groups of different organisations working together in a specific application domain – sustainable energy, water management, ICT systems, etc. Mechanisms should be elaborated to interconnect those networks which are focused on internationalisation. The good example one of such networks is European Enterprise Network (Armenia and Russia are participants of this network). Another example of

networks are European Technology Platforms that have internationalisation strategy. They consider internationalisation issues as a way of achieving their goals more efficiently in terms of enlarging the markets where S&T results could be exploited. Mechanisms should be elaborated to interconnect those networks which are focused on internationalisation. Connection of the networks would require a combination of focused efforts at European and EECA levels, greater openness of mind, intelligent solutions, but it would also require seed funding to start the networks' interactions. It is important to plan such seed funding since the beginning, to initiate the process.[1]

For both regions it is very important to design appropriate funding and/or co-funding mechanisms to finance international S&T cooperation activities. Application of such instruments like coordinated / joint calls for projects and programmes could be recommended as one of cooperation instrument intending harmonization of administrative procedures and expert evaluation procedures.

ERA-NET action funded by the European Community within FP7 could be mentioned as a successful example allowed reaching a new level in EU-Russian S&T cooperation by improving coordination of EU MS cooperation with Russia and the complementarities between MS/AC and Community activities. ERA-NETs aim at enhancing coordination of national or regional research programmes in the EU MS and AC in order to reduce the fragmentation of research programmes along national funding lines. This has been achieved by the implementation of Pilot Joint Calls for transnational and scientifically excellent research projects in the fields of S&T and Innovation. The ERA-NET scheme could be widened to other EECA countries.

It could be recommended to the national policy stakeholders and to the EC to set up collaborative EU-NCs competitive innovation funding programmes as an indirect or explicit means to stimulate the development of innovative companies. Such collaborative competitive innovation funding programmes should financially support joint R&D projects designed to lead in the mid-term to innovative products, services or processes of significant economic and/or societal value.

[1] Svetlana Klessova. PICTURE in focus. Pan European Networks: Science & Technology 06. Source: www.paneuropeannetworks.com