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Scientific Cooperation between Russia and the EU in the Development and Use of Large Research Infrastructure

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Abstract:
The article considers the use of scientific infrastructure as an element of international scientific cooperation. The authors analyze a European approach that was developed in the framework of the Horizon 2020 Research and Innovation Program.

The authors examined the current large international infrastructure projects with Russian participation and proposed their typology. The article outlines the specifics and prospects for the development of scientific infrastructure, proposes optimal forms of scientific cooperation, and makes some suggestions on the use of international scientific cooperation as an instrument for solving tasks related to the foreign policy of Russia.

The authors prove that the development of scientific infrastructure is a driver of economic growth for both the country as a whole and its regions.

Keywords: *research infrastructure, Horizon 2020, modernization of the economy, EU, international cooperation, eScience, national contact point, development of regions*.

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1. Introduction: Horizon 2020 as the main tool of science policy in the European Union

A multidimensional social institution, science is currently considered as one of the crucial factors for sustainable economic development (Sayer and Campbell, 2003). For instance, the need to support breakthrough technologies at the state level is recognized in Russia and abroad (Foster, 2011). At the same time, the research infrastructure is seen as a fundamental tool that allows both solving already existing research tasks and outlining new directions of scientific inquiry (Mazurenko, 2010). In addition to that, it is generally recognized that scientific infrastructure facilitates the dissemination of advanced scientific methodology, attracts talented professionals and serves as a platform for researchers' networking in various fields of science, thus, being a basis for the development of new interdisciplinary projects and for the formation of innovative clusters (Azoev, 2006). It is expected that in the medium term, the development of advanced scientific infrastructure in high-tech areas (for example, in nanotechnology) will lead to modernization of the economy as a whole (Balyakin and Zhulego, 2012; Valma, 2014; Thalassinos, 2017; Liapis *et al.,* 2013).

When creating scientific infrastructure that complies with the goals of sustainable development and international division of labor, the state should pay special attention to certain requirements. For instance, to develop appropriate managerial decisions, one should accurately identify both the most promising areas of research and the optimal formats for Russia's participation in international scientific projects according to the existing experience and with focus on the scientific and technological development of the country (Pociovalisteanu and Thalassinos, 2008; Malichkay, 2014). Another significant requirement is the joint use and (or) creation of research infrastructure by research centers and scientific organizations, both at the national, regional and international levels, this being a fundamental factor in scientific breakthroughs. Practice has shown that the cooperation is increasing in such areas as the creation of large facilities of research infrastructure both at the national and international levels in various fields, and, primarily, in interdisciplinary studies (Lenchuk and Vlaskin, 2011; Thalassinos and Pociovalisteanu, 2009; Malysheva, 2014).

There are several factors boosting the joint creation of scientific infrastructure. The most important of them is the economic, related to the high cost of this infrastructure, which requires international multilateral cooperation. Such processes were previously typical of the advanced physics research: high-energy physics, nuclear physics, energy, and astronomy. However, the focus is currently shifting to such areas of research as biology, biomedicine, materials science, environmental studies and control, oceanology, etc., (Pociovalisteanu *et al.,* 2010). This paper investigates the experience of modern large research infrastructures; the work of the national Nanotechnology contact point located at the NRC Kurchatov Institute and discusses the specifics of the operation of large research infrastructures, as well as prospects for the development of scientific infrastructure and optimal forms of scientific cooperation. The article makes suggestions on the potential of international scientific cooperation as a tool that can help Russia achieve foreign policy. The authors prove that the development of scientific infrastructure is a driver of economic growth (Dzhukha *et al.,* 2017; Zaman and Meunier, 2017).

The European Union is the most important scientific partner of the Russian Federation, and its main instrument of science policy is the specialized EU scientific framework programs which until recently provided direct funding to Russian scientists[6]. Upon the completion of the Seventh EU Framework Program in 2013, the European Union launched Horizon 2020 Program, which is a logical continuation of the previous EU framework programs (Horizon 2020). The European Union officially declares the development of international cooperation as one of the goals of Horizon 2020 (Giacometti, 2013; Akulshina and Pilieva, 2013). It also states that cooperation with the Russian Federation is an important element in the construction of all-European scientific environment (Kuzmin, 2014; Ignatushchenko, 2011). At the same time, the mobility of scientists both in our country and abroad is viewed as a strategic task (Mobility of scientists, 2008; Athanasenas *et al.,* 2015).

Therefore, any country can take part in this program. However, its rules were changed for the BRICs countries if compared with the Seventh Framework Program: Horizon 2020 defines them as developed and, thus, organizations from these countries are invited to participate in projects, but are not funded by the European Commission (Horizon 2020 Work Program). Thus, participants from Russia should seek their own funds (in monetary or non-monetary forms) to cover their expenses associated with participating in Horizon 2020 projects. Russian member organizations may belong to consortia, but it is assumed that they will provide relevant funding themselves (Terebova and Kuzmin, 2014; Duguleana and Duguleana, 2016; Robertie, 2016). The General Annexes and the Rules of Participation name some exceptions according to which organizations from the listed countries (including Russia) can receive funding under Horizon 2020:

A) financing details are stated in the text of the announced tender;
B) financing is provided under a bilateral agreement on scientific and technical cooperation or any other document signed by the EU and a third country;
C) The European Commission regards the participation of a third country organization necessary for the implementation of the project financed under Horizon 2020.

Taking into account this and other changes stated in Horizon 2020, we investigated and analyzed the existing instruments of cooperation between Russia and the EU, which made it possible to determine the most effective ones among them and to

6Among the most recent ones we should mention the Sixth Framework Program https://ec.europa.eu/research/fp6/index_en.cfm develop proposals for their further development and the application of new forms of cooperation (Gutnikova *et al*, 2014). According to this analysis, at present moment the support from the Ministry of Education and Science remains the main mechanism for financing Russian participants within a number of Horizon 2020 sections, which are among our country's priorities. Selection of areas and their expert evaluation are carried out with the direct involvement of national contact points being one of the basic instruments of interaction between Russian and European researchers (Dmitrishina *et al.*, 2015).

2. Using humanitarian methods of analysis in natural sciences as exemplified by international scientific cooperation

Acknowledging the importance of innovations and their transfer to the practical level, the European Commission actively used the humanitarian approach while preparing the new edition of Horizon 2020, with a great deal of attention paid to international cooperation (Gioveneze, 2008).

SOPHIA special project within the Seventh framework program focused on the application of research infrastructure and the use of its positive experience in the future (Kroon *et al.*, 2014). A separate project, the European Strategy Forum on Research Infrastructures (ESFRI) can be regarded as a continuation of the SOPHIA project. The aim of the project is to develop a unified strategic approach to the development of a European policy on research infrastructures, ensuring their effective application at both the European and international levels (ESFRI, 2002-2017). The development of science as a social institution is not limited to the technological factor and scientific infrastructure that enable its reproduction. Convergence of the humanities and natural sciences is a characteristic feature of the modern scientific and technical environment (Kovalchuk *et al*., 2013). In this regard, one can mention the application of analysis methods used in humanities when considering the scientific infrastructure of physics, astronomy and chemistry. First of all, it is necessary to investigate socio-cultural consequences of introducing high technologies, their contribution to solving social and economic problems. The importance of developing the mega-science facilities and their role in building modern society can be better understood after the successful implementation of a number of projects initiated and implemented in CERN (Berners-Lee and Fischetti, 1999). For example, a hypertext project World Wide Web was created in CERN (in 1991, English scientist Tim Berners-Lee made the world's first web server, website and browser). Later in the late 90s, CERN became one of the centers for the development of a new computer network technology – GRID that is a distributed computing system where the "virtual supercomputer" is represented as clusters connected via a network, loosely coupled heterogeneous computers working together to perform a huge number of tasks (operations). This technology is used to solve serious mathematical problems that require significant computational resources, and it is used in commercial infrastructures to solve such laborious tasks as economic forecasting, seismic analysis, development and study of the properties of new drugs, new materials, nanostructures, etc. At present moment, this approach is used to create the Internet of things (Guinard and Trifa, 2015; Kurzweil, 2005).

The example of CERN is indicative, but does not reflect the whole diversity of socio-cultural external effects of the development of science or the range – territorial and thematic – of such an effect. To a greater or lesser extent, this can refer to other scientific centers and to other countries, including the Russian Federation. At the same time, it is worth mentioning that the overall trend of high technology development is the same in Russia and the European Union. For instance, in 2007-2011, within the framework of the Federal Targeted Program "Research and Development" Russia created a distributed GRID system to link scientific centers, researchers and research teams (S&TRF, 2010). As we have noted earlier, a country alone cannot always implement major research projects due of their complexity, duration and high cost. This refers equally to innovations, which are fundamentally based on the existing scientific infrastructure. In this regard, the development of international cooperation in innovation is one of relevant issues for Russian science (Terebova, 2012). One of the most effective mechanisms for innovative cooperation involves participation in mega-science infrastructure projects (Inshakova, 2013). It should be noted that a large research infrastructure can consist of separate facilities, distributed facilities (for example, interconnected medical databases and data banks), as well as infrastructure facilities integrated in the network. In turn, each of these types of infrastructure facilities can be international, national and regional. Here, the term "mega science" is often used to denote unique, large research installations (complexes) reflecting the level of the global scientific and technological development. These facilities are: modern (the equipment must be up-to-date, otherwise it is impossible to obtain excellent results), complementary (the devices that make up the infrastructure facility must complement each other), and universal (the equipment should allow carrying out studies throughout the cycle, from fundamental ones to applied research and development) (RF State Program, 2013).

The innovative nature of the modern scientific infrastructure is evident – technology transfer, the introduction of innovation results into practical life becomes the most important element of the new technology of knowledge. At the same time, to achieve this, special institutions should be established. For instance, more and more experts are considering the idea of creating a specialized structure that is aimed at the commercialization of scientific results, but not at carrying out scientific research itself. At the same time, public-private partnerships are becoming the most important mechanism for the implementation of innovation policy in the EU. The importance of generating innovation in the interaction between economic entities and research institutions was understood under the influence of a new theory of economic growth. In their research on systems of actors' interactions in the main institutional spheres illustrated by the example of the Silicon Valley, Etzkowitz and Leydesdorff, demonstrated the great significance of scientific, entrepreneurial and public partnership for the innovative development of the economy (Leydesdorff & Etzkowitz, 1996; Etzkowitz, 2008). The Triple Helix model developed by them showed the redistribution of functions between institutional actors with the subsequent expansion of their activity in the innovation.

At present moment, the concept of public-private partnership has been applied – both in Russia and in the EU – in the format of an "industrial partner" [7]. For instance, it is not mandatory at all to include this in consortia within Horizon 2020, as it is only recommended; however, according to the representatives of the European Commission, it is a matter of time when this requirement becomes compulsory. It is similar for the Russian Federation: with clear understanding that there is no other alternative to this approach, the Ministry of Education and Science of the Russian Federation introduced the requirement of having an industrial partner. At the same time, the financing of a number of joint projects must be carried out exclusively through the fund that promotes the development of small forms of scientific and industrial enterprises, which in turn implies the requirement for practical implementation of the development.

Thus, we can see that the development of scientific infrastructure is a driver of economic development in high-tech areas. The EU believes that this enables to implement a strategy, which involves building centers of competence around scientific infrastructure elements aiming to create and apply scientific findings. Moreover, the experience of implementing joint projects can be transferred to other countries and domains of science since innovation hubs (in the EU terminology) are not highly specialized, but can be applied in different fields of knowledge. Regional innovative incubators can be adapted to the needs of a specific country (region) and contribute to the creation of new economic relations based on the knowledge economy (Kautonen *et al.*, 2017).

3. Findings of the analysis of current major international infrastructural projects with Russian participation

To analyze the status of large research infrastructures, we propose a classification model according to which the institutional organization of their work was chosen as the main classification criterion. Using this approach, we identified four types of large research infrastructures, proposed and approved by the Ministry of Education and Science of the Russian Federation. Type I includes international organizations whose activities are regulated by specialized agreements and treaties of the member countries. Here, we should mention the supranational nature of the infrastructure created, when the geographic localization does not reflect the nature of the developed infrastructure, and it acts as a separate legal subject.

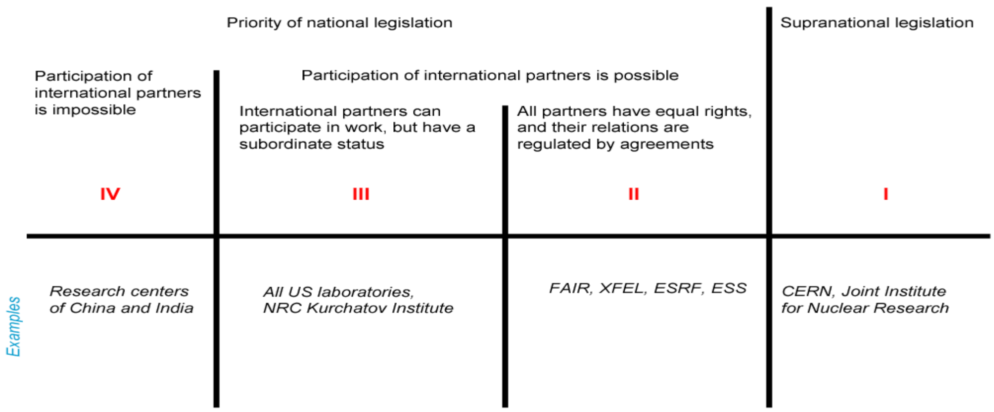
7 This approach is also used in the Russian Federal Targeted Program "Research and Development".

Type II refers to organizations working within national legislation, but with international participation, when each participating country contributes to the project and assumes certain obligations (primarily on financing, but also on the use of the infrastructure created). In this case, the host country of the major research infrastructure where the latter is located has priority, whereas rights and obligations of the consortium members are regulated by special agreements, which, as a rule, are multilateral. Type III includes research infrastructures created as national organizations that have the right to attract foreign participants to their work. In this case, each specific international project is regulated by a special agreement (usually bilateral), while national legislation has priority and the participation of foreign scientific groups is limited to a specific project (an experiment or a series of studies) using the existing research infrastructure. The participants of Type III infrastructures cannot influence the policy of the organization and virtually act as users of unique scientific equipment provided to them under an international agreement. Type IV includes large research infrastructures that do not imply international participation. Such facilities include Chinese scientific centers, research infrastructure of India and others. In the future, however, they allow involving the international scientific community, but the form and time frame of this participation remain uncertain.

4. Specifics and prospects for scientific infrastructure development

In general, the EU main trends imply the creation of an integrated scientific environment with open access and the development of the eScience system (Prytkov *et al*., 2016), supplemented by the system of e-commercialization (Dynich and Wang, 2016). The first step involves the unification of science, data collection systems and access to them. This EU policy will be implemented by means of the e-Infrastructure tool, when the benefits of the Internet, Grid systems, cloud computing and databases are accumulated into a new infrastructure. Approximately 3 billion Euros will be allocated for the relevant projects over the next 3 years (Horizon 2020; Prytkov *et al*., 2016).

Figure 1. *Classification of infrastructure types (authors' development).*



There are only few comprehensive studies on the development of international scientific cooperation and its impact on the society. Such papers, as a rule, consider side (though quite significant) issues: how to build an international consortium, legal features of created legal entities, the impact on the international system of relations, the emergence (or disappearance) of certain business approaches related to new technologies. The weak side of most theoretical works in this field, in our opinion, is that most researchers suggest apriori that international cooperation brings only positive results. For example, Ramamurthy (2011) considers joint international projects as the meeting of different civilizational approaches, which generate new knowledge through brainstorming. The study also highlights the ease with which economically weak countries can access the achievements of large states and their research infrastructure, thus eliminating inequality (De Cerreno, 1999).

Critical points of view are not loud: some express fear of losing national identity and the possibility of following the path of global corporations (Baccaro and Mele, 2011). It pointed out that large projects belong to one country that allows other states to participate in them on its terms (Hoddeson *et al*., 2008). However, all challenges are associated only with specific national features that will be overcome upon transition to an all-European level, with standardization and unification becoming the solution to inevitably arising problems (Granieri and Renda, 2012). In this regard, three main mechanisms are proposed: a general patent law operating in all EU countries, technological transfer (transfer of knowledge to industry, localization of science and production centers in different EU countries) and standardization (common standard for all EU countries).

4.1. Optimal forms of implementation of international scientific cooperation

In modern world, the direction of scientific research largely depends on the created scientific infrastructure that, among other things, determines the interaction of participants in scientific research. In particular, the functioning of large research infrastructures is possible only in the form of joint international projects with numerous participants. At the same time, the implementation of Type I projects seems to be fairly unrealistic as it requires great scientific discoveries or political decisions. At the same time, another possible solution is the creation of an international scientific network where participants have relatively equal opportunities, solve similar problems within their competence, whereas all participants can use research equipment, belonging to one country (countries). The global neutrino network is the most successful example of such a network with Russian participation.

Currently, the GNN is represented by 4 participants: the Antares collaboration (32 organizations from 8 countries), the Ice Cube Collaboration (47 organizations from 12 countries), the Baikal collaboration (on the basis of the Dubna deep-water multi-megaton neutrino telescope, the Institute for Nuclear Research of the Russian Academy of Sciences, the Scientific Research Institute of Applied Physics of Irkutsk State University, the Scientific and Research Institute of Nuclear Physics of Moscow

State University, the Joint Institute for Nuclear Research, DESY – Zeuthen Germany) and KM3NeT (42 organizations from 12 countries). In terms of infrastructure, the GNN is a set of experimental facilities, which act as the centers of localization, and a number of scientific institutions (institutes, universities, research centers) that are engaged in carrying out experiments and processing data. The latter are scattered throughout Europe, America and Asia. Therefore, in this case we can talk about a unique scientific facility (a neutrino telescope), in which a wide research program is implemented in the remote access mode (GNN, n.d.).

Type II of research infrastructures seems to be the optimal option for international cooperation. However, considering the current foreign policy and the specifics of the major scientific centers operation in Russia and the world, one should proceed from the premise that international scientific cooperation should be built on the basis of national scientific centers (Type III in our classification) which will gradually transform into international Type II collaborations. An example of this is the creation of XFEL, which emerged from a Russian-German agreement on high-energy cooperation based on the German synchrotron radiation center in Hamburg (European XFEL, 2017. A different approach, typical of the US, can prevail which implies that all external (international) participants are invariably placed in a subordinate position.

An extreme – but realistic – option is the possibility to use the experience of China and India (Type IV) when large research infrastructures are excluded from international scientific cooperation. In this case, we can speak of protecting national sovereignty and ensuring national security issues (dual-purpose works), as well as the situation when the country is not interested in international participation now, while international scientific teams can be involved later. In this case, the most probable outcome is the transition of the organization from Group IV to Group III.

4.2. Use of institutional features when establishing international scientific interaction

Promoting international scientific cooperation, one should consider not only infrastructural and institutional constraints (hypothesis 1), but also existing mechanisms required to implement the science and technological policy of the main actors. These include, first and foremost, specialized state programs (in Russia: Events 2.1 and 2.2. of the Federal Targeted Program "Research and Development", specialized joint competitions held by the Russian Foundation for Basic Research, projects of the Russian Science Foundation, in the EU – primarily Horizon 2020, joint competitions of national scientific foundations).

The main actors here are the national contact points (NCP) which represent both the priorities of the Russian Federation and the research areas in the European Union (Prytkov *et al*., 2016). They can provide Russian scientists with the information necessary for the successful creation of consortia, in particular: focus on environmental issues ("green" topics); requirements for the development of open science (open source); requirements for attracting industrial partners; requirements of EU unification and standardization; requirements for gender equality (gender issues).

At the same time, there are some challenges associated with inviting Russian participants, especially from regions, to work in consortia within Horizon 2020, and it is proposed to use the experience of the NCP to solve these problems. First, it is proposed to unite the NCP efforts, creating a single information center, which would include all existing NCPs. Secondly, it is possible to use the experience of the NCP and the EU regarding the development of scientific projects in Russia therefore to assign the NCP with the monitoring of research areas, and to include an obligatory requirement for participation in the consortium when submitting applications from representatives of different regions (to stimulate lagging regions and to promote networking). Similar actions can be implemented to stimulate the integration processes within the Eurasian Economic Union (EAEU).

4.3. Development of scientific infrastructure as an instrument for solving foreign policy and socio-economic tasks of the Russian Federation

The development of scientific infrastructure has not only the fundamental meaning, but it also contributes to solving economic and political tasks the country faces. At the same time, economic reasons play an increasingly important role in determining promising research areas and in shaping the scientific infrastructure: private organizations act as equal users of specialized scientific equipment (Antonelli *et al*., 2011).

Scientific cooperation in high technologies can be seen as one of the possible mechanisms for supporting integration processes and, thus, act as a tool for solving macroeconomic and political problems. Horizon 2020 directly aims at the creation of a unified scientific environment in Europe. Over the post-Soviet territory, experts are also considering the possibility of using the infrastructure of the national nanotechnology network as a model of scientific cooperation[8]. In addition to that, the BRICS countries have been developing large research infrastructures.

When promoting scientific coordination, one has to solve a number of extremely important scientific and organizational tasks such as creating a unified science policy of the countries coordinating their scientific infrastructures, which includes the development of joint standards, criteria for assessing the findings of research institutes, agreement of conditions for joint participation in projects, network interaction between scientific and educational organizations, etc. All this involves

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[8] The corresponding proposals were drawn up following the results of the meeting of the nanoindustry expert group on May 27, 2015 at the Advisory Committee on Industry under the Eurasian Economic Commission

the formation of a single integration road map for developing science and technology.

For instance, taking into account the fact that the scientific infrastructure of the BRICs countries develops in interaction with the elements of scientific infrastructures in the EU, the USA, Japan and other countries, the development of a large scientific infrastructure will eventually lead to the situation when developing countries would join the global integration process. The potential investment in high-tech in the BRICS countries is estimated at USD 57 bln. In this case, one can talk about the interaction of equal partners with approximately the same intellectual and financial investments. To ensure the systematic work on all areas of scientific, technological and innovative cooperation within the BRICS, the countries adopted the BRICS Work Plan for Science, Technology and Innovation for 2015-2018, which establishes the creation of the BRICs Research, and Innovation Initiative.

The work plan includes sixteen priority areas for cooperation, and activities in priority areas are coordinated on the principle of country responsibility (the coordinating country), based on existing and stated country competences and interests. The unification within the framework of the EAEU is carried out in the similar manner, the difference being that the Russian Federation is the key partner in the integration (due to the existing infrastructure, accumulated experience, existing scientific schools, etc.). Taking into account the current cooperation of the Russian Federation with the EU, we can talk about the subsequent expanded integration of Asian representatives of the region (Kazakhstan, Uzbekistan, Tajikistan) into the European scientific community.

For instance, annual investments in the nanoindustry sector in the member states of the Customs Union and Common Economic Space estimate approx. USD 1 bln. We believe the cooperation of enterprises within the CU and CES can be built on the following chain: the Republic of Belarus has a strong potential in the development and production of nanotechnological instruments and equipment; the Republic of Kazakhstan has a strong raw material base; the Russian Federation – fundamental research, development and production of nanotechnology products, the market and financial resources (Nikitova and Zhilenko, 2016).

As for the EU countries, the USA, Canada and Japan, we propose to focus on joint bilateral contacts, decreasing the projects with several participants. Such an approach is determined by the fact that the attitudes towards Russia may vary in different countries, which results in international projects with a large number of participants becoming much more prone to the changing political situation.

4.4. Ambivalence of international scientific cooperation

It is generally assumed that international scientific cooperation is a game in which all participants win. As an example, one mentions the possibility for economically weak countries to access the achievements of large states and their research infrastructure (albeit using it jointly), or one highlights the regional development (for example, to solve the problems of the Baltic region (Belova, 2012) or the Circumpolar Territories (Zukerman, 2008). At the same time, critics rightly point out the inequality of such cooperation: as we have shown above, all American scientific centers function as Type III structures, whereas participation of third countries increases their backlog (similar to "digital inequality", one can speak of scientific inequality), and mobility programs frequently result in brain drain.

The next controversial issue is the unification of the scientific environment. It is necessary to investigate whether the implementation of Horizon 2020 will truly facilitate the standardization of scientific research methods, presentation of results within the EU, and how this will achieve.

It should be noted, however, that this approach, based on purely national interests, is also characteristic of Russia. At present time, the Russian Federation is the absolute leader in both scientific research and commercialization on the territory of the EAEU (CIS). The Republic of Belarus is the closest to the Russian Federation; however, due to the limited resources the Republic of Belarus is carrying out a smaller range of studies compared to Russia, although they are coordinated within similar state programs[9]. The Republic of Kazakhstan is more focused on applied research, for example, obtaining new products for photovoltaic energetics and electronic equipment from domestic raw materials (for example, metallurgical and "solar" silicon). The scientific potential of Armenia is assessed rather low, and in this regard, the country's involvement in joint projects depends on political goals of integration of the member countries of the EAEU (Balyakin and Taranenko, 2015).
Another negative aspect of international scientific cooperation is associated with the fact that it is impossible to account for the interests of all countries within one project. In this regard, we can mention a recent increase in bilateral scientific activity in high technologies that took place in Russia, with a significant reduction in multilateral contacts on the other hand.

5. Conclusion: Prospects of international scientific cooperation

Today, in the accelerating global world, along with the globalization of life and social activities at all levels, we can witness the globalization of scientific knowledge. A key role in this trend is played by large research infrastructures and international research networks, as well as by large and unique experimental mega-science facilities. Russia is increasingly involved in international research, which implies a well-planned policy in this area. The expert community plays an important

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[9] For example, in nanotechnology in 2013, the government approved the Concept for the Formation and Development of the Nanoindustry and an Action Plan for its implementation stateing that in the coming years the production of nanotechnology products (including devices) is to estimate USD 30 mln per year, which will provide for approx. 3,500 jobs in this area.

role in shaping the agenda, and so do national contact points working in cooperation with the EU.

The main priority of international scientific cooperation for Russia involves following its own national and economic interests. This, in turn, defines two priority work areas: the European Union (as the most important economic partner) and the EAEC (as a foreign policy entity). In practice, when interacting with the BRICs countries, the CIS and the EUEA, the Russian Federation, due to its scientific leadership (regarding these countries) can and should initiate the scientific and technological development in the region. At the same time, we are not talking about grants, but investment in the future: these should become joint integration projects aiming at scientific and technological development, restoring, in many ways, ties lost after the USSR period. Regarding the European Union, they should be the relations of equal partners, taking into account the interests of each other. This approach should be implemented through joint scientific projects supported in the framework of corresponding competitions, with Russia taking active part in megascience projects with international participation and European researchers working at unique Russian research facilities (the CREMLIN special project, implemented within Horizon 2020).

In general, one can predict that taking into account the situation in Russia's foreign policy, focus on import substitution and integration over the post-Soviet territory and within the BRICs countries, international scientific cooperation can become a significant accelerator of economic growth both in the Russian Federation and in its partners – the BRICs countries and the EUEA.

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