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THE EUROPEAN UNION AND THE EASTERN PARTNERSHIP: SECURITY CHALLENGES



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THE EFFECTS OF THE EU'S SCIENTIFIC COOPERATION ON THE EASTERN PARTNERSHIP COUNTRIES: DEVELOPMENT IMPACT OF THE INTEGRATION INTO EUROPEAN SCIENTIFIC COMMUNITY¹

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Abstract. Scientific cooperation between the European Union (EU) and its Eastern neighbours has grown rapidly since the early 2000s. This cooperation holds great promise to influence not only the science and innovation sectors, but also to affect the practices and values of research communities in the Eastern Partnership (EaP) countries, their public policies, and societies at large. In this paper we aim to assess the impact of scientific cooperation with the EU with a focus on three countries of the EaP: Belarus, Moldova, and Ukraine. We address the broader impact on the scientific community, institutions, and society by analysing new data from expert interviews. In terms of scientific output we find that while the EU has not radically transformed science in the EaP countries it might have provided it with an essential lifeline of support. We also uncover clear evidence for positive impact of cooperation with the EU on the participating institutions from the EaP countries, but very little evidence (so far) about effects on public policies or significant impact on society at large.

Keywords: European Union, Eastern Partnership, scientific cooperation.

1. Introduction²

In this paper we aim to assess the impact of international scientific cooperation with the European Union (EU) on three countries which are part of the Eastern Partnership (EaP): Belarus, Moldova, and Ukraine. Potentially, this impact is broader than purely scientific and might extend to affect the practices and values of research communities in EaP countries, public policies, and society at large. International scientific cooperation has grown very rapidly

¹ This project has received funding from the European Union's Horizon 2020 research and innovative programme under grant agreement no. 693382.

² The qualitative questionnaires were designed by Dimiter Toshkov, Ina Ramasheuskaya, and Tatsiana Chulitskaya with the help of Honorata Mazepus. The qualitative interviews were conducted by Ina Ramasheuskaya and Tatsiana Chulitskaya (Belarus), Tatiana Parvan (Moldova), Oleg Grytsenko (Ukraine), and Dimiter Toshkov and Suzan Saris (EU Member States). Ina Ramasheuskaya coordinated the data collection in the EaP countries and organized the analysis of the data. The bibliometric data was collected by Suzan Saris and analysed by Dimiter Toshkov. The final text was written by Honorata Mazepus and Dimiter Toshkov. We thank Antoaneta Dimitrova, Elyssa Shea, and Matthew Frear for their useful comments, as well as the audience of the EaP Plus conference in Chişinău, Moldova (30-31 May 2017).

since the 1990s.³ The EU encourages and funds international collaborative research projects between the Member States and with third countries.⁴ Scientific collaboration can have many advantages, such as pooled financial resources and ideas, developing expertise, and access to equipment.⁵

Already in the 1990s, scholars observed the increasing importance of the EU as a collaboration partner for candidate Member States, but also more generally for developing and advanced countries.⁶ The question of the impact of such collaborations became a subject of scholarly investigation itself. Existing research has focused primarily on assessing the impact of international cooperation on various aspects of scientific publications, for example numbers of co-authored works and their citation rates, and on assessing the benefits in terms of academic output for different countries and within different disciplines.⁷

The goals of many international research projects funded by the EU are broader and include impact not only on academic communities but also on societies at large. Measuring the influence of cooperation on scientific output is challenging, but assessing the impact of international scientific cooperation more generally is an even more daunting task. There are several reasons that make the measurement of the broader impact of scientific cooperation difficult. First of all, it is hard to define and operationalize impact beyond the publication output. Second, the implementation of research findings in the economy and society can have a substantial time-lag. Third, the broader impact of cutting-edge research is often unpredictable. Finally, the influence of research projects on policy-making depends on the willingness of political actors to adopt the proposed solutions. The unwillingness or reservations of state actors to act upon scientific evidence constitutes a challenge in democratic countries and might be even more pertinent in non-democratic ones, especially in the field of social sciences.

The EU-STRAT project to which this paper contributes is particularly interested in the impact of EU scientific programmes on the long-term development of bilateral and multilateral ties between the parties involved in the collaborative projects, and the support for the emergence of democratic societies and vibrant economies in the EU neighbourhood. In this paper we build on the findings of the earlier working paper 'Science Policies and International Cooperation in the Eastern Neighbourhood of the European Union: An Overview,'⁸ which provided an

³ L. Georgiou, "Global cooperation in research," *Research Policy* 27 (1998): 611-626; W. Glänzel, A. Schubert and H. J. Czerwon, "A bibliometric analysis of international scientific cooperation of the European Union (1985-1995)," *Scientometrics* 45, 2 (1999): 185-202.

⁴ Glänzel, Schubert and Czerwon, "A bibliometric analysis of international scientific cooperation of the European Union (1985-1995)."

⁵ J. S. Katz and B. R. Martin, "What is research collaboration?," *Research Policy* 26, 1 (1997): 8.

⁶ Glänzel, Schubert and Czerwon, "A bibliometric analysis of international scientific cooperation of the European Union (1985-1995)."

⁷ G. Bote, P. Vicente, C. Olmeda-Gómez and F. Moya-Anegón, "Quantifying the benefits of international scientific collaboration," *Journal of the American Society for Information Science and Technology* 64, 2 (2013): 392-404.

⁸ T. Chulitskaya, H. Mazepus, I. Ramasheuskaya and D. Toshkov, "Science Policies and International Cooperation in the Eastern Neighbourhood of the European Union: An Overview," *EU-STRAT Working Paper 2* (January 2017): 6-41.

overview of the science policy in Belarus, Moldova, Ukraine, and the EU and took stock of the international projects in which the three EaP countries have been involved. The working paper identified institutions in the EU and in the EaP that collaborated in the Seventh Framework Programme for Research and Technological Development (FP7) and Horizon 2020 (H2020) programmes.

The next step in our investigation of scientific cooperation between the EU and EaP is to assess the impact of cooperation. We address the *broader* impact on the scientific community, institutions, and broader society by analysing new data derived from several dozen semi-structured interviews with policy experts, project coordinators, working scientists, and think-tank researchers in the three EaP countries *and* in the EU Member States that are or have been engaged in EU-EaP scientific cooperation.

The analysis reveals a complex and nuanced picture of the impact of the scientific cooperation of the EaP countries with the EU and Russia. In terms of broader impact, there is clear evidence for positive impact on the participating institutions from the EaP countries, but very little evidence (so far) about effects on public policies or significant impact on society at large. We discuss possible reasons for this and the barriers for realization of the full potential of scientific cooperation.

2. Towards Assessing the Broader Impact of Scientific Cooperation

Bibliometric analysis of publication numbers, funding, and co-authorship patterns cannot capture all aspects of collaboration⁹ and, as a result, does not cover all dimensions of the impact. Arguably, co-publications and citations measure only the ‘inside’ quality of research, which reflects a “purely professional scientific view” of impact as “commonly assessed by professional peers”¹⁰ in the peer-review process. On the other hand, the ‘outside’ quality of research “addresses the impact of science and technology on society” and “is related to the concept of quality of life and considers the achievement of various goals – economic, social, political and strategic – as well as human interests and values.”¹¹ In other words, the impact of research is also understood as “the benefits that research outcomes produce for wider society.”¹² Purely scientific excellence might not go hand in hand with societal benefits.¹³

Obviously, different scientific disciplines can offer different kind of social benefits. Consequently, different tools have been developed to assess the social impact in different

⁹ Katz and Martin, “What is research collaboration?”

¹⁰ S. Lawani, “Some bibliometric correlates of quality in scientific research,” *Scientometrics* 9, 1-2 (1986): 13.

¹¹ *Ibid.*, 14.

¹² C. Donovan, “State of the art in assessing research impact: introduction to a special issue,” *Research Evaluation* 20, 3 (2011): 176.

¹³ Lawani, “Some bibliometric correlates of quality in scientific research,” 14.

fields of research.¹⁴ Moreover, these tools are often flexible and leave a lot of room for interpretation of impact itself.¹⁵ It is impossible to use the same standards of assessment for political science as for medicine or engineering or agriculture. Even within a field of science, there are differences in the nature of the discipline that may affect knowledge utilization. For example, a study of Australian social scientists has shown that scholars conducting education research perceive the impact of their studies in terms of uptake by policy makers and/or practitioners as higher than scholars of political science and economics.¹⁶ The explanation offered for the difference in perception of the usefulness of research is that education research is oriented towards schools and local authorities from the start and therefore has conducted targeted investigations. Another possible explanation is that in the case of political scientists and economists, the research results may point to solutions that are not feasible from the point of view of policy makers. Moreover, the results of the survey with Australian academics “point to some key lessons about research quality: It is not the key priority potentially driving research use, nor is it the single most important factor in determining uptake: contacts, communication, and timeliness also matter.”¹⁷

2.1. Methodology and data

To address the issue of assessing the broader impact of scientist cooperation we opted for a qualitative approach. In an iterative way we (a) formed an expectation as to where and how to search for possible impact, (b) examined these expectations in interviews with experts from the field, (c) adjusted our expectation, and (d) subjected these expectations to evaluation by experts again. More formal approaches to assessing the broader impact of cooperation are possible, but there is a fundamental trade-off between breadth (scope of the evaluation) and precision. We have opted for a relatively broad and comprehensive evaluation that, however, remains by necessity unquantified and, in this sense, preliminary. We could have also relied on formal assessments of the societal impact of scientific projects from official reports, but these are not always public, come too soon to measure any real impact, and could have overestimated the impact as the researchers and other professionals writing these reports have incentives to exaggerate the likely impact. Therefore, given the state of knowledge and available data, we opted for a more exploratory approach grounded in qualitative, in-depth data rather than formalized and quantified indicators. In this way, we complement the systematic quantitative analysis presented in Part I of this paper, with insights from scholars and experts who have participated in the collaborative research projects.

¹⁴ B. Wolf, T. Lindenthal, M. Szerencsits, J. B. Holbrook and J. Heß, “Evaluating Research beyond Scientific Impact: How to Include Criteria for Productive Interactions and Impact on Practice and Society,” *GAIA-Ecological Perspectives for Science and Society* 22, 2 (2013): 106.

¹⁵ M. Z. Cohen, G. L. Alexander, J. F. Wyman, N. L. Fahrenwald, D. Porock, M. E. Wurzbach, S. M. Rawl and V. S. Conn, “Scientific impact: Opportunity and necessity,” *Western Journal of Nursing Research* 32, 5 (2010): 581.

¹⁶ A. Cherney, B. Head, P. Boreham, J. Povey and M. Ferguson, “Research utilization in the social sciences: A comparison of five academic disciplines in Australia,” *Science Communication* 35, 6 (2013): 780-809.

¹⁷ *Ibid.*, 795.

To collect the data for the qualitative assessment, we conducted semi-structured interviews with researchers, experts, and project coordinators who have participated in the FP7 and H2020 programmes to get an idea about other dimensions of impact for scientific collaboration between the EU and EaP scholars. We were particularly interested in whether the EaP institutions gained experience in writing and managing the projects, whether the EU projects have shaped their research agendas, whether any long-term relationships between the Western and Eastern partners have been built, and whether there have been any broader implications of the projects for the industry and society. Although these interviews cannot systematically measure the scientific impact, they can capture a very important aspect, namely bottom-up insights about the role of the projects. Focusing on the perceptions and views of those who have a first-hand experience with the projects can deliver valuable information about how scholars assess the impact of the collaboration on the institutions involved and on broader society.

Moreover, by interviewing scholars and experts from the three EaP countries (Belarus, Moldova, and Ukraine) and scholars and coordinators from the EU countries, we are offering complementary Eastern and Western perspectives on the relevance and effects of international cooperation.

To sample the researchers for the interviews, we used the database compiled for the earlier working paper,¹⁸ which listed institutions that have participated in EU projects involving EaP partners. This database identified 376 projects in which one or more EaP countries were involved: 95 with Belarus,¹⁹ 75 with Moldova and 206 with Ukraine. To identify scholars for the interviews, from this list we have selected only H2020 and FP7 projects and chose approximately 25 projects per EaP country. In this selection, we included projects from as many disciplines as possible, taking into account that most of the projects are conducted in technical/hard sciences. As much as possible, we tried to approach participants from different types of institutions (public institutes and National Academies of Sciences, universities, and think tanks), which perform different roles in the projects (consortium members, sub-contractors etc.). We identified the names of project coordinators and searched for their email addresses using the CORDIS website and the projects' websites. We also used the snowball approach, i.e. we asked our respondents for recommendations regarding other potential interviewees.²⁰ In each country, we approached between 20 and 45 project coordinators and participants via email or by phone. Many of the identified project coordinators have been involved in more than one project and were therefore contacted only once. For several of the project coordinators, contact email addresses and phone numbers were not

¹⁸ Chulitskaya, Mazepus, Ramasheuskaya and Toshkov, "Science Policies and International Cooperation in the Eastern Neighbourhood of the European Union: An Overview."

¹⁹ Our interviews in Belarus revealed that apart from participating in European projects as a partner institution, Belarusian institutions often contribute to the projects as sub-contractors. This type of participation was not included in the number of projects in our database and it brings the number of collaborative projects up.

²⁰ In Belarus, at this stage, the recommendations that we got from National Contact Point for FP7 and Horizon2020 – Belarusian Institute of System Analysis and Information Support of Scientific and Technical Sphere (BELISSA) were extremely useful.

available. Many persons contacted did not reply to the interview request and several replied negatively. In Belarus, the interviewees from the state institutions requested to see the official registration of EU-STRAT project with the appropriate state body.²¹ Once presented with the registration document, it was relatively easy to get participants' consent for the interviews and the respondents agreed to talk, talked freely, expressed their own opinions, and made evaluations. Most of the interviews were conducted by phone (or Skype call), with the exception of Belarus, where the interviews were in most cases conducted face-to-face at locations convenient for the interviewees.

In total, we interviewed 37 participants in EU funded projects. The total duration of the interviews varied from approximately 15 to 60 minutes. We interviewed eleven participants in Belarus, ten in Moldova, and eight in Ukraine. These interviews provided insights into the role of institutions from these countries in the projects, their experience of the projects, and perceived impact on their institutions and societies. The interviews with the project participants from the EaP countries covered cooperation with Russia as well. We have also interviewed eight participants from the EU institutions who have collaborated with one or more institutions from the EaP countries. Many of the interviewees have had experience with multiple projects (for the list of projects in which our interviewees participated, see Appendix 1). These interviews present the view of the collaboration, information about the gains, barriers, and impact from the point of view of the EU scholars and coordinators. The questionnaires used for the semi-structured interviews are attached in Appendix 2.

2.2. Empirical results from the qualitative interviews: The perspectives of scholars from EaP institutions

The interviews provided us with a breadth of insights about the impact of scientific cooperation between the EU and EaP researchers. The answers of participants of the collaborative projects allowed us to draw a rather detailed picture of how they have experienced the process and how they see the influence of their work. The following sections present the results of the interviews in a systematic manner. We have grouped the answers into overarching themes that inform us about: (1) the impact of the projects on the participating institutions and their employees; (2) the broader relevance of the projects for the scientific community, society, economy, and policy; (3) the influence of the projects on the attitudes towards the EU and understanding of the EU values and rules; (4) interpersonal dynamics, barriers and problems that participants experienced in these projects; and (5) the most important scientific cooperation partners, scientific cooperation with Russia and plans for further collaboration within the EU projects. These categories of themes emerged from the direct questions that we have asked (in other words, we intended to cover this range of issues), but they also include additional spontaneous comments provided by the interviewees. We discuss these themes country by country and provide a comparative summary in the concluding section of Part II.

²¹ Projects that receive foreign support need to be registered with the State Committee on Science and Technology of the Republic of Belarus.

2.2.1. Belarus

Impact of scientific cooperation with the EU and its Member States on scientific and managerial capacity of the Belarusian institutes and their employees

Belarusian participants of the collaborative projects emphasized several aspects of how the projects have affected their organizations. A common aspect mentioned in the interviews is the development of a network of contacts within the scientific community and with companies in Belarus and in Europe. One of the interviewees spoke about the impact of these projects on the socialization of young Belarusian scholars into the scientific community and several others mentioned access to state of the art knowledge in their disciplines, new methodologies, and procedures of research. Most of the interviewees agreed that the participation in the collaborative projects has had some impact on the use of methodology in research (or at least that an exchange of methods occurred.) Others talked about management experience and experience with event organization. Integration with other project teams demanded a consolidation of practices and put them in touch with specialists from bordering disciplines (for example, researchers doing fundamental research came in contact with engineers). Interviewees have also emphasized the importance of personal professional development thanks to the possibility of working with and learning from colleagues and experts.

Access to resources is perceived as having had the most obvious and significant impact on the institutions as well. The interviewees noted that funding coming from the collaborative projects allowed them to diversify the sources of funding of their organizations, pay salaries to employees, and purchase equipment and software.

In terms of the impact of joint projects on planning and management practices, the majority of interviewees admitted that to at least some extent they have borrowed some practices such as financial reporting, communication strategies, and time-management from their project partners. A couple of interviewees noted that they already had strict guidelines and rules in their organizations and that working according to EU standards sometimes contradicted national organizational culture and understanding of rules, including financial ones.

Regarding issues related to ethics and data management rules, half of the interviewees reported that they became aware of them, especially in the sphere of intellectual property. Only two of the interviewees, however, explicitly mentioned applying these rules in their organizational practice after the projects were completed. Others said they did not have any special ethics procedures or rules in the project.

Finally, according to the researchers interviewed, collaboration with EU projects improved the reputation and visibility of their institutes. A positive evaluation of the institutes by European partners gave them a competitive advantage. Moreover, one of the interviewees mentioned that his/her organization had learned that it was not inferior in terms of quality in comparison to the Baltic States. This organizational self-confidence can be seen as an unintended positive consequence of participation in the European projects.

Relevance of the projects and impact on scientific community, society, economy, and policy

Most of the interviewees see the relevance of the research themes in terms of scientific development of their country and they talked about the knowledge export and modernization of knowledge. However, they were more sceptical about the social and economic relevance of the projects, although this varied depending on the type of project. One of the interviewees noted that the improvement of the analytical competences of their organization led to better quality advice in the sphere of public policy and more adequate recommendations for political authorities. Other projects were more relevant purely for scientific development, because they tackled fundamental research questions. Others had direct practical application, for example, in the ICT field. This is also reflected in the opportunities to create or work with companies: several interviewees mentioned that companies were part of the consortia and collaboration was one of the goals of the projects. Others mentioned the potential use of the results by industry. One participant mentioned that although their project did not lead directly to cooperation with industry, people who participate in European projects can more easily find employment in business.

The relevance of the projects for the scientific community specifically seems to be appreciated more by the participants. They referred to results such as increased scientific capacity and quality, access to data, opening of new perspectives, professional growth of individual academics, and creation of islands of scientific excellence in Belarus. They stressed that local partners are perceived as equal scientific partners rather than 'third-world country' partners. Two critical comments about the impact of projects on the scientific community referred to the unequal opportunities for scholars. According to these respondents, university administrations support hard sciences more actively and in addition, Belarus is not a full member of H2020 and therefore mainly has access to mobility projects, rather than research.

A number of interviewees did not see the relevance of the projects for Belarus, either due to lack of interest on the side of the EU in Belarusian research, or to lack of implementation of European practices in Belarusian universities. Moreover, opinions about the policy impact of these projects seem to be divided. In a couple of sectors such as science policy and IT policy interviewees noted a modest change. Others said that the joint projects could have some influence because of good contacts with the authorities and membership in the National Academy of Sciences, as well as the professional reputation they had gained due to their participation in the EU projects. The other interviewees did not see or did not concern themselves with influencing policy at all.

Influence on attitudes towards the EU and on understanding of EU values

Discussing the effects of international collaboration on changing attitudes towards the EU and on understanding of EU values is seen as a sensitive topic. Only six out of eleven interviewees provided an answer to the question, while five of them did not give a response or avoided answering. Those who answered the question believed that an attitude change was visible among participants of the projects who were exposed to contacts and communication with

scholars from the EU. They also got a better understanding of the European organizational culture, bureaucratic requirements, and research policy.

A couple of respondents noted that there is a limited change in attitudes and understanding of the EU among policy makers, who have slowly started to open up towards the EU. One respondent emphasized the change within the National Academy of Sciences, where the institutes that collaborate with the EU have become more open and progressive. Through this channel the information about the EU projects reaches policy makers and potentially can even have influence on regional authorities who are ready to acquire new information. However, scepticism about the policy and broader social influence seems to prevail. As one of the interviewees put it, the situation (regarding a shift of attitudes in society) could change, if there was an understanding of the necessity of cooperation with the EU on the side of the state. Moreover, a couple of respondents also said that the research community in the country was too small to influence the attitudes and values of the broader public. An alternative view presented by one of the interviewees, in line with the official stance on the issue, is that Belarus already follows European values and the EU projects can only contribute to spreading democratic values further as common values.

Interpersonal dynamics, barriers and problems

Interviewees emphasized the importance of communication and the challenges of developing an efficient communication style with other project partners. They have observed that interpersonal communication helps to correct nationalistic stereotypes. Professionalism, discipline, and mutual respect were considered important to achieve this. One respondent appreciated the professional communication within EU projects and considered it a very good practice that was very easy to get used to. She/he also observed that this type of communication is not common within public institutes and among officials in Belarus. The interviewees talked about the importance of face-to-face meetings and personal connections, too. One interviewee had the experience that it is easier to communicate with Central and Eastern European partners than with Western European partners (in particular, German ones), who were less flexible in the matter of meeting deadlines and, in his/her view did not understand that the quality of research is more important than the deadlines. In general, however, the communication, although challenging, was assessed as good.

One aspect that was mentioned by two interviewees as part of the discussion of interpersonal dynamics was the inequality in payments and budget allocations between the EU and EaP partners and a lack of transparency in contract negotiations and allocation of funds. They underlined the lack of Belarusian national funding for research in comparison with other EaP countries and Russia.

The interviewees identified many barriers and problems regarding participation in the collaborative projects. The most common answers included the language barrier, the apathy of the Belarusian scientists who did not wish, or were unable, to step outside their comfort zone (and as a result often lagged behind in terms of methodological and conceptual training), and

the absence of support for applications for international projects from the Belarusian authorities and universities. Insufficient methodological and analytical skills of Belarusian academics and researchers were also named as a barrier to participation in EU projects.

The interviewees emphasized that to apply for EU projects, organizations needed to have ample resources as well as competitive scientific portfolios. However, since the funding for science and the salaries of academic staff are very limited and their administration is more oriented towards status quo preservation, Belarusian institutions do not get a chance to develop their scientific portfolio. Social sciences are in a particularly bad situation as they are not supported by the state and receive less administrative support at the university level compared to disciplines such as mathematics and physics. One of the interviewees portrayed it as a vicious circle: institutions need to have a solid scientific portfolio to be considered for the EU projects, but it is difficult to develop such a portfolio without being a part of these projects.

The international isolation of Belarus was also recognized as an obstacle in realization of cooperative projects. Nevertheless, one of the interviewees blamed the EU for only caring about securing its borders rather than other aspects of cooperation with Belarus and for being concerned mainly with Ukraine.

Another common barrier seems to also be the fact that institutions in Belarus cannot simply propose a project to the EU, but rather they have to be found by the EU partners and invited to collaborate. This limits their freedom in developing projects, but also their chances of becoming a part of a collaborative project. Moreover, institutions from Belarus sometimes participated in the EU projects as contractors rather than members of the consortia. Although they received the funding, they were not in the spotlight and their institution did not get international recognition. Nevertheless, all the scholars interviewed would like to participate in, and several are actively trying to become a part of EU projects in the future, despite their often very limited resources.

Scientific cooperation: the EU and/or Russia?

Most of the institutions represented by the interviewed scholars have participated in collaborative projects with Russian scholars. In the majority of cases, cooperation with other EaP countries happens within EU or other Western projects. Two interviewees mentioned that they had found EaP partners for cooperation within EU projects. Almost half of the interviewees did not reply to the question on which countries are the most important for their organization in terms of scientific cooperation. Two interviewees named Russia as the most important partner and one of them elaborated that this is because of their common history, economy, and existing instruments of cooperation. The increase in collaboration with Russia, however, was explained as a result of the deadlock in relations with Germany and Poland, who used to be Belarus' most important partners for bilateral cooperation within the EU. Two other interviewees believed that the EU and the West are the most important partners; one thought that although Russia is their most frequent partner, the EU is the most attractive for young scientists, and one put an equal emphasis on both the EU and Russia and Eurasian countries.

2.2.2. Moldova

Impact of scientific cooperation with the EU and its Member States on scientific and managerial capacity of the Moldovan institutes and their employees

All the interviewees were very positive about the effects of participation in EU projects. They all emphasized the importance of the new contacts that they established through participation in these projects, the exchange of knowledge, experience, and methodologies, and more generally, the integration of their institutions into global research networks. Many appreciated the possibility to learn about new technologies and methods and one interviewee pointed out that being a part of the EU projects has helped them to reflect on the strengths and weaknesses of Moldovan research. Several of our respondents emphasized that the projects had long-term effects on their institutions as they initiated ongoing scientific cooperation at both a national and international level.

The interviewees were almost unanimous in their opinion that participation in the EU projects has had an influence on their method of work. Three interviewees mentioned very specific methods that they encountered and learned about, such as digital processing in holographic microscopy, automated calculation of the comparative advantage in exports with the help of international platforms, and complex macroeconomic analysis. Others also pointed out that the management of the projects, financial reporting, and time-management were new to them and different from what they were used to. In terms of planning and management, the interviewees noted that the system of setting up and conducting research projects in Moldova is different than in the EU and that they have adopted practices that enhanced the quality of their work. They learned about new, goal-oriented strategies and approaches to work. Although different projects demand different management strategies, in general the interviewees valued the experience they had gained and said they would use it when planning and managing future projects. Even where planning and management was centralized, as in the case of one of the projects that was coordinated from Paris, it was appreciated that the coordinators discussed each step of the project with the partners and valued the opinion of the Moldovan partners. One interviewee said that the project had changed his/her whole life in terms of style of work, methods, speed, communication with the supervisors, and full commitment to scientific research.

Regarding the issues of ethics and data management rules, the interviewees mentioned that they are integral part of the EU projects, so they have followed them. Moreover, although researchers are not required to follow these rules in Moldova, they try to continue implementing them in their own activities as much as possible. The aspects of ethics and good practice that several interviewees highlighted as having influenced their institutions were the policy of open access of publications, other results of the projects, gender equality and balance within the projects, and data collection (in particular the handling of survey data).

Most of the projects involved academic cooperation and were not oriented towards building links with businesses. Several of the interviewees, however, mentioned that they have developed contacts with the state industries, local companies, and NGOs. One respondent had

experienced interest from foreign companies. To what extent the projects have an impact on the links with companies seems to be highly dependent on the type and goals of each project.

Relevance of the projects and impact on scientific community, society, economy, and policy

The interviewees agreed that scientific cooperation with the EU is very relevant for the scientific development of Moldova. Almost all of them emphasized that the possibility of being a part of the international research community allowed them to present their work to large scientific audiences, discuss research topics that are globally relevant, find new directions for their research, and increase their didactic and scientific potential. As a result of collaboration, courses for students were organized and the institutes were capable of attracting young people. One interviewee mentioned that as a result of the project, new laboratories were opened, facilitating research on the same level as that of the EU partners. Others talked about the improved publication record of their institutes. It seems also that exact sciences experienced more impact from EU projects than social sciences.

In terms of impact on society and the economy, the views are much more divided. Half of the interviewees thought the projects they worked on were relevant to social development and half thought that they were relevant to the development of key sectors of the economy. This seems to reflect once again that different projects can both set and achieve different goals with priority still being given to the development of the scientific community.

The interviewees were relatively positive about the relevance of their projects for policies and impact they have on the policy-making. Although a couple of them mentioned that long-term effects are still to come, several had contacts with various ministries and the Academy of Sciences. Some noted that they had influenced reforms in the agricultural and educational sector, and cooperated with the Ministry for Information Technologies on the development of the 'digital single market'. Only one interviewee was negative about the cooperation with the state authorities because of their politics and bureaucracy. Nevertheless, the researchers from Moldova in general seem to be very active when it comes to participation in round tables, cooperation with different ministries, and contacts with authorities on the regional level.

Influence on attitudes towards the EU and on understanding of EU values

All of our respondents agreed that participation in the EU programmes translated into a broader change in understanding of European values in the scientific community. Values were considered the most important unifying factor for scientific activity. Some also saw a positive change in the attitudes and understanding among policy makers and within society. One interviewee emphasized that Moldova belongs to the European culture and that European values are not foreign to Moldovan society. Another noted that their institution had an opportunity to communicate the results of projects to broader audiences on TV and in publications. Others, however, emphasized that society should have better access to information about the projects and European funding. In general though, it is difficult to assess

the influence on attitudes towards the EU and understanding of the EU values on the basis of our Moldovan interviews. It is clear that the researchers appreciated the EU for giving them the opportunity to work on the collaborative projects, but it is not clear to what extent these projects were able to make policy makers and society appreciate and understand the EU as well.

Interpersonal dynamics, barriers and problems

The comments about interpersonal dynamics were mainly positive. The interviewees appreciated finding new contacts and coming together for events and conferences, and some even said that they have built a very strong team that felt like family. Within one of the projects, participants made sure that conferences were attended by different staff every time, so everyone had a chance to experience them. Our respondents did, however, identify a couple of problems. One of the interviewees mentioned that initially the partners did not trust their institution and it took time to improve their image. Another one said that the communication was difficult as the level of partners varied and each had their own vision of the project. They also talked about the difference in values and priorities, which caused some tension within the projects and required synchronization.

There were several problems of financial nature mentioned by the interviewees. One of them was the domestic system of managing research funding. In Moldova, all the funding goes to the institutes that participate in the projects through the Academy of Sciences. This complicates the process of the distribution of resources, creates delays in the receipt of funding, and causes problems with the timely realization of project tasks. The other problem was the inequality of payment for the partners from Moldova and the EU countries. More specifically, one of the interviewees pointed out that the salary for the function of a coordinator in Moldova is lower than for an ordinary employee in an EU Member State.

The interviewees also identified structural obstacles to participation in the programmes for academic mobility and scientific cooperation with the EU. The scientific community of Moldova is very conservative, and according to our interviewees, it lags behind the Western community in many respects. The selection of cadres for participation in the projects was perceived as unfair. Another problem observed by the interviewees was the aging staff at the research institutes and an absence of young talented researchers to replace them. Also the language barrier was mentioned. Finally, lack of resources remained a serious obstacle. It prevented Moldovan scholars from participating in international conferences that are crucial for building networks, which can eventually lead to cooperation. The lack of resources also affects the situation of the researchers, who earn low salaries and are often forced to work in multiple institutes at the same time to survive. This leaves them with little time to write a project proposal or to actually participate in a project.

Scientific cooperation: the EU and/or Russia?

Several interviewees or their institutes have experience in cooperating with Russia. In particular, they have cooperated within the EUinDepth project, Air-Q-GOV project, and are planning to submit proposals for the ERA.Net RUS Plus programme (FP7 framework). Others have mentioned laboratory collaboration and common workshops. One interviewee said that they used to have three projects with Russian institutions until 2009, but since then they have not cooperated with them. Moldovan institutes have also cooperated with all of the other EaP countries. Some of the collaborative work was conducted on a bilateral basis, but these countries cooperated mostly within the projects sponsored by the European Commission (e.g. AGRICIS TRADE, Air-Q-GOV, and Eastern Partnership Connect).

The interviewees see European countries as their main partners for scientific collaboration. Romania, Poland, Germany, and France were named most often as important partners for Moldovan institutions. From outside of the EU, Ukraine and Japan were also on the list. A couple of the interviewees emphasized that it is important to find the right partners for the field of cooperation and it does not matter much from which EU country they come.

All but one interviewee stated that they are planning to participate in the EU projects in the future, as they provide them with good experience, new ideas and approaches, and additional funding.

2.2.3. Ukraine

Impact of scientific cooperation with the EU and its Member States on scientific and managerial capacity of the Ukrainian institutes and their employees

Ukrainian scholars who have responded to our request for an interview listed two main ways in which collaboration in the EU projects impacted their institutions. An essential impact of these projects was access to funding that is available for the institutes and their employees. Several interviewees emphasized that local funding is scarce and that therefore the EU projects are important as they allow for the purchase of equipment and support salaries. Moreover, interviewees noted that cooperation has positive effects on the scientific capacity of the institute, as scholars can update and exchange knowledge, work on actual tasks that lead to real results, and participate in conferences.

The method of work has not been affected very much by participation in EU projects, although a couple of interviewees noted the heavy bureaucratic strain of the projects: the strict system of control, and full agenda. One respondent said that their method of work was affected due to the extent that it was necessary to get to grips with European bureaucracy, which in their words, is at times worse than the Soviet one.

In terms of the impact of the projects on planning and management practices, the majority of interviewees (seven out of eight) had learned and adopted some new practices. This was possible due to communication with partners and the necessity of ensuring the smooth running of the projects. One of the interviewees noted that they experienced the EU as having a very

bureaucratic system and strict schedules, within which every moment was planned in advance. An interviewee who had experience with projects within each EU framework (FP6, FP7, and H2020) was most critical of the EU projects planning and management system. On the basis of his/her experience with project management gained in the U.S., he/she believes that the EU framework projects are seriously behind the American ones and suggested that it is due to a principally wrong approach to project organization.

Half of the respondents reported that they have become more conscious of the issues related to ethics and data management rules. A couple of the interviewees said that their practices related to the ethics and data management were not far from those required within the EU projects and a couple of them suggested they did not learn anything new.

Most of the respondents mentioned that they are either already cooperating with companies or planning to do so, so it seems that participation in the EU projects can facilitate contacts with business. This is, however, not a priority for all project participants: for example, one interviewee stated that the question of business is not at the forefront of their activities as they are a university.

Relevance of the projects and impact on scientific community, society, economy, and policy

Most of the interviewees thought that the EU projects were relevant for the development of the scientific community in Ukraine. One of the positive effects was that international scholars became familiar with the work of Ukrainian researchers. Cooperation also positively influenced specialization and strengthened scientific potential. Moreover, these projects were relevant as they introduced new materials, new ideas, and new technologies, which resulted in new patents.

In terms of social relevance, only three of eight interviewees recognized it as being valid but they did not specify exactly how the projects were relevant to society. The majority was much more sceptical and usually responded negatively or expressed doubt in social relevance.

The interviewees were more positive about the impact of EU scientific collaboration projects on the development of key sectors of the economy. Five of the respondents thought that the projects were relevant and two of them specified that their projects involved work for Ukrainian industry and could be relevant at least for the regional economies.

Influence on attitudes towards the EU and on understanding of EU values

All of the interviewees agreed that scientific collaboration within the EU projects improved the attitudes towards the EU and enhanced mutual understanding within the scientific community. They saw these projects as part of deep changes occurring among scientists in Ukraine and believe that cooperation enriched both sides. One of the interviewees mentioned that actually the attitudes towards Europe within the scientific community were already quite positive and when they were enhanced with financial support, they became even better. Another

interviewee said that it is important for the scientific community to see that Europe supports them.

Scientific influence on the attitudes of policy makers toward the EU was not perceived as high. Several respondents did not know how to evaluate it, others were critical about the understanding of the importance of scientific research by policy makers in Ukraine. One of the interviewees mentioned that in the past there used to be more interest from policy makers in scientific research and that this has recently diminished. Another respondent expressed similar views and stated that politicians did not care about natural sciences. However, one EU project participant said that it is possible that on the local level politicians' attitudes towards the EU are to some extent influenced by the projects.

Regarding the influence on attitudes toward the EU of the broader society, the answers were mixed. Four of the respondents were sceptical about this for different reasons. The projects did not get enough attention in the press and did not reach a broader audience in the first place. In addition, there were not many projects and their results were so specific that they did not reach broader society nor influence their understanding of the EU. One of the scholars pointed to the fundamental values of research, regardless of where the researcher is based. Regardless of whether research is conducted in Europe or in Ukraine, one scholar emphasized that either science is based on an objective and honest approach, or it is not science. According to this scholar, science does not have any other values besides objective truth and ethics.

Interpersonal dynamics, barriers and problems

On the level of interpersonal relations, most interviewees expressed rather positive experiences. They have appreciated the personal contacts established during the projects that have survived beyond the projects' duration. Moreover, they thought that cooperation enriched both parties involved, created friendly relations, and stimulated new plans and ideas. Sometimes, the issue of language made collaboration more difficult, but did not necessarily cause interpersonal tensions. Others noted that the communication was strict, which was linked to the desire to reach the set goals. One of the interviewees appreciated the goal-oriented approach of collaborative projects and suggested that the interpersonal relations should be connected to specific project tasks. The picture that emerges from the interviewees is that communication is sometimes difficult, but in general friendly and aimed at getting things done.

Several important barriers and problems with participation were listed by the interviewees. One fundamental one, mentioned by two scholars with extensive experience with international collaboration, is the lack of interest from the Ukrainian authorities in science and lack of support at the ministerial level. As long as the authorities do not see science as useful and do not stimulate research, cooperation with the EU will be limited, researchers pointed out. Another interviewee also noted problems with discrepancies in legal regulations regarding the projects.

The low financial and research capacity of the Ukrainian institutes limit possibilities to participate in the projects. They lack funds to purchase modern equipment and to travel abroad for their research. This is perceived as a serious barrier and makes the Ukrainian scholars less competitive and less attractive for partners from the EU. At the same time, research technologies and information are becoming more expensive and less available to the Ukrainian scientists.

The interviewees also mentioned the problem of language training and lack of experience and support with writing high quality research proposals that have a chance of being accepted. The high bureaucratization of EU funding constitutes a real barrier. Moreover, the lack of links and exchanges between the separate projects is seen as an obstacle to scientific development. One of the interviewees observed that so far the approach of the EU towards Ukraine resembles that towards a country from 'the Third World'.

The interviewees did not observe a large-scale brain-drain as a result of the EU projects. One interviewee noted that even if more Ukrainians left their country to work abroad it was very unlikely that it was caused by international collaboration. They believed that the main reason for Ukrainian scholars to leave was the unbearable conditions created by the Ukrainian political authorities.

Scientific cooperation: the EU and/or Russia?

Regarding scientific cooperation with Russia, five out of eight interviewees told us that their institution has in one way or another collaborated with Russian institutes. This collaboration, however, was rather limited with the exception of space research and mostly ended after the political events in 2014. The majority of the respondents also mentioned cooperation with other EaP countries, including projects with Belarus, Georgia, Moldova, and Azerbaijan. Many of them cooperated within the framework of EU projects. All of our interviewees named the EU Member States as the most important partner countries to them and their organizations in terms of scientific cooperation. A couple mentioned the U.S. and one also mentioned Russia. In addition, there has been collaboration with fast developing countries such as Iran and China. One interviewee emphasized their institution's good relations with neighbouring countries – Poland, Romania, and Lithuania. France and Germany were also named by several interviewees.

All interviewees expressed their intention to participate in future H2020 projects. They see it as the only opportunity to get funding for science, to travel abroad for research, and to purchase equipment. They also noted, however, that the competition for participation in these projects is fierce.

2.3. Empirical results from the qualitative interviews: The perspectives of scholars from institutions in EU Member States

The interviewees from the EU institutions were asked to reflect about the role of Eastern partners in the collaborative projects that they have participated in.

Setting up of the projects and recruitment of partners

The responses showed that Eastern partners who have participated in the projects had different scope and degree of involvement in the projects. In some, they were only involved in the implementation of the projects, in others they had managerial functions and led work on particular work packages. In most cases, they were not involved in the drafting of proposals. Nevertheless, one interviewee with experience in a large number of projects, who has been involved in setting up and managing EU projects for many years, observed that the involvement of the Eastern partners at the initial stages of planning and drafting of the project proposals increased over time. Moreover, it was mentioned that there are 'pockets of excellence' in the EaP region that can develop project proposals, know well how to draft them, and are even better at it than many European institutes. One case which was highlighted as exceptional is the National Aerospace University of Ukraine in Kharkiv. Other teams (including ones from Belarus) were mentioned as excellent in terms of providing valuable research input.

The most common way of recruiting partners for the projects is through an already existing network. Several interviewees noted that they have collaborated with their Eastern partners for a long time before these projects. Other ways of finding partners are through an Internet search, a call for application, or through a particular institution that works in the field (e.g. the Black Sea Commission).

Impact on the Eastern Partners

In terms of how the interviewed scholars from Western institutions perceive the impact of the EU projects on the Eastern partners, there were several common answers focusing on the benefits and obstacles to cooperation. One answer stressed by several respondents referred to the possibility for the Eastern partners to get access to resources. Eastern institutes are often underfunded and there is no sufficient financial support for their work from the side of the government and businesses. Interviewees talked about the EU money as helping the Eastern institutions to survive and upgrade their outdated equipment. One of the interviewees mentioned that funding not only increased the capacity of an institution in terms of research and technologies but also positively influenced the atmosphere in which the employees of this institution worked. A couple of interviewees also mentioned the organization of training events and workshops in both the EU and EaP countries. One mentioned twinning projects in which EU and EaP institutes were paired, and the researchers travelled to spend time at each other's institutes. One project in particular used a strategy referred to as benchmarking, in which experts were sent to the institutes in the EaP countries and they assessed the institute to see

what could be improved in its functioning. The benchmarking has been accepted by Belarus and Moldova, but not by Ukraine. The impact of this strategy, however, is not yet possible to assess.

Apart from the financial aspect, another form of impact on the institutes is the shaping of their research agenda, resulting in the possibility to participate in more EU projects in the future. Collaboration with the EU partners also increased the awareness of the importance of scientific publications and the projects improved the publication record of the institutes from the EaP countries.

Transfer of technology has not been common according to the Western interviewees and, naturally, it is dependent on the objectives of a project. In one case, it was the Ukrainian institution that provided the technology to complete the project. Moreover, in this particular project, an impact on the Ukrainian economy can be expected, as it will result in demand for fuel that will be delivered by Ukraine.

Interviewees often struggled to assess the broader impact of the projects. In a couple of cases this is because the projects are ongoing, so the results are not yet available. Others mentioned media interest and the possibility of communicating the results to larger audiences. As expressed by one of our interviewees, one of the reasons for problems with assessing the impact is the nature of scientific work, which is a long chain of steps that add to the body of knowledge. As they mentioned, even multi-million projects follow the same logic – one step at a time. Therefore, the impact on society is often unpredictable and takes a very long time to be implemented (examples included the use of nano-particles in oncological therapy and environmental research).

In terms of a brain-drain – one potential negative effect on society – the interviewees did not observe it. Most researchers mentioned exchanges and participation in mobility programmes and workshops, but no permanent exit from local institutions.

The policy impact was mostly perceived as non-existent. A couple of interviewees mentioned a potential for influencing policy change, rather than actual change. For example, Georgian researchers are trying to implement their findings and ideas about CO₂ emissions, and Moldovan partners are required by the project leaders to at least inform the relevant ministries about the interesting results of their research on water management. One of the interviewees also emphasized that it is not the role of the scientific community but of the European institutions to influence politicians.

Barriers and problems

There are several commonly mentioned problems that collaborators from the EU institutions noted. On the side of the EU, most of our interviewees emphasized the complexity and abundance of legal and financial rules and administrative requirements for the EU projects, which are difficult not only for the Eastern partners, but also for partners in EU countries. Many of the partners in the EaP countries do not have enough resources to cope with the heavy load

of paperwork demanded by the EU projects. The difficulty is to some extent moderated by experience with these types of projects, but the high share of bureaucratic requirements seems to be a problem of its own. The issues with obtaining visas had a negative impact on the mobility of scholars. Scholars from Ukraine in particular had experienced obstacles in travelling to their partners in the EU. Entry to Belarus had been a problem for EU researchers. The more experienced interviewees mentioned that this has to some extent improved over time.

Other barriers mentioned by the interviewees were the communication issues in terms of language (especially older staff did not have a sufficient level of English proficiency) and more closed cultures that sometimes made it difficult to get things done. Our interviewees from the EU also mentioned the difficulty in finding information about partners, specifically because of their limited online presence. This included institutional websites that were often not well developed and not available in English.

3. Conclusion

Overall, the picture that emerges from the interviews, both in the East and in the West, is one that portrays scientific cooperation between the EU and the EaP countries in a very positive light, with many welcome developments spurred on by participation in joint projects. The benefits, as perceived by the Eastern partners, conform with prior expectations – access to funding, participation in networks, advancement in research methodology, opportunities for the mobility of researchers, some transfer of technologies and (administrative) know-how. Therefore, the impact of the cooperation within the EU projects on participating institutions and on scientific community in the three countries is significant and positive. Moreover, the EU and its Member States are considered the most important partners for scientific cooperation. From the perspective of Western partners, the participation of institutions from the EaP countries is also seen as a success, and the quality of the scientific contributions by the EaP partners is widely agreed upon, which also translated into willingness to work together in the future.

At the same time, we find less evidence of broader societal impact or direct effects on public policies. Partly, this can be accounted for by the type of research projects that have been conducted: mainly fundamental science (prevailing hard science disciplines), compared to only a few projects with explicit policy objectives (other than supporting science policies in the EaP countries) and direct societal relevance. From our interviews it became apparent that societal and policy impact can be expected only from very specific research projects. As far as rules and values of scientific research can be transmitted to EaP scientific communities through collaboration in any discipline, transmission of values such as democracy, rule of law, or human rights to societies and authorities seems highly unlikely to be achieved by projects focusing on physics or chemistry. Moreover, as noted by one of our interviewees, the nature of scientific endeavour is such that one piece of research rarely brings about ground-breaking results that can have grand societal and policy impact. Hopefully, over time, more of the positive effects of scientific collaboration will become apparent. For now, it is fair to say that the impact of scientific collaboration beyond the scientific community itself is perceived as minimal.

Some of the expected negative effects of scientific cooperation with the EU did not seem to be very salient. The suspected brain-drain of qualified scientists from EaP countries to the West as a direct result of participation in joint projects was not confirmed by our interviews. This could be attributed to a variety of reasons, ranging from the advanced age of many of the project participants to the family commitments of the young scientists. The administrative burden of applying for and participating in EU-funded projects, however, was often mentioned as an obstacle to scientific cooperation.

What appears to be an unanticipated effect of scientific cooperation, one that became especially visible after a decade of intensifying cooperation, is the emergence of organizational 'islands of excellence' in the EaP countries. Some organizations have the requisite expertise and increasing experience in participating in EU-funded projects, and therefore become natural partners for further collaboration. While the accumulation of expertise and experience in certain institutions is not a problem in itself, it should not remain too concentrated in a handful of institutions that become gate-keepers to collaboration. Ideally, participation in EU projects should spread out beyond the few already established 'islands of excellence.' Otherwise, over time it will get only more difficult for newer organizations to find a way into the scientific cooperation networks and projects.

Our interview respondents suggested that the broad societal impact of scientific cooperation and the projects they have been involved in has been low, so far. There is limited evidence of the effects of their findings on societies and public policies in the three EaP countries, although researchers in Moldova were more positive about the impact on policy makers than the researchers in Ukraine and Belarus. It remains possible that scientific cooperation works as an instrument of diplomacy and socialization beyond the borders of scientific communities. More importantly, as noted by almost all interview respondents, scientific cooperation in EU-funded projects helped them and their organizations preserve organizational capacity, establish long lasting scientific networks of cooperation and keep up with developments in their fields. These are important elements of impact which should not be disregarded, even as we continue our investigation of the effects of scientific cooperation.

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Appendix 1

(Non-exhaustive) List of the EU projects that the selected interviewees participated in:

European Union	Belarus	Moldova	Ukraine
COCONET/Marine biology (Ukraine & Georgia)	BY-NANOERA	Eastern Partnership Connect	FP7 SUAFRI-EPC
TIDE/Transport (Moldova)	ENER2I (ENERgy Research to Innovation)	HP-See Research Communities	FP7 SECURE-R2
ESSANUF/ European Supply of Safe Nuclear Fuel (Ukraine)	INNOVER EAST/ EaP cooperation on energy efficiency (Belarus, Georgia, Ukraine)	European Grid Initiative	IncoNet EaP
FP7 SCUBE-ICT (Belarus and Ukraine)	IncoNet EaP/INCO NET projects/scientific capacity building	Erasmus+	INCO NET projects
FP7 IPERA (Armenia)	STI International Cooperation Network for Eastern Partnership Countries – PLUS	PRO-METROFOOD	LIGHT-TPS
FP7 BELERA(Belarus)	Idealist201	FP7-INCO SECURE-R2I	NANOMAT-EPC
FP7 SENS-ERA (Georgia)	H2020 INTELUM	FP7-PEOPLE/ International cooperative programme for photovoltaic kesterite based technologies, head	AERO-UKRAINE

FP7 KhAI-ERA (Ukraine)	BY-NANOERA	FP7- PEOPLE/Training and collaboration on material development and process improvements in oil and sugar production	NoGAP
FP7 SUAFRI-EPC (Armenia, Belarus, Georgia, and Ukraine)	Graphene Flagship	FP7-TRANSPORT/ Tangential Impulse Detonation Engine	LIGHT-TPS
FP7 SECURE-R2I (Armenia, Belarus, Georgia, Moldova, and Ukraine)	CACOMEL	FP7-ICT European Innovation Ecosystem	DEGISCO
FP7 NANOMAT-EPC (Armenia, Belarus, Georgia, and Ukraine)	TerACaN	H2020-TWINN	POEMA
H2020 HOLO (Moldova)	FAEMCAR	AGRICIS	PICASA
H2020 INTELUM (Armenia, Belarus, Ukraine)	CANTOR	EUinDepth “European identity, cultural diversity and political change”/Promotion of the improvement of environmental indicators of small and medium-sized enterprises	INOTLES
H2020 AERO-UA (Ukraine)	NAmiceMC	Air-Q-Gov	Building capacity for University-Enterprise partnerships towards competency based training in Armenia, Georgia and Ukraine
Black Sea Horizon	BalticGrid-I	FP7 BLACK-SEA- ERA-NET	TRUST

IncoNet EaP	SCUBE-ICT	FP7-PEOPLE-2012-IRSES - Marie Curie Action "International Research Staff Exchange Scheme"	EANET
ERAnet Cofund	EGI-INSPIRE	Erasmus +/-Jean Monnet actions	HUMERIA
Joint Programming Initiatives	ORIENTplus		IANUS II
H2020 Waterworks (Moldova)	GN3plus		IANUS
INNOVER EAST EaP cooperation on energy efficiency (Belarus, Georgia, Ukraine)	SECURE-R2I		ACTIVE
INCO NET projects/scientific capacity building	Horizon2020		KhAI-ERA
H2020 ERA NET/mobility (Belarus, Moldova, Ukraine)	GEANT		CORSAIR
	DphotoD		GREENCO
	METCOPH		WASIS
	Horizon 2020 SUPERTWIN		START
	MARTEC II		
	ENTIII		
	MarTERA		
	EMEurope		
	AGRICISTRAD		
	NET4SOCIETY		

	(2,3,4)		
	ENRI-East		
	HITT-2008		
	INTAS		
	New Europe		
	Barometer (NEB) Surveys		
	European Values Study (EVS)		

Appendix 2

Questionnaire: interviews in the EaP countries

1. Position (e.g. "Head of research institute, deputy head of department in university) etc.
2. Type of organization (e.g. "Institute of physics", "department of sociology in university") etc.
3. Scientific cooperation projects with the EU and its Member States (briefly)
4. What is the most important impact of scientific cooperation with the EU and its Member States on scientific capacity of your organization or you personally?
5. Were the project's themes and topics (of the project you have participated in) relevant for
 - a) scientific development of your country?
 - b) social development?
 - c) The development of key sectors of the economy?
6. How do you evaluate the impact of scientific cooperation with the EU on scientific capacity of society in your country?
7. Did the participation in a scientific cooperation project(s) influence your method of work?
8. Has the project(s) that you participated in led to cooperation between companies? Has it facilitated any new business ventures?
9. Has the project in which you participated led to the change of public policy in your country?
10. Has the project in which you participated affected your project planning and management practices? How?
11. Have you become (more) aware of issues related to ethics and data management after participating in the scientific cooperation project? If yes, has this awareness been translated into new practices and institutions (e.g. ethics board)?
12. Are there any aspects of cooperation that you would like to comment on regarding interpersonal dynamics between you/your organization and other partners from the project you have participated in?
13. Have you noticed any other indirect or unintended effects of participation in scientific cooperation projects?
14. Do you think that the influence of the cooperation programmes with the EU translates into a broader change in
 - a) attitudes towards Europe
 - a1) in the scientific community
 - a2) among policy makers

- a3) among the broader public
- b) understanding of European values
- b1) in the scientific community
- b2) among policy makers
- b3) among the broader public

15. In your opinion, what factors limit the possibilities of scientists from your country to participate in programmes of scientific cooperation and academic mobility with the EU?

16. Have you or the organization where you work taken part in the programmes of scientific cooperation or academic mobility with Russia in 2009-2016?

17. Have you or the organization where you work taken part in the programmes of scientific cooperation and academic mobility with the Eastern Partnership countries in 2009-2016?

18. Do you plan to participate in the programmes of scientific cooperation with the EU in the future? If yes, why? If no, why?

19. In your opinion, what countries are the most important to you and your organization in terms of scientific cooperation?

20. Other comments

Questionnaire: interviews in the EU countries

We are interested in your personal reflections, opinions and assessments and not in a formal evaluation of your project and its results.

1. Could you tell me your function in the project and the kind of responsibilities you have (had) for the project?
2. What was the role of the partners from the Eastern Partnership countries for the project?
3. To what extent were these institutions involved in the preparation of the project proposal? If yes, were there any specific challenges to their participation in the drafting phase?
4. Did these partners have any managerial responsibilities for the implementation of the project? If yes, were there any specific challenges to their participation in project management?
5. Did these partners lead any work packages? If yes, any specific challenges or remarks about their performance?
6. How did you get in contact with your EaP partners?
7. Have you collaborated with scientists or scientific institutions from EaP countries before? If yes, which and under what programmes?

8. In your view, what was the overall impact of the project on the participating institutions from the Eastern Partnership countries?
9. On their scientific quality and productivity?
10. On their research agenda?
11. On their access to state-of-the-art facilities and equipment?
12. On the mobility and career prospects of their researchers?
13. More concretely, any of their researchers spending extensive periods of time at the Western partners or perhaps being employed after the project completion in Western Europe?
14. Does the project have results in transfer of practices and institutions, such as ethics boards or data management plans?
15. Has the project resulted in any transfer of technologies (or new patents) to these institutions?
16. Has the project affected the values of the research communities in the EaP countries?
17. Has the project led to change of public policies in the EaP countries?
18. Has the project led to concrete business initiatives in the EaP countries?
19. Or helped the economies in some other way?
20. Would you say that the project has had an impact on the broader society in the EaP partner countries?
21. If yes, how (what mechanisms)?
22. If no, what could have produced such impact?
23. In your opinion (and, to remind, this is confidential) was the inclusion of partners from these countries a success?
24. Would you say that there are big differences in the organizational culture between West and East European research institutes (if yes, some examples)?
25. Would you say that there are big differences in the institutional setup for scientific research between West and East European countries (if yes, some examples)?
26. What makes it hard for EaP researchers and institutions to participate effectively (e.g. interference from state, or different accounting standards, or different administrative culture, or different standards of doing research, for example, norms about research ethics and integrity)?
27. Based on your experience, would you seek to do research work with partners from the Eastern Partnership countries again in the future?
28. Is there anything else that you want to share from your experience with collaborating with EaP institutions?