



SUPPORT OF INTERNATIONAL COOPERATION AS A SPECIFIC POLICY INSTRUMENT FOR IMPROVEMENT OF INNOVATION ENVIRONMENT IN AP VOJVODINA

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Abstract: *Open innovation evolve a high degree of cooperation with partners in innovation chain. By means of collaboration, innovation actors contributed to synergy and knowledge creation both at national and international levels. In the world of Open Innovation, public policy has to be complied with the behavior of innovative entities and with external conditions which motivate them to practice it. Science policy is identified as the one which has the most influence on open innovation. Research and development is one of the key behavioral aspects in Open Innovation. The subject of this paper is analysis of the specific regional government's tools for improvement of open innovation environment in AP Vojvodina (APV). The Provincial Secretariat for Science and Technological Development (PSSTD) supports a wide range of activities that lead to the progress of innovativeness within APV.*

Key Words: *Open Innovation, Science, Innovation, Policy, Policy instrument*

1. COOPERATION AS AN ELEMENT OF OPEN INNOVATION

Cooperation is the core of open innovation framework and the number of cooperative partners and quality of cooperation matter for the success of introducing the open innovation principles.

Open innovation phenomena evolve a high degree of cooperation with partners, such as other companies in the industry, suppliers, and clients [1].

Cooperation and collaboration are essential to open innovation. Thus entities in innovation process put in sufficient different resources needed to achieve a common goal. Collaboration is then more of an effectiveness measure, meaning “doing the right things” to achieve something with a higher value than one party could do alone. The mutual dependency is stronger. By means of collaboration, innovation actors contributed to synergy and knowledge creation at both national and international levels [2].

In the world of Open Innovation, public policy has to be complied with the behavior of innovative enterprises and with external conditions which motivate enterprises to practice them. One of the key behavioral aspects of enterprises in Open Innovation, that have been identified, is collaboration [3].

If innovation is accepted as the open process in which companies systematically look for inflows and outflows of knowledge that certainly has implications on creating and implementing all policies, by which innovations are supported. In this context science policy is identified as the one which has the most influence on Open Innovation (and the other way) and which, because of it, will be exposed to changes.

Fields of science and innovation are essential for the open innovation and also for the country's development. From the very limited research on open innovation at the state and regional level, it could be seen that current government policies in many countries already contain many elements to support it [4].

2. SPECIFIC REGIONAL GOVERNMENT'S TOOLS FOR THE DEVELOPMENT OF SCIENCE AND INNOVATION IN THE AUTONOMOUS PROVINCE OF VOJVODINA (APV)

The subject of this paper is analysis of the specific regional government's tools for the development of science and innovation in the Autonomous Province of Vojvodina (APV). These are the instruments that stimulate cooperation and networking of scientific/research institutions from the province with international partners in order to create better innovation environment. The Provincial Secretariat for Science and Technological Development (PSSTD) supports a wide range of activities that lead to the progress of science and innovativeness within APV. Support of international cooperation is among its priorities. With the aim of achieving the most successful incorporation of the scientific institutions from APV into European research area, PSSTD has developed unique instruments such as support schemes for the application to international projects as well as for the support of already accepted on going internationally funded projects. These forms of support do not exist at the republic level and represent an additional incentive for the development of this area in APV.

The jurisdiction of the AP Vojvodina in the field of science and technological development is very limited. Nevertheless, the Provincial Government pays a great attention to the progress in that area. Despite the fact that PSSTD has no legislative power it undertakes many activities with the aim of the progress of science and innovativeness within the province. Activities of the PSSTD in 2014, as in the past ten years, were focused on the further encouragement of the development of science and

technology in the AP Vojvodina and their approximation to the European standards [5]. Secretariat implements its activities operationally, under the Rulebooks and by announcement of the public calls for each activity.

Support of international cooperation of the scientific institutions from AP Vojvodina in order to facilitate their significant involvement in international research area is at the top of its priorities. The international aspect permeates almost all activities of the PSSTD. In 2005 began the co-funding of so called interregional projects with neighbouring countries and institutions in these countries. The requirement for these projects was to establish joint teams of foreign and domestic partners and to formalize their cooperation. The most direct support to the international and inter-regional cooperation takes place through co-financing current activities of international cooperation institutions from Vojvodina. This support began in 2005, when 45 activities were co-financed, and in 2014 it rise to even 194 activities. The approved projects included more than 45 mainly European countries, and some projects are done in cooperation with more than ten countries. The projects are working in cooperation with 951 institutions abroad. The same year begins the co-financing of the on-going activities of international cooperation realized by the scientific-research institutions from AP Vojvodina. With the aim of bolstering a more effective participation of research institutions from AP Vojvodina in the European research programs, Secretariat started in 2007 to support financially the proposals of the international projects complying with the EU programs. The priority was given to the applications for the FP7 and

SEE-ERA.NET programs. The support has been dedicated for the technical preparation and contacts with potential partners for realization of the applications for international projects. The support was given exclusively to the project proposals that were submitted or prepared in the cooperation with at least one of the EU member states.

These forms of support do not exist at the republic level and represent an additional incentive for the development of science, technology and innovativeness in APV[5].

By the scheme for co-financing of on-going activities of international cooperation the Secretariat co-finance those international cooperation activities that are supported through international funds as well as bilateral and multilateral project activities that are implemented on the basis of inter-state and inter-institutional protocols of cooperation and whose realization is in progress at the time of filing the application.

Secretariat announces a public call. The amount of funds for co-financing in the current year shall be determined on the basis of the total available funds in the budget of the Secretariat for this purpose, the number of accepted activities and the established character of approved activities. Funds are approved for the following purposes: travel costs, costs of stay and education expenses and the cost of the presentation of the results achieved by the participants and contributors to the activities of international cooperation. Monitoring of the implementation of international cooperation activities are carried out on the basis of reports, which are regulated by a contract between the Secretariat and the institutions that realizes the activity of international cooperation.

Table 1. Review of support to the on-going activities of international cooperation from 2005 to 2014 (by the type of cooperation). [5]

Project type/year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL
FP 5	1	1	1	1							4
FP6	4	10	10	7	3	1					35
FP7				7	11	16	14	19	22	15	104
INTERREG	1	2	6	2							11
TEMPUS	16	13	15	9	7	12	17	26	19	23	157
COST	2	6	10	10	15	20	26	34	50	63	236
IPA						4	17	22	23	9	75
EUREKA	2	2	2	4	5	6	9	5	4	1	40
CEEPUS	6	8	8	13	17	17	19	18	23	27	156
WUS	3	2	2		1	1					9
DAAD	1	1	-	1	2	2	3	1	2	2	15
Stability Pact	1	1	1	1	1	1	1				7
CIP								1	1	1	3
IAEA								1	2	1	4
ERASMUS								1	2	3	6
SCOPES						2	2	2	1	5	12
SEE.ERA-NET			1			1	2				4
CBC					1						1
SEE TC Programme					2	2	4	4	3	1	16
Multilateral activities	8	8	8	9	10	11	16	20	19	25	134
Bilateral activities		15	19	17	14	22	15	19	18	17	156
NATO Programme							1	1	1	1	4
US EPA							1	1	1		3
TOTAL:	45	69	83	81	89	118	147	176	191	194	1193
Approved funds:	10.850.000	12.110.500	14.700.000	18.304.000	24.609.000	24.518.000	35.014.000	42.107.000	48.048.000	49.835.250	280.095.750

From the above data it can be seen that the majority of co-financed projects were from the COST program (236), followed by TEMPUS (157), CEEPUS and bilateral activities (156 each), multilateral activities (134), FP7

(104) and IPA (75). Other types of activities are represented in significantly less number.

As for the institutions involved, significantly largest share of the participation of the scientific-research

institutions from the AP Vojvodina in international projects is of the Faculty of Technical Sciences (439), followed by the Faculty of Natural Science (215), Faculty of Agriculture (109) and Faculty of Technology (91). University of Novi Sad is the holder or participant in 80 activities and it could be seen that his participation over the years is steadily increasing. It is also important the fact that independent research institutes from AP Vojvodina have well-developed international cooperation and to participate in a number of projects. Scientific Institute of Food technologies is leading with 65 co-financed activities, and it is followed by the Institute for Lowland Forestry and Environment with 41 and the Scientific Veterinary Institute with 32 co-financed activities.

As regards the scheme for co/ financing the preparation of the project proposals for international cooperation Secretariat co-finance those proposals for international cooperation activities which are submitted to international institutions and funds, as well as those that are submitted on open calls for bilateral and multilateral cooperation. Priority will be given up for the program Horizon 2020. Application may submit scientific-research organizations from AP Vojvodina, and exceptionally other institutions dealing with scientific research and by a special decision. For this purposes Secretariat announces a public call.

Table 2. Review of support to the proposals of international cooperation from 2007 to 2014 (by the type of cooperation) [5]

1. Project type/year	2007	2008	2009	2010	2011	2012	2013	2014	Total
Horizon 2020								18	18
FP7	39	13	17	14	13	13	7	1	117
EUREKA			1	1	1				3
TEMPUS			1	7	7	6	12		33
SEE.ERA-NET	28			4				2	34
EU Neighborhood Program	1								1
DAAD		1			1	1	2		5
COST		1	1	1		3	11	10	27
WUS			1	1					2
SEE Prog.		6		1		6			13
NATO				2					2
IPA				5	10	12	6		33
Multilateral coop.								5	5
Bilateral coop.				3	16	13	13	8	53
SCOPES			1				2	3	5
US EPA					1	1			2
Erasmus Mundus					1	1	1		3
CEEPUS							1		1
ERA-CAPS							1		1
BMBF Prog.								1	1
CEI								1	1
START Danube Region								1	1
Danube Region Strategies								1	1
Fellow prog. for research in Japan								1	1
Visegrad fund								2	2
Creative Europe								1	1
Total:	68	21	22	39	50	56	56	55	367
Approved funds:	2.649.294	1.193.200	1.249.800	2.782.500	2.969.750	3.460.000	2.430.000	6.846.564	23.581.108

Most scientific-research institutions has submitted proposals for FP7 program (117), followed by SEE.ERA-NET (34), bilateral cooperation (53) and IPA (33). It is also important the fact that 18 applications for the program Horizon 2020 were submitted in 2014. That shows that from the very beginning of this programme the institutions from AP Vojvodina are very active to participate.

As for institutions, the situation is similar as with on-going activities, the largest number of applications comes from the Faculty of Technical Sciences (104), followed by followed by the Faculty of Natural Science (89), Faculty of Technology (66) and Faculty of Agriculture

(52). Concerning the applications from scientific-research institutes, the most active was the Institute for Lowland Forestry and Environment with 9 and the Scientific Institute of Food technologies with 8 applications.

3. CO-AUTORSHIP AS A MEASURE OF COLLABORATION

If publications serve as unit of analysis, co-authorship is taken as a measurement of collaboration. It entails the tacit transfer of information and knowledge and ensures diffusion of ideas and knowledge circulation. The

importance of co-authorship in knowledge creation and sharing may be measured by the international co-authorship trend. Indeed, publications on coauthorship worldwide all reported an increasing trend in the number of authors who contributed to an article (e.g. Bordons and Gomez 2000; Tijssen 2007; Leydesdorff and Wagner 2008; Boshoff 2009; Adams et al. 2010a; Onyancha and Maluleka 2011; Toivanen and Ponomariov 2011; Adams 2012; Leydesdorff et al. 2013b; Mègnignêto 2013b; Adams et al. 2014; Ossenblok et al. 2014). Some of them underlined the concentration of the growth in the group of papers with five or more authors, lending strong importance to collaboration. Globally, co-authorship has exploded recently and internationalization of collaboration characterizes science today due mainly to globalization. Therefore, by means of collaboration, innovation actors contributed to synergy and knowledge creation at both national and international levels. [2].

If we look at the specific instrument for co-financing of on-going activities of international cooperation that stimulate cooperation and networking of scientific/research institutions from AP Vojvodina with international partners we could see that it supports collaboration and contribute to the synergy and knowledge creation at both national and international levels. By this instrument is also created a more favorable environment for innovative activity and open flow of knowledge. Monitoring of these activities is done through reports that institutions are obliged to deliver to Secretariat annually. Questions in the reports relating to the elements of cooperation are the following: weather is submitted new joint project; weather is in the framework of the project published joint publication with foreign partners and weather is in the framework of the project presented joint paper with foreign partners in the international conferences. If we consider the data from the last three year reports we could see the following results.

Table 3. Review of joint activities that promote cooperation through the support to the on-going activities of international cooperation in AP Vojvodina (Source: data base of the PSSTD)

Year of the report	No. of co-financed projects	No. of new joint projects	No. of joint publications	No. of joint papers presented on conferences
2012	147	198	249	324
2013	179	195	255	327
2014	191	205	256	391
Total:	517	598	760	1042

From the results shown in Table 3. it can be seen that from the co-financed of projects during last three years 16 % more new international projects were derived. In favor of the fact that these instruments are in the function of enhance the degree of cooperation between partners. This is also confirmed by the fact that in this period was published 760 joint papers and 1042 joint papers are presented at international conferences.

4. CONCLUSION

Open innovation phenomena evolve a high degree of cooperation with partners. It is the core of open innovation

framework and the number of cooperative partners and quality of cooperation matter for the success of introducing the open innovation principles.

The Autonomous Province of Vojvodina (APV) developed specific instruments that stimulate cooperation and networking of scientific-research institutions from the Province with international partners in order to create better innovation environment. These forms of support represent an additional regional incentive for the development of science, technology and innovativeness in APV. This also contributes to the establishment of a favorable environment for open innovation in the region.

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