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**State science & technology programs in Ukraine in the contest of international science & technology cooperation of Ukraine: analysis of regulatory aspects
(Draft of the working paper)**

Introduction

Mission-oriented (or program/project based) management is an important tool for performance enhancement across the national economy on the whole and the science & technology sector (S&T) in particular. This is the reason why the history of science and technology programs in Ukraine as a tool for implementing national S&T priorities dates back from the first year of its independence when the Law of Ukraine “On Basics of the State Policy in Science and Technology Activities” was adopted (the year of 1991). It was followed by the Resolutions of the Verkhovna Rada (Parliament) of Ukraine “On Priority Areas of Science and Technology” (1992), and “On the Nomenclature of National Science and Technology Programs” (1994) fixing the total amount of funding for these programs at a level that could not be lower than 35% of government expenditures on R&D plus about 50% of the annual contributions to innovation funds run by industrial ministries and departments concerned with S&T issues [1]. Legislative action in the S&T field continued in 2000s with enforcement of the Law of Ukraine “On Priority Areas of Science and Technology Development” (2001), which fixed a minimum 30% share in the total government R&D expenditures in each fiscal year for allocation to the state science and technology programs [2].

Thus, mission-oriented method of S&T management has had a solid regulatory support in Ukraine since early 90s of the past century. Yet, it did not work in the subsequent periods. Soon after that national S&T programs were transformed into state S&T programs (SSTP); their funding ratio fixed in the above-mentioned Law of

Ukraine has never been allocated, and actual investment in the programs has never correlated with macroeconomic tendencies.

The share of government R&D expenditures allocated in SSTP featured a downward tendency throughout the 1990s of the past century and stabilized at virtually zero level in 2000s. While the decline in 1990s can be excused by the transformation-led crisis and economic recession, its zero level in the period of rapid economic growth in Ukraine continued until the global economic crisis (2000-2008), has other reasons. Taking into account that economic growth in Ukraine had a positive effect on government R&D expenditures which grew in this period, the share of SSTP nevertheless stagnated. The essential reasons for this zero level are probably two: the structure of the Ukrainian economy with prevailing low tech industries like basic metals or chemicals, and an unreformed (also “preserved”) R&D sector in which a lion share of funds is still allocated on the institutional basis, in spite of the emphasis on a program-based approach made in early 1990s.

Chronic underfunding of SSTP in Ukraine in 1990s and 2000s should, by definition, entail their shrinkage, their reforming or, rather, radical reforms in R&D, but everything proved to be vice versa, because SSTP-related action was intensified, with the increasingly growing numbers of SSTP. An outcome of this tendency (seemingly quite logical one), especially in the context of the financial and economic crisis that broke out in Ukraine in later half of 2008 was the Resolution of the Ukrainian Cabinet of Ministers “On Reduction of a Number and Merging of State Goal-Oriented Programs” (2011) [3], which, apart from other state programs, concerned quite many SSTP.

Yet, the officially declared priority of the mission-oriented method in S&T management in Ukraine might well be the reason to consider SSTP in the context of the international science & technology cooperation (ISTC). It is, therefore, quite logic that European partners in the project ‘Enforcement of Bilateral S&T Partnership with Ukraine’ (FP7-INCO-2012-2) want to have information about EU participants in Ukrainian SSTP. The inquired information covers participation statistics and regulatory acts on SSTP in Ukraine as a factor that may either encourage or

discourage EU participation in SSTP. The inquiry of regulatory information on SSTP does not seem accidental, because extremely small scales of EU participation in Ukrainian SSTP may be well known in the EU. So, EU partners may intend to learn more about regulation-specific reasons for this situation. This motivated us scrutinising easily available regulatory documentation on SSTP to identify regulatory-specific opportunities for EU participation in Ukrainian SSTP.

1. International S&T cooperation in Ukraine: regulatory system and official statistics

Regulatory system for international S&T cooperation (ISTC) in Ukraine comprises laws and other legal rules, multilateral agreements, interstate associations. Principles behind ISTC implementation in Ukraine (utilization of results of the global science and opportunities offered by international science cooperation; freedom for dissemination of science and S&T information; openness for ISTC; global integration of Ukrainian science with the priority assigned to national security issues) are outlined in the Law of Ukraine “On Science and Science & Technology Activities) (1999) [4]. From a formal perspective, ISTC cooperation between Ukraine and the EU was launched in 2002 by signing the 5-year Agreement on S&T cooperation, enforced in 2003. The Agreement on the renewal of the above mentioned Agreement was signed in 2010 and ratified in 2001.

Yet, in spite of the declared priority of ISTC for Ukraine, especially with EU member states, the official statistics’ office in Ukraine does not practice collection of data on EU participation in SSTP and other state programs. It leads to the assumption that a reason behind this may be the minor significance of SSTP due to the following factors:

1. SSTP underfunding, entailing low salaries of participants, poor working conditions etc. Detailed statistical data, facts and expert opinions showing the scales of this problem in Ukraine are given in scientific works and media releases [5, 6, 7, 8, 9, 10, 11, 12].

2. Defects in the relevant mechanism set up in the basic Law of Ukraine “On State Targeted Programs” [7, 13]. Defects that should be mentioned in the context of our study are absence of references to practical applications of results for purposes of economic restructuring in Ukraine, ill-conceived procedure for control, absence of criteria for expert review (which tends to be substituted by the principle referred to in [14]: “The one who pushes the program and seeks for its funding is the one who gathers the team of experts for its review (everyone comes from Ukraine), with the predicted result”); absence of centralized publicly available statistical reporting on SSTP performance.

If it is really so, then the assumption may be made on the preset “autonomy” of SSTP from the other economic tools, which does not make legislators obliged to comply with regulatory documents on SSTP. All other things being equal, such model for SSTP implementation and performance is unlikely to attract potential foreign participants, especially from the EU.

3. The post-soviet mentality (which applies for Ukraine as well) related with ISTC, when the latter tends to be treated as a source for R&D financing rather than for R&D performance enhancement.

in the reason for this is the radical change in ISTC across the post-soviet area (including Ukraine) due to social and economic liberalization, which had strong implications for its scales, geography, funding sources, drivers (from top-down to bottom-up). As ISTC cooperation in Ukraine was funded mainly by foreign partners, participation in it was regarded by far and large as access to a reliable source of funding, which implied better opportunities and conditions for R&D. Participation in ISTC was, therefore, considered by Russian analysts as a strong factor of researcher’s productivity [15, 16].

Having opened-up great opportunities for global integration of S&T systems in post-socialist countries (including Ukraine), ISTC was implicitly asymmetrical [17, 18], ineffective due to the distorted purpose (aiming at preservation of research institutes rather than their restructuring) [19] and institutional limitations due to its individualization [20]. International linkages in S&T in these countries are mainly a

substitute for inadequate domestic funding rather than a sign of a well integrated and developed national S&T system. The post-soviet R&D system becomes internationalized, but it is a sign of crisis rather than dynamism [19].

As far as Ukraine is concerned, in spite of the existing Agreement between Ukraine and the EU on S&T cooperation, cooperation between Ukraine and the EU has been implemented by far through Ukraine's participation in EU programs and projects under technical aid from the EU. At the same time, cooperation between Ukraine and the EU at enterprise level has been rather occasional. Researchers' mobility features similar trends, as their constant "circulation" between Ukraine and the EU has not been established yet, and visits of European scientists to Ukraine have been sporadic (episodic), arranged mainly for conferences, symposia and other analogous events, whereas visits of Ukrainian researchers to Europe are usually related with doing R&D of global significance [21].

The above mentioned information lays grounds for the assumption that the asymmetry featured by ISTC entails a methodological format for ISTC measurement in Ukraine. Statistical data collected by the State Statistics Service of Ukraine cover the three categories: (i) R&D funding by customers from abroad; (ii) migration flows from Ukraine related with ISTC, by ISTC purpose; (iii) institutional and financial undertakings related with ISTC (number of international conferences held in Ukraine and number of received international grants);

2. ISTC in Ukraine and SSTP in Ukraine: empirical analysis

Given the abovementioned practice of the statistical measurement of ISTC in Ukraine, statistical data on foreign participants in Ukrainian SSTP can be extracted only from internal documentation of SSTP executors, which, however, are not easily available, and by use of indirect methods like expert interviews.

Taking into account that scales of foreign participation in Ukrainian SSTP may depend on regulation and that regulatory-specific information is inquired by EU partners of the project, then, by definition, a detailed analysis of internal documentation of ISTP executors should be made only after a review of open (easily

available on-line) regulatory documentation on SSTP, which are resolutions of the Cabinet of Ministers of Ukraine on SSTP approval or laws of Ukraine on SSTP; this review is made in order to find out opportunities for foreign participation. *The review involves search for and finding of paragraphs (articles, items) in regulatory documentation on SSTP, containing reference to foreign participation or even detailed description of participation procedures and mechanisms.*

The review of the available regulatory documentation on SSTP is made by addressing their on-line copies. Initially, the analyzed sample covered 22 state targeted programs, of which 15 had the status of a state targeted science & technology program and the rest had the status of state targeted program, each containing science & technology sections. Their actual performance as of today (finished, suspended, in process, abrogated etc.) doesn't matter for us. For one program ("State program for basic and applied research in use of nuclear materials, nuclear and radioactive technologies in for industrial development purposes for 2004-2010), on-line copies could not be found. Once it was excluded, the sample covered 21 programs, including 15 SSTP.

The official resolution of the Cabinet of Ministers of Ukraine on SSTP approval contains the following sections: introduction, core section (objective of the program, ways and methods of problem solution, tasks and undertakings, expected results and efficiency, amount and sources of funds), and annexes. Annexes are a "passport" of the program, which contains information about program executors, and a table with a detailed description of program tasks and undertakings. Laws of Ukraine approved for the two programs included in the sample (State targeted S&T space program of Ukraine for 2008-2012, and National program for informatization) contain analogous sections, but without passport as an annex. For illustration purposes, the passport format is given below.

Passport
**State targeted S&T program for development and manufacturing of high
R&D capacity sensor products for 2008-2012**

1. Conception of the Program approved by the Resolution of the Cabinet of

Ministers of Ukraine from October 3, 2007 No 822 (822-2007-p).

2. The Program is approved by the Resolution of the Cabinet of Ministers of Ukraine from December 5, 2007 No 1395.

3. Public 'consumer' – National Academy of Sciences.

4. Program supervisor – Yevgen F. Venger, department head, V. Ye. Lashkaryov Institute for Semiconductor Physics at the National Academy of Sciences.

5. Program executors: research institutions of National Academy of Sciences and branch academies of sciences, higher education establishments, design bureaus and industrial enterprises.

6. Duration: 2008-2012 роки.

7. Expected amount and sources of funding (Table)

Although the passport is a standard annex to the program, our check shows that a passport is attached to only 14 programs included in the sample, for which resolutions of the Cabinet of Ministers of Ukraine are approved. In the other programs approved by the resolutions of the Cabinet of Ministers of Ukraine, information about program executors is given either in the core section or not given at all. In the two programs approved by laws of Ukraine, information on executors is also given on the core section.

Information on program executors was not found for 3 programs included in the sample. For 14 programs it was found in the passport, whereas for 4 programs it was identified in the core section.

However, in neither of the programs a reference to foreign participation is found in the item "Program executors" of the passport (passport format is illustrated above).

References to foreign participation were found in the text of regulatory documents, but not in the passport, for three programs:

- State targeted S&T program for development and manufacturing of high R&D capacity sensor products for 2008-2012 – in the core section, paragraph "Ways and methods for problem solution")

- State targeted S&T program for development of advanced technologies for national medicaments, for human health purposes and meeting the needs of

veterinary medicine for 2011-2015 – in the core section, paragraph “Amount and sources of funds”;

-National program for informatization. It is the only program whose documentation (the Law of Ukraine) contains clear description of rules (procedures and mechanisms) for foreign participation. This program is treated by us as non-typical case and described in detail separately from the others.

For illustrative purposes, results of our check, with indicating the location of information on program executors (passport or elsewhere in the text), except for National program for informatization, the non-typical case, are shown in Table 1.

Table 1: Executors of state programs in Ukraine

	Program name	Program executors
State targeted science & technology programs		
1.	State targeted science & technology program “Development and utilization of microelectronic technologies, launch of mass-scale manufacturing of devices and their systems for 2008-2011”	Research institutions and enterprises (according to passport)
2.	State targeted S&T program for development and manufacturing of high R&D capacity sensor products for 2008-2012	Research institutions of the National Academy of Sciences And branch academies of sciences, higher education establishments, design bureaus and industrial enterprises (according to passport) Research institutions of the National Academy of Sciences And branch academies of sciences, higher education establishments, design bureaus and industrial enterprises that have the required material and technical resources, with engaging specialists from national and <i>foreign research institutions and enterprises</i> (in the core section, paragraph “Ways and methods for program solution”)
3.	State targeted S&T program “Development and manufacturing of energy saving light emitting diodes and lighting systems”	Research institutions of the National Academy of Sciences And branch academies of sciences, higher education establishments, design bureaus and industrial enterprises (according to passport)
4.	State targeted S&T space program of	No passport and no reference to program

	Ukraine for 2008-2012	executors in the core section
5.	State targeted S&T program “Image computer” for 2010	Research institutions of the National Academy of Sciences, higher education establishments, design bureaus and industrial enterprises (according to passport)
6.	State targeted S&T program for Antarctic research for 2011–2020	National Center for Antarctic Research, State Agency on Science, Innovation and Informatization; institutions, enterprises and organizations of the National Academy of Sciences, National Academy of Medical Sciences, <i>Minmolod’sport*</i> [Ministry for Education, Science, Youth and Sports], Ministry for Ecology and Natural Resources (according to passport)
7.	State targeted S&T program for introduction and utilization of grid-technologies for 2009–2013	Institutions of the National Academy of Sciences, higher education establishments, <i>Minmolod’sport*</i> [Ministry for Education, Science, Youth and Sports], clinical hospitals of the Ministry for Health Protection (according to passport)
8.	State targeted S&T program “Nanotechnologies and nanomaterials” for 2010–2014	Enterprises, institutions and organizations of the national academies, <i>Minmolod’sport*</i> [Ministry for Education, Science, Youth and Sports], Agency for Public Property, <i>Derchinvestpoekt*</i> [State Agency for Investment and Management of National Projects] and its regional centers for innovation development (according to passport)
9.	State targeted S&T program for development of advanced technologies for national medicaments, for human health purposes and meeting the needs of veterinary medicine for 2011-2015	Institutions subordinated to the National Academy of Sciences, National Academy of Agrarian Sciences and National Academy of Medical Sciences, other public institutions and organizations, private legal entities that have required material and technical resources (according to passport) Reference to <i>foreign researchers and specialists</i> (in the core section, paragraph “Amount and sources of funding”)
10.	State targeted S&T program “Creation of chemical and metallurgical industry for manufacturing of pure silicon for 2009-2012”	National Academy of Sciences, Ministry for Industrial Policy, Ministry for Education and Science (according to passport)

11.	State targeted S&T program “ <i>RESOURCE</i> ” for 2005-2007	NAS [National Academy of Sciences, MES [Ministry for Education and Science], <i>Derzhbud</i> * [State Inspection on Architecture and Construction], <i>Derzhnahlyaokhoronpratsi</i> * [State Committee of Ukraine on Supervision of Labor Protection] <i>Derchspozhyvstandart</i> * [State Committee of Ukraine on Technical Regulation and Consumer Policy], Ministry for Justice, Ministry for Economy (passport is none, according to information in the core section)
12.	State targeted S&T program for development and introduction of technologies for production of soybean products for 2005-2007	No passport and no reference to program executors in the core section
13.	State targeted S&T program for development of topographical and geodesic activities and national mapping for 2003-2010	No passport and no reference to program executors in the core section
14.	State targeted S&T program for medical devices manufacturing for 2009–2013	<i>MHP</i> * [Ministry for Health Protection] (according to passport)
15.	State targeted S&T program for development of optic and electronic technologies for 2005-2007	Institutes of the NAS* [National Academy of Sciences] of Ukraine (passport is none, according to information in the core section)
Other programs		
	Program name	Program executors
1.	State targeted S&T and scial programs “Science in universities” for 2008–2012 роки	Public higher education establishments of III - IV level of accreditation, research institutions (according to passport)
2.	State targeted program for development of system for information and analytical support to implementation of the state innovation policy and monitoring of the innovation-driven economic development	Ministry for Economic Development, Ministry for Education, Science, Youth and Sports, <i>Derzhinvestproekt</i> * [State Agency on Investment and Management of National Projects], <i>Dezhstat</i> * [State Statistics Service], <i>Natsderzhsluzhba</i> * [National Agency of Ukraine on Public Service], National Academy of Sciences and branch academies of sciences (according to passport)
3.	State program for development of standards for 2009-2010	National research institutes, other research institutes, organizations selected on competitive basis (passport is none, according to information in the core section)
4.	State program for S&T development forecasting for 2008-2012	Research institutions and higher education establishments (according to passport)
5.	National program for informatization	Non-typical case

6.	State targeted economic program “Creation of innovation structure in Ukraine” for 2009–2013	Ministries, other central bodies of executive power, Council of Ministers of the Autonomous Republic of Crimea; regional public administrations, city administrations of Kiev and Sevastopol, National Academy of Sciences (according to passport)
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Source: compiled from on-line copies of regulatory documentation of the programs

*abbreviation used in the original text

As can be seen from Table 1, except for the National program for informatization (non-typical case), information about foreign participation can be found in regulatory documents of only two programs, “State targeted S&T program for development and manufacturing of high R&D capacity sensor products for 2008-2012”, and “State targeted S&T program for development of advanced technologies for domestic medical substances, for human health purposes and meeting the needs of veterinary medicine for 2011-2015”. In addition, the latter program envisages a procedure (condition) for foreign participation, which is investment from other-than-budgetary sources (see the core section, paragraph “Amount and sources of funds”). But a logical question appears: why foreign participants are mentioned in the core sections of these programs, but not mentioned in their passports? Which information about foreign participation should be regarded ultimate, the one given in the core section or the one in the passport?

Also, data in Table 1 allows us to break down the executors into two formal categories: (i) national executors identified as administrative departments of Ukraine and their subordinated organizations; (ii) various kinds of unidentified (either by location or by administrative subordination) “research organizations and enterprises”, “higher education establishments”, “design bureaus”, “industrial enterprises” etc. In the context of our study this raises another question related with the second category of executors, concerning their location: if they are organizations located on the Ukrainian territory or organizations located elsewhere? So, ambiguous interpretation of information from regulatory documents occurs, although it may be assumed that their authors did not consider the necessity of clear references to executors’ location

relative to the country of customer's location (resident and non-resident executors or participants), because the executors (or participants) were supposedly Ukrainian residents.

Special items fixing a clear procedure for foreign participation can only be found in the Law on National program for informatization (which is the non-typical case). According to Article 27 of the Law, entitled "International cooperation in implementing the National program for informatization", "... *legal entities and physical persons from abroad*, and foreign investment may be engaged for doing selected tasks (projects) of the National program for informatization". According to Article 16 entitled "Conditions for selection of non-residents as executors of selected tasks (projects) of the National program for informatization", "Given the results of competition of selected tasks (projects) of the National program for informatization, the Cabinet of Ministers of Ukraine, after proposition from the General public customer, may take the decision to commission selected tasks or projects to *non-residents* once the following conditions are met: engagement of national enterprises to the fulfillment of tasks (works) with an amount of funding not less than 20 percent of the total value of the contract; establishment of residents in Ukraine for the fulfillment of a selected task (project) of the National program for informatization with the total amount of statutory capital not less than 5 percent of the total value of the contract".

The analysis of regulatory documents for the sample of state programs of Ukraine (SSTP and others) cannot lay a solid ground to consider them as a significant factor for ISTC of Ukraine because potential executors, when addressing regulatory documents for a major part of the programs, will fail to find relevant information.

In addition to this, regulatory documents were checked in order to find pieces of broader information specific to ISTC, where foreign participation might be fixed indirectly. Because we regard ISTC as a tool to enhance performance of Ukrainian programs (if it is not a program devoted to ISTC where the word combination "international science & technology cooperation" is found in the program's title), it

was interesting for us to look at interpretations of ISTC roles or functions by authors of regulatory documents.

Some general information about ISTC could be summarized on the basis of different legal acts:

- in paragraph “Objective and main tasks” of the Resolution of the Cabinet of Ministers of Ukraine (referred to hereafter as Resolution) on approval of “State targeted S&T program “*RESOURCE*” for 2005-2007” and Resolution on “State targeted S&T program for development of topographical and geodesic activities and national mapping for 2003-2010” (paragraph “International cooperation in the field of topographical and geodesic activities”)

- in paragraph “Ways and methods for program solution” of Resolution on “State targeted program for development of a system for information and analytical support to implementation of the state innovation policy and monitoring of the innovation-driven economic development” (promotion of ISTC in formulating and implementing innovation policy of the state”); in Resolution on “State program for S&T development forecasting for 2008-2012” (“organization of international cooperation in the field of science & technology forecasting”).

- in the Law of Ukraine “State targeted S&T space program of Ukraine for 2008-2012”, where implementation of most important and prestigious international research projects and initiatives (which is the meaning of ISTC) is referred to as a way for problem solution, whereas promotion of international cooperation is referred to as a task and an initiative.

- in the Law of Ukraine “On State targeted S&T program for Antarctic research for 2011–2020”, “promotion of cooperation with international organizations of the Antarctic Treaty” is referred to as a way for problem solution.

So, some of the authors treat ISTC as a program task, and others consider it as a way of program implementation (problem solutions), with which we can basically agree.

A clear and strong link between ISTC, the program performance and foreign participation can only be found in the abovementioned Article 27 of the Law of

Ukraine on National program for informatization: “International cooperation in informatization field is focused on enhancing economic efficiency and science & technology performance of the National program for informatization. For this purpose, *legal entities* and *physical persons from abroad*, foreign investment etc. can be engaged in selected tasks (projects) of the National program for informatization”.

To conclude the study, retrospective expert data obtained from the interviews with SSTP managers (supervisors), held by G.M.Dobrov STEPS Center of the NAS of Ukraine in 2009, was analyzed and compared with official statistics on SSTP financing.

The interviews covered 19 respondents who were leading scientists appointed as SSTP managers (as the total number of SSTP being under way in that period was 29, the sample coverage was 66%). They were mostly directors or deputy-directors of research institutions, heads of research units in universities. Of them, 13 were academicians of the National Academy of Sciences (NAS) of Ukraine, one was an academician of the Ukrainian Academy of Agrarian Sciences, two were correspondent-members of the NAS of Ukraine and one was a correspondent-member of the Academy of Pedagogical Sciences of Ukraine. All of them had the scientific title of professor.

The interview dealt with various aspects of SSTP inefficiency in Ukraine, which went far beyond underfunding, as, according to the respondents, the main reason behind SSPT underfunding was the immense gap between SSTP-related procedures in Ukraine and the commonly adopted programming methodology. Expert opinions lead to the conclusion that Ukraine needs a radical reform of its SSTP system.

As far as underfunding is concerned, only five of 19 respondents said that they had done selected small-scale project works (on SSTP line) for money allocated on SSTP line (they had covered expenses for doing small-scale projects on SSTP line works by monetary transfers on SSTP line), without the need to invest additional funds from internal or other external sources.

Several citations from responses are given below, to illustrate SSTP underfunding and its implications.

I.K. Pokhodnya, academician of the NAS of Ukraine: *“Neither formulation nor implementation of SSTP was properly organized. The reason is not only in that the money was ridiculous (the allocated amounts used to be far less than asked by executors). More essentially, it was never guaranteed, as much more often it was transferred to us at the end of the year, and applications for equipment purchase tended to be ignored. Break down of the money between priority fields is made randomly without consideration for their specifics, so that nobody would be offended... So, SSTP were treated as nothing but a small financial support to institutes in hard times”*.

I.M.Karp, academician of the NAS of Ukraine: *“... Funding was so small that there could not be a notable effect... In this situation the program efficiency appears to be miserable. Staff at the institutes does not even want to waste time for preparation of project applications and for writing reports...”*

V.S. Pidhorsky, academician of the NAS of Ukraine: *“The funding is ridiculous. SSTP objectives need to be properly understood. What do we really want: to have a new development or only to support researchers financially?”*

V.S.Koshechko, academician of the NAS of Ukraine: *“SSTP funding needs essential increase, as project funding in the amount of 30,000 to 40,000 GRN [about 4,000 to 5,000 USD] per year (as in the past years) is, in fact, insufficient for doing a significant project”*.

Direct information about EU researchers' participation in special projects was absent, meanwhile random information can be found.

According to the interviews with representatives of programme owners, funding agencies, and participating researchers about participation of foreign researchers in 4 State Scientific and S&T Programmes (defined from Policy Brief 4), we can be sure only about some examples of cooperation with researchers from EU states, not about statistical data.

Table 2

The state targeted S&T programme for design and development of the sensor

science intensive production (2008 - 2012), programme owner – NASU			
	Project	Ukrainian partner	EU partner
1	High precision semiconductor microsensors for temperature measuring in extreme conditions	V.E. Lashkaryov Institute for Semiconductor Physics	1. Grenoble Center for Nuclear Studies, 2. Abdus Salam International Centre for Theoretical Physics (Italy, Trieste), 3. Institute of Physics (AS, Czech Republic)
2	Technology for growth of new-type optical germanium crystals	V.E. Lashkaryov Institute for Semiconductor Physics	End-users: companies from Germany and Switzerland
3	5-th International Scientific and Technical Conference "Sensor Electronics and Microsystem Technologies" ("SEMST-5"), Ukraine, Odessa, June 4 - 8, 2012	Odessa I. I. Mechnikov National University, V.E. Lashkaryov Institute for Semiconductor Physics	EU scientists as members of Programme and Organizing Committees http://www.semst.onu.edu.ua/semst-5/en/index.html
State targeted S&T space programme of Ukraine (2008 -2012), programme owner – SSA			

1	Variant (using satellite “Sych-2”)	Institute for Space research, NASU	1.Laboratoire de Physique et Chimie de l’Environnement (LPCE/CNRS) , France 2.Sheffield University (UK)
2	Ionosat Micro	Institute for Space research, NASU	Center of Space Research (PAS, Poland)
State targeted S&T programme for carrying out investigations at Antarctica for 2011 – 2020, programme owner – SASII			
1	Ecological and genetic mechanisms of plants adaptation to extreme environments	Institute for Molecular Biology and Genetics	Institute of nature protection (PAS) and Catholic University, Lublin
Governmental targeted S&T program for development of novel technologies for creation of domestic drugs for healthcare and veterinary medicine needs (2011-2015), programme owner – SASII			
The mentioned programme foresees involving the high-qualified national specialists experienced in design of novel drugs abroad, but as the first call of this programme has been announced recently the actual information is absent till now			

Conclusions

As a result of low performance of SSTP due to chronic underfunding and other reasons, the issue concerning foreign participation in Ukrainian SSTP may seem commonplace: when there’s no money (as well as peer expert review and other integral components of mission-oriented management), there’s no participation.

However, checking of regulatory documents for the sample of SSTP and other state programs to find out if foreign participation is feasible leads to the assumption that foreign participation in SSTP is not envisaged, and that SSTP underfunding is not the only reason behind the absence (or a minor share) of foreign participants in SSTP. A good ground for this assumption is the reference to subordination of potential executors to Ukrainian administrative departments and absence of references to country location (resident and non-resident executors) for the executors whose administrative subordination in Ukraine is not referred to.

Another reason for the above-mentioned assumption is the low quality of information about program executors (although a standard format does exist, it is not always kept to; and abbreviations are used that are known mostly by “insiders”), because when the authors of program documents sought to extend the range of program executors beyond the Ukrainian borders, they would care more about information quality.

Basically, our check confirms the well-known conclusion that SSTP in Ukraine, which were conceived as an instrument to enhance administrative management in S&T (which can be done by engaging foreign executors as well), turned into an “effective” tool for re-distributing budgetary funds allocated on SSTP line inside the government sector. To put it another way, SSTP in Ukraine have turned into a tool for filling up the funds of organizations in the government sector. This conclusion is based on a check of regulatory documents of SSTP included in the sample, which shows that SSTP executors are mainly organizations subordinated to various administrative departments of Ukraine (note that Academies of Sciences in Ukraine are administrative departments, too). To put it another way, the main institutional executor of SSTP in Ukraine is the government segment of the national science & technology sector, but not the business one. It means that the business segment of this sector, which still remains a weak and unprotected actor in the Ukrainian economy, cannot rely on budgetary support through a mechanism such as SSTP. The existing situation also raises doubts about the feasibility and applicability of an innovation-driven model in Ukraine.

Yet, being the earliest phase of the study, our check of regulatory documents on SSTP in Ukraine does not mean that foreign participation in selected projects on SSTP line is non-existing. Therefore, the next phase will involve in-depth analysis of the problem by way of expert interview and, when possible, by addressing internal reports of SSTP performers in Ukraine.

References

1. Resolution of the Verkhovna Rada of Ukraine “On Nomenclature of National Science & Technology Programs” from February 25, 1994, No 4034 // Compendium of legislative and regulatory acts of Ukraine in science and science & technology field. – Kiev: Ukr.ISTEL,1997. (Published in Ukrainian)
2. Law of Ukraine “On Priority Fields of Science & Technology Development” // Records of the Verkhovna Rada, 2001, No 48. (Published in Ukrainian)
3. Resolution of the Cabinet of Ministers of Ukraine Ministers “On Numerical Reduction and Merging of State Targeted Programs” from June 22, 2011 No 704. – Access: <http://zakon4.rada.gov.ua/laws/show/704-2011-%D0%BF> (Published in Ukrainian)
4. Law of Ukraine On Science and Science & Technology Activities” from December 1, 1998, No 285 – XIV // Records of the Verkhovna Rada, 1999, No 23. (Published in Ukrainian)
5. Popovich O.S. Position of Priorities in Implementing the State Science & Technology Policy in Ukraine // Science and Science of Science, No 2, 2001, pp.65-73. (Published in Ukrainian)
6. Malitsky B.A., Popovich O.S., Soloviyov V.P., Egorov I.Yu., Bulkin I.O., Shokun T.V. Rational Financing of Science and a Factor for Building up Knowledge-Based Society in Ukraine // Kiev: Phoenix, 2004, 32 p. (Published in Ukrainian)
7. Popovich O.S. Science & Technology and Innovation Policies: Essential Mechanisms for Building up and Implementation // Kiev: Phoenix, 2005, 226 p. (Published in Ukrainian)
8. Science & Technology State Programs are funded 15 percent / Khimprom (on-line resource). – Access:: <http://himprom.ua/nauchno-tehnicheskie-gosprogrammy-finansiruyutsya-na-15-new208> (Published in Russian)

9. Popovich O.S., Velenteychik T.M. State Targeted Programs: Performance Enhancement Issues // Science and Science of Science. – No 2, 2009. – pp.38-47.

10. Conception for Reforming the System for Financing and Management in Science and Science & Technology Activities / Government web-portal (on-line resource). – Access:

http://www.kmu.gov.ua/control/ru/publish/article?art_id=245708884&cat_id=244313416 (Published in Russian)

11. Perevertaylo V.L. Problems and Tasks in Developing Microelectronic Technologies in Ukraine // Science & Production Enterprise (on-line resource). – Access http://www.detector.org.ua/article/PROBLEMY_ME1.html (Published in Russian)

12. Ryabchun Yuliya. Cabmin [Cabinet of Ministers] builds ethereal plans // Kommersant-Ukraina, No155, October 4, 2012 (on-line resource). – Access: kabmin_stroit_zaoblachnye_plany.htm (Published in Russian)

13. Boronos V.N., Sklyar I.D., Kostel N.V. Mission-Oriented Methods for Management of Science & Technology Progress // Mechanism of economy regulation. – No 4, 2005. – pp.115-121. (Published in Russian)

14. Sibirny Andrey. What science is needed for us // “Zerkalo Nedeli. Ukraina”, No 32, September 14, 2012. – Access: http://zn.ua/SCIENCE/kakaya_nam_nuzhna_nauka-108747.html (Published in Russian)

15. Mirskaya Yelena. Russian Academic Scientists in the Mirror of Sociology of Science. – Otechestvennyye Zapiski (National Transactions). – No 7, 2002. – pp.350-358. (Published in Russian)

16. Belanovsky Sergey. Evaluating the Performance of the RAS [Russian Academy of Sciences]. – On-line resource. – Access <http://www/polit/ru/dossier/2005/12/15/ran/html> (Published in Russian)

17. Mirskaya E. (1997) International Scientific Collaboration in the Post-Communist Countries: Modern Trends and Priorities // Science and Public Policy 24, no.5. – p. 301-308.

18. Meske W. A Provisional Appraisal: The Transformation of S&T During the 1990s and the Challenges of the 21st Century // Meske (ed). From System

Transformation to European Integration. Science and Technology in Central and Eastern Europe at the Beginning of the 21st century. – LIT VERLAG Munster, 2004. – p. 419-442

19. Radosevic S. What Future for S&T in the CEE sib the 21st Century // Meske (ed). From System Transformation to European Integration. Science and Technology in Central and Eastern Europe at the Beginning of the 21st century. – LIT VERLAG Munster, 2004. – P.443-478.

20. Mayntz R., Schimank U., and Weingart P. East European Academies in Transition. Dordrecht: Kluwer Academic Publishers. – 1998.

21. Bilozubenko V.S. Innovation System of the European Union: Peculiarities of Rise and Development. – Donetsk: DonNUET, 2012. – 456 p. (Published in Ukrainian)

Annex 1

Table: Main legal acts of Ukraine on formulation and implementation of science & technology programs

Year of enforcement	Legal acts
1991	Law of Ukraine “On Principles of the State Policy in Science and Science & Technology Fields” from 13.12.1991, No 1977-XII
1992	Resolution of the Verkhovna Rada (Parliament) of Ukraine “On Priority Fields in Science & Technology” from 16.10.1992, No 2705-XII
1994	Resolution of the Verkhovna Rada (Parliament) of Ukraine “On Nomenclature of National Science & Technology Programs” from 25.02.1994, No 4034-XII
1998	Law of Ukraine “On Amendments in the Law of Ukraine ‘On Scientific and Science & Technology Activities’” from 01.12.1998, No 284-XIV
2001	Law of Ukraine “On Priority Fields of Science & Technology

	Development” from 11.07.2001, No 2623-III
2004	Law of Ukraine “On State Targeted Programs” from 18.03.2004, No1621-IV
2006	Law of Ukraine “On Amendments in Certain Legal Acts of Ukraine, Due to the Enforcement of the Law of Ukraine ‘On State Targeted Programs’” from 09.02.2006, No 3421-IV
2010	Law of Ukraine “On Amendments in the Law of Ukraine ‘On Priority Fields of Science & Technology Development’” from 09.09.2010, No 2519-VI
2011	Resolution of the Cabinet of Ministers of Ukraine “On Cutback and Merging of State Targeted Programs” from 2.06.2011, No 704
2011	Resolution of the Cabinet of Ministers of Ukraine “On Approval of the Nomenclature of Priority Thematic Fields of Scientific Research and Technological Developments till 2015” from 07.09.2013, No 942