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R95 **Russian Economy in 2011. Trends and Outlooks.**
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The review provides a detailed analysis of main trends in Russia's economy in 2011. The paper contains 6 big sections that highlight single aspects of Russia's economic development: the socio-political context; the monetary and credit spheres; financial sphere; the real sector; social sphere; institutional challenges. The paper employs a huge mass of statistical data that forms the basis of original computation and numerous charts.

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State of Science and Innovation in 2011

The scientific sphere saw continuation of the measures initiated between 2009 and 2010. The Russian research complex displayed certain positive shifts, though they fell short of being of magnitude sufficient to be mirrored by statistics. There also were alarm bells: specifically, against the backdrop of increasing budget appropriations for civil science Russian researchers' publication activity continued to decline.

The Government implemented its innovation policy with much vigor: the i-city Skolkovo project advanced at a very high pace, new institutions of development emerged, and the project on formation of technological platforms was launched.

The R&D Funding

The budget financing of civil R&D in 2011 in current prices posted a robust 20.9%¹ increase and hit Rb 287bn. The figure accounted for 3.07% of the federal budget spending (in 2010 – 2.35%). Meanwhile, it is worth noting a parallel increase in extrabudgetary funding of science. That said, the budgetary to extrabudgetary R&D funding ratio remained at the 2009 level (65:35). So, budget sources still dominated the structure of R&D financing.

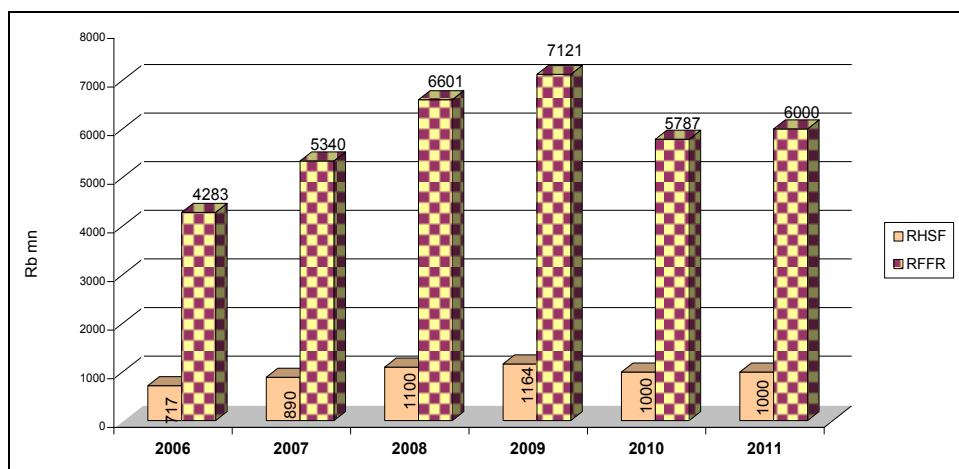
The policy with regard to allocation of budget funds was changing towards increase in the proportion of competition-based financing under public contracts, which posted a 37.3% increase. This is a positive development indeed, as competition suggests picking the best projects. Meanwhile, according to leading university presidents and research organizations executives, the basic financing, like before, proved short of covering the institutions' maintenance and research process costs. Accordingly, the stochasticity in the financing of science did not reduce, as the constant (outside the competition area) budget financing was insufficient to ensure implementation of long-term research projects.

Another serious tendency became the shrinking role played by competition-based grant financing through the system of scientific foundations as a specific conduit. Despite all the official documents trumpeting the pivotal role of the Russian Foundation for Fundamental Research (RFFR) and the Russian Humanitarian Scientific Foundation (RHSF), their actual standing remained very complex. In 2011, their budgets were small, particularly in contrast with the amount of public funding of R&D under public agencies' lots in the framework of federal target programs (FTPs).

The Foundations' budgets were first axed back in 2010. (*Fig. 15*). Average amounts of their grants have not increased ever since and accounted for Rb 370,000 per a team of up to 10 per-

¹ Data for 2011 are given in accordance with Federal Law of 13 December 2010 No. 357-FZ "On the federal budget for 2011 and the planned period 2012 and 2013"

sons at RFFR and 400,000 – at RHSF¹. What is more, actual funds spent on research account for between 60 and 40% of the grant total, with the rest being various taxes and overheads.



Sources: http://www.ras.ru/news/news_release.aspx?ID=e251689c-6b6d-48b1-a819-ab2bbbae9531. The art of combining. An interview with Acad. V. Panchenko, Chairman of RHSF// Poisk, No. 17, 29 April 2011, p. 6. Report on the RHSF performance. The meeting of the Presidium of the Russian Academy of Sciences of 31 May 2011. http://www.ras.ru/news/news_release.aspx?ID=e251689c-6b6d-48b1-a819-ab2bbbae9531

Fig. 15. Dynamics of Budgets of the Public Foundations, RHSF, RFFR, in 2006–2011

Miserable budgets are not the only challenge facing grant-awarding research foundations. Their organizational-legal status still remained murky, which is why every year, when the annual federal budget is formed, they find themselves under the Damocles' sword of being crossed out of the list of main managers of budget funds. Federal Law No. 249-FZ², which became effective as of 1 October 2011 and which specifies the status of foundations for support of research, scientific and technical, and innovation activities, fell short of solving the problem. The Law in question introduces the concepts of public and non-government funds and specifies that the former may be established in the form of budget or autonomous institutions, while financing of research projects is exercised at the expense of grants. However, the Law fails to clarify peculiarities of funding of RFFR and RHSF. More specifically, there is no single reference therein to the Foundations being entitled to the status of main managers of budget funds or, as an alternative, being recognized as critical budget institutions.

That said, regardless of all the drawbacks of their current mechanism of allocation of funds, foundations can be viewed as a more progressive and transparent vehicle to support science than the competition-based financing procedure in the frame of FTPs. When compared with tenders held by federal agencies, the undisputable pluses of the grant-based form of funding lie in the refusal to apply the criteria used in the course of public procurement to evaluation of scientific projects, as well as in the broadness with which such grants encompass individual re-

¹ Report on the RHSF performance. The meeting of the Presidium of the Russian Academy of Sciences of 31 May 2011. http://www.ras.ru/news/news_release.aspx?ID=e251689c-6b6d-48b1-a819-ab2bbbae9531. The art of combining. An interview with Acad. V. Panchenko, Chairman of RHSF// Poisk, No. 17, 29 April 2011, p. 6.

² Federal Law of July 2011 No. 249-FZ «On introducing amendments to the Federal Law “On science and the scientific-technical policy” and Art. 251 Part Two of the Tax Code of Russian Federation with respect to specifying the legal status of foundations for support of research, scientific-technical and innovation activity”.

searchers and research teams, which proves far greater than the one displayed by FTPs' projects. Besides, the Foundations strive to bolster transparency of their operations: more specifically, today, applicants for RFFR grants have access to reviews and comments to their applications¹, which is equally important both for researchers in the course of implementation of their projects and for increasing experts' responsibility for their conclusions.

The Foundations were de-facto required to "prove the operational efficiency", nonetheless, and by analogue to FTPs, to set up target indicators, in particular. The indicators the Foundations currently put forward may result in a biased, rather than more objective, assessment of their performance. Thus, it is planned to increase the proportion of applied projects, which is most likely to result in a greater support of such projects to the detriment of purely fundamental ones. As well, the share of projects whose results match or exceed the international level (with no clear ways of identification of the latter) is set for increase. Likewise, the share of PhDs and Drs in the age of up to 39 years among contributors to projects should grow.² It is common knowledge that when such an indicator becomes an imperative, it is not a big deal to give a statistical boost to the number of young researchers. Meanwhile, there is no explanation as to why the indicator of publication activity and citation, which proves the most adequate one, as far as assessment of outcomes and level of research under the Foundation's grants, was not included in the list of major indicators.

In addition, under the pressure from inspecting instances the Foundation were compelled to modify or even terminate some important and useful for researchers programs. More specifically, RFFR will no longer award grants to partake in scientific conferences, as the Accounting Chamber auditors considered that a "scientific tourism". That said, many research organizations lack funds to send their fellows to conferences, especially overseas. That gave rise to a déjà vu situation, when, like in 1990s, Russian scientists find themselves reliant on the hosts, who, unlike the then crisis time in Russian science, are now often reluctant to incur the costs in question.

The mechanism of financing through FTPs to a significant extent suffers from the need to abide by provisions of the law on state procurement³, which, as far as the R&D sphere is concerned, does not always result in picking the strongest application, as it is the costs of implementation of works (until 2010 – costs of implementation of works and their timelines) that constitutes a principal criterion. That said, last year, the foundation was laid for positive changes.

New Federal Laws⁴ enacted in April and in December introduced two important adjustments set to facilitate contract- and grant-based implementation of R&D projects: The first of them makes it possible to place orders without a tender, where an R&D project is implemented by a budget institution at the expense of grants (competition-based subsidies) awarded out of a

¹ Mysyakov D. Familiar signs // Poisk, No. 3, 20.01.2012, p. 5.

² Up-and-down traffic. Research foundations in search of common language with the authorities. // Poisk, No. 49, 9.12.2001, p. 4.

³ Federal Law of 21.07.2005 No. 94-FZ "On placement of orders for delivery of goods, implementation of works, provision of services for the public and municipal needs".

⁴ Federal law of 21.04.2011 No. 79-FZ "On introducing amendments to the Federal Law "On placement of orders for delivery of goods, implementation of works, provision of services for the public and municipal needs"; Federal Law of 07.12.2011 No. 418-FZ "On introducing amendments to Art. 31¹ (Art. 31 item 1) and 55 of the Federal Law "On placement of orders for delivery of goods, implementation of works, provision of services for the public and municipal needs".

respective budget of the budget system of Russian Federation as well as grants awarded by foreign foundations, unless otherwise established by grantors. The other novelty is that budget institutions are now allowed to attract, outside of the tender procedure¹, in the course of implementation of a public or municipal contract, or a contract under the civil law of Russian Federation, other entities to jointly implement an R&D project, as well as to deliver goods, provide services required for its implementation.

Yet another problem associated with the FTP-based mechanism of financing is the opaque project evaluation procedure. The project awarding statistics evidence monopolization of the “market for public contracts” by a closed circle of research institutes and universities. On the one hand, they indeed might be most qualified for the job, while, on the other hand, the concentration of funding by year in the same structures, with the evaluation procedure being opaque and with no publicity with regard to presentation of respective outcomes whatsoever can result in an increasingly lowering quality of implementation of projects. The RF Ministry of Education and Science planned to post such projects findings and outputs on the Internet, but that has not taken place as yet - both the customers and contractors do not seem to be keen on that.

Lastly, implementation of projects under FTPs’ lots is a time-consuming exercise, with the respective paperwork taking far greater time than overseas. And if this is not enough, the paper squall is intensifying and gradually results in poorer performance. Thus, one of the increasingly frequently cited reasons behind young Russian researchers’ emigration is bureaucratization of the scientific process, rather than low salaries or a primitive research infrastructure, as before².

The imperfection of financing mechanisms clearly leads to poorer performance. Despite a continuous increase of budget allocations for R&D, the number of Russian papers published in journals referenced and indexed in the Web of Science database is in decline and has presently sunk lower than the other BRIC nations’ respective indicators. (*Table 14*).

Table 14

Dynamic of the Number of Papers for the BRIC Countries, 2007–2011, as Thos. Pcs

Country	2007	2008	2009	2010	2011 (estimated)
Russia	27.4	29.4	29.8	28.9	27.0
Brazil	27.8	32.2	34.4	35.8	37.0
India	36.3	42.3	43.5	46.2	48.0
China	100.0	114.7	132.2	146.2	160.0

Source: The Web of Science data. Published in: E.Onischenko. The fall in the number of Russian publications should account for some 10%. www.gazeta.ru/science/2011/11/17_a_3837722.shtml 17.11.2011.

Regretfully, the planned volumes and priorities of the budget financing of science for next three years cannot be assessed in a positive way. According to budget projections, the 2013 allocations to civil research will rise by 1.3% vs. 2012 and then fairly drastically plunge in 2014 (nearly by 15% to the prior year’s level). That will be a serious cut with no sound rationale behind it. One of substantial changes is that the correlation between allocations for civil research and military one will be changing in favor of the latter. While in 2012 the planned expenditures on defense research are projected to be twice as low as those on civil one, the “civil research to defense research” ratio will have already been 1.2:1 by 2014. So the structure of the budget would become similar to the one characteristic of the first post-Soviet years. Notably, with the

¹ Sub-items 32 and 33 item 2 Art. 55 of Federal Law No. 94-FZ, as reworded on 07.12.2011 No. 418-FZ.

² Volchkova N. One day application, another day report // Poisk, No. 5, 3.02.2012, p. 7.

planned increase in spending on military research, it is planned to trim allocations for science in the frame of the state defense order which currently helps keep afloat research at a fairly wide array of technical universities.

The good news is that spending on fundamental research will be increased; however, both RFFR and RHSF will still remain underfinanced against the respective legislative standards. The research foundations are supposed to receive thrice as low the funding they would otherwise be entitled to.

As for applied research, the Government seems to be far more generous in this respect. The greatest volume of funding is provided for civil research under the item ‘National economy’: in 2012-13, this direction of research should receive more funding than the defense one; by 2014, the levels of spending on research under these two directions should be practically even. Such substantial expenditures on the item ‘National economy’ should be ascribed to the fact that it comprises the most science-intensive programs, namely the 2006–2015 Federal Space Program (funding of R&D in 2012–2014 – Rb 66bn, 74.6bn and 71.8bn, respectively) and FTP ‘Development of the civil aircraft in Russia for 2002–2010 and for the period through 2015’ (Rb 34bn, 37.7bn and 23.3bn, respectively). For reference: allocations for research in the frame of the basic FTP aiming at implementation of priority avenues of development of science and research – ‘Research and development in priority directions of development of the scientific-technological complex of Russia for 2007–2012’ – will account for Rb 18.8bn in 2012 and 21.9bn in 2013. This also is in contrast to the funding of science by the item ‘Applied research in the health care area’ – Rb 8bn in 2012–2013 and 10bn - in 2014. That spending on research in this area is planned to increase is a positive trend, but its level is too low. All that evidences that long-standing tendencies have not changed, with priority still given to the airspace sector.

So, the civil science should arrive by 2014 with the old system of priorities. That said, given sizeable allocations for defense research, the national scientific complex will most likely to keep focusing on the state as its major customer.

Changes in Organization of Academic Research: Research and Federal Universities

The reform of the public scientific sector which read that all the scientific organizations were to be split into three categories with respective managerial decisions tailored for each category¹, has not started in 2011. Changes were taking place only in the university sector of science, with the system of elite universities unfolding continuously. Last year, yet another federal university was added to this category, namely the North-Caucasian one, thus making the total of 9 federal universities. The number of national research universities (NRU) remained unchanged, with development programs for some of them potentially set for some adjustment following results of their 2011 evaluation.

The evaluation of the NRU’s progress in fulfillment of their development programs² started in the spring of 2011, with the emphasis put on the 14 pioneer universities which were granted the NRU status in 2009. The ultimate objective of the evaluation was to assess the universities’

¹ For a greater detail, see: Russian economy in 2010. Trends and perspectives. Issue 32. – M.: the Gaidar Institute, 2011, p.381–382.

² A special expert Commission was established to evaluate the NRUs’ performance (Executive Order of the RF Ministry of Education and Science of 4 February 2011. No. 167 ‘‘On commission on evaluation of efficiency of implementation of programs of national research universities’’.

record of fulfillment of development programs they initially formed, to examine what objective and subjective challenges they faced, and how adequate to the goals of the evaluation in question the existing system of indicators was.

At the end of the day it was found that the NRU drafted their reports in such a manner that it was hard to judge qualitative results of their performance. That said, it became quite evident that most of them were still building on their past developments and know how. Furthermore, the expert evaluation of the federal and research universities' curricula revealed that only 14.7 and 13.7% of those, accordingly, proved to be of an adequate quality.¹ The result is a consequence of both external reasons and the internal situation at the universities. As far as serious external causes, those are peculiarities and timelines of budget allocations for development programs. For example, in 2009, the funding was allocated with a significant delay to reach recipients in the fall of the year. In 2010, there arose a new problem: while in 2009 the financing was carried out following the budget estimate, in 2010 it was allocated in the frame of the FTP "Research and scientific-pedagogical cadres of the innovation Russia" for 2009-13, under the "Other directions" item. That resulted in extra costs for the universities, as those allocations were taxable. In 2011, a positive development was that it was already in July that the NRUs received all the federal budget funding due.

As the concept of research university *per se* suggests a vigorous development of research, it was critical to assess developments therein from the perspective of the faculty's increasing contribution to research. At some NRUs, this indicator is higher than nationwide averages: e.g. at St. Petersburg State Mining University, up to 70% of faculty is engaged in research activities; the respective index at HSE is 45%, while the nationwide average is under 20. However, the objective is not just to boost the number of faculty engaged in research but also to change the volume and quality of the latter. In this respect, the number of papers indexed in Russian and foreign databases per one faculty member of the group of 14 universities has so far accounted for 0.7 (the median value for all the 29 universities was 0.58), ie. not even a single article per one faculty member. The best results in this regard were posted by MFTI and Tomsk State Polytechnic University whose faculty publish more than one article a year per one faculty member.

The other critical aspect of the NRUs' operations which distinguishes them from other universities is international cooperation in education and research, attraction of cadres (both faculty and students) from overseas. The top 14 NRUs have not performed well enough in this respect and find themselves far below the commonly recognized international standards applicable to their peers overseas. According to the NRUs' reports, they believe success lies primarily in internships with foreign universities, academic exchange programs, contribution to conferences, publication of research findings overseas, contribution to a string of projects, including, *inter alia*, the EU Framework Program, and - rarely enough - in conduct of joint research. The NRUs have no developed system of expansion of their international contacts, and only a tiny fraction of them has begun revising approaches to training in English. Prospects for bolstering the number of visiting foreign students from regions other than CIS appear fairly elusive, while just a handful of the universities can afford the luxury to attract a foreign specialist.

That said, the analysis of the NRU's performance shows there are no clear losers among them. Those universities that failed to report on a number of target indicators put forward

¹ <http://www.best-edu.ru/directory-best>.

quite logical explanations which do not evidence a given university's poor performance, which is why where the university fell short of attaining the planned value of the targeted indicator, it does not necessarily mean it failed on it. Furthermore, because of the original imperfection of the selected system of indicators, their absolutization is dangerous where a managerial decision is to be made. Plus, unification of indicators without regard to a given university's profile does not seem to be an unarguable decision. It is impossible to compare medical, technical and classical universities using one and the same metrics or one should thoroughly interpret quantitative data and be well aware of specificity of each given university's operations.

While addressing the issue of evaluation of universities' activities on implementation of development program, there arise problems as to how and by what parameters they should be gauged. The existing indicators exhibited a string of deficiencies, namely:

- they are not informative enough;
- there are many of them, but no cogent system is in place;
- integration between research and education is not assessed;
- universities employed different indicator calculation methodologies.

Plus, each NRU would set benchmarks on its own. Understandably, they proved too low, hence, easily attainable in some cases. From this perspective, one should have risen the standard primarily with regard to such indicators as the number of postgraduates from outside organizations, which reflects both the level of academic mobility as a whole and a concrete postgraduate course's attractiveness to prospective applicants from different universities, institutions and regions, the R&D volume per one faculty member, and publication activity.

The evaluation also exposed that at the stage of formation of programs, the university leadership had had no clear vision of both the Government's objectives and future moves to develop the national research universities system. Post-evaluation, the decision was made to modify methodologies of calculation of a string of NRU's performance indicators and introduce a few new ones to ensure a more comprehensive picture of the *status quo* at the universities. As well, some changes in the indicators were caused by new normative and legal documents which affect NRUs' operations. More specifically, in August 2011 NRUs were granted the right to send their faculty members and students to study overseas against the guarantee of their employment with Russian corporations, which resulted in a rise of the respective indicator.

In addition to the federal and research universities, the year of 2011 saw the rise of yet another group of "selected" ones, as 55 universities were awarded with up to Rb 100mn out of the federal budget for the term of up to 3 years (2012–2014) to fulfill their development programs. While selecting recipients, both a university's scientific and educational, as well as innovation capacity, and geopolitical importance were taken into account. That is why the support was granted to universities in the Caucasus and the south of Russia, among others.

In all, the volume of university funding was up 3.5-4-fold per one faculty member¹, but the university research fell behind that of scientific organizations, nonetheless. This is evidenced by the level of international cooperation expressed in the degree of engagement in it of staff of respective institutions. Thus, a survey on 3,450 PhDs and Drs at research institutions, universities and the corporate sector showed that 3.8% of university faculty is engaged in research at foreign organizations (for the term of up to 3 months) vs. 10.1% of staff at research institutions doing that too. As to joint publications with foreign authors, the respective rates are 10.5

¹ N. Volchkova. Two Quarters of Justice. Rectors are punished for small salaries // Poisk, No. 47, 25.11. 2011, p. 3.

vs. 22.1%, while judging such indicators as engagement in research projects and conferences overseas, universities' performance is twice as low as research institutions'¹. A low efficacy of budget investment can be partly ascribed to the fact that the funding is channeled to universities which are bound to operate in accordance with strict and not yet changed rules (such as, for instance, a high tuition load rate, which hampers academic research), while expenditure items are too rigid. Hence, an insufficient efficiency of the system as a consequence of the rigidity of the system of its support.

Scientific-Educational Centers as a Form of Integration of Education and Research

In 2011, the Government continued to fund scientific-educational centers (SECs') operations. Established under universities and research institutions, over 1,300 SECs received support from the RF Ministry of Education and Science. Most of such centers operate under universities, while some ¼ - under RAS institutions.

In 2011, SECs supported by the Ministry in 2009-2010 underwent evaluation of their performance².

According to the Ministry's documents, main objectives of allocation of the support were:

- 1) attainment of world-class scientific results across a broad spectrum of research;
- 2) shaping efficient and viable research teams wherein young scientists, postgraduates and students work hand by hand with the most effective researchers of older generations;
- 3) retention of research and scientific-educational cadres in the scientific sphere.

Indicators by which SECs report to the Ministry do not allow to judge whether the objectives of their support were attained, as the indicators in question are only quantitative ones, while the objectives were formulated in such a manner that evaluation of their attainment requires a quantitative analysis too. That is why there were objective limitations in the course of evaluation of the SEC's performance.

Attainment of world-class scientific results was evaluated chiefly by indicators of publication activity and the number of new educational programs. The respective scores proved very moderate, especially with respect to the indicator of publication activity overseas. There is a whole string of SECs without any scientific outputs. When compared with university SECs, academic ones performed far better. As for the university community, the situation varies by university, and the specific weight of SECs with no research output is greater than at the academic institutions. Interestingly, as evidenced by the specific weight of SECs which have had respective results, SECS are keen on research, rather than development of new educational programs.

Shaping efficient and viable research teams. Whether viable teams were formed is premature to assess right after financial support to SECs came to an end. However certain landmarks can be found by assessing the volume and composition of the attracted by SECs extrabudgetary financing, which can evidence the degree of their successfulness and potential of a sustained development. The analysis revealed that the SECs's extrabudgetary funds are formed

¹ Shmatko N.A. Scientific capital as a driver of researchers' social mobility // Foresight, 2011, No. 3, p 18–32.

² The author ran the evaluation on the basis of data collected and processed by the National Foundation for Cadres Training. The scoring is based on information collected across two masses of SECs: 1) the ones that became victors in the 2009 competition (a total of 502 SECs) and 2) victors of the 2010 competition (809). The author analyzed the data as of late-2010.

largely by their own ones (it is universities where the specific weight of this particular source of funding is particularly high). The second critical source of funding is “Other” funds, including:

- agreements on delivery of services under the RF civil law;
- co-investors’ funding;
- agreements on execution of works concluded between organizations;
- RFFR, RHSF’s grants;
- target grants awarded under the EU 7th framework program.

Foreign funding constitutes a fairly meager part of financial support to SECs (under 5%); however, its “weight” at academic SECs is greater than at university ones. It should also be noted that the former SECs boast a greater variety of sources of financing than university SECs, which allows suggestion that the latter are less stable than academic Centers.

So, while assessing the SECs viability and sustainability from the perspective of composition of extrabudgetary funding sources, it can be ascertained that they rely largely on their own funds, which, on the one hand, evidences their future sustainability, while highlighting a small volume of extrabudgetary (including the Centers’ own) financing, which is unlikely to increase in the future to a degree needed to ensure their substituting for the budget financing.

Retention of research and scientific-educational cadres in science and education

Attainment of this particular objective was assessed using specific weight of young staff employed specifically to complete a project under the aegis of a SEC. It turned out that the performance of the Centers supported since 2009 was in stark contrast with the one of the Centers supported since 2010. The average index of the proportion of young staffers employed for the said purpose made up 24% for SECs-2010 vs. 41% for SECs-2009.

In all, roughly a half of young researchers was hired to do the job, which proves a fairly high rate, given caps on payrolls at research institutions and universities. But it remained unclear for which term the young cadres accounted by the statistics were hired, as, according to the established procedure, the calculation is run only with regard to those who were “fixed” for the term of the project implementation, rather than given a full-time job at a research center or a university.

In addition to the evaluation of attainment by SECs of their goals, equally important is analysis of types of SECs which have currently emerged under Russian research organizations and universities, as well as examination of their strengths and which centers are missing. The research allowed identification of three basic types of SECs.

The first, most numerous, type of SECs includes those ones which demonstrate median-low performance in respect to major scientific-educational parameters. In such Centers, ex-students mostly stay on in the same organization where the Center belongs. Accordingly, no encouragement of mobility of cadres there, while research efficacy is poor, outputs and findings are not presented at conferences overseas, which is why the level of international relations is low. It can be asserted that such SECs operate in a slow mode. They ensure minimum results required for their support. This type of SECs can be tagged as centers of poorly efficient integration of research with education.

The second type boasts somewhat better results compared with the first one: such Centers are a bit more efficient with training of cadres, a greater number of their graduates find jobs at other universities, ie. diffusion of expertise and skills takes place there. That said, their scientific performance is poor too, and the emphasis is put mostly on education. Their international

“visibility” rate is fairly low. To some extent it can be argued they may become resource centers for a short-term advanced training of cadres.

The third type incorporates the SECs with the highest indexes of R&D outputs. Such Centers are based mostly at RAS organizations, federal and research universities. They demonstrate a high degree of retention of young people in the scientific area. Such Centers are successfully engaged in the international research community (judging by the number of publications in foreign journals and presentations made at international conferences), and the proportion of foreign sources in their budgets is quite substantial. It is also possible to identify sub-clusters of SECs which are eligible for the title of international centers of research. There are just a handful of such SECs – some 10% of the aggregate number of examined Centers.

It should be noted that just 6% of SECs are engaged in commodization of their research outputs, which manifests itself in the average statistical structure of funding of SECs’ operations: with 66% of the funding spent on research, another 23% is spent on education and only 10% - on commercialization, despite the fact that commercialization is the most resource-intensive exercise. SECs’ business culture is still nascent. Traditionally, they practice patenting, but none of them has ever sold a single license. So, a Russian patent is still viewed as a means to secure the priority, rather than as a lever to engage results of intellectual activity into economic turnover.

Formation of a World-Class Scientific Base: Megagrants on Creation of University Laboratories

Megagrants on creation of laboratories at universities to be spearheaded by leading international experts¹ can be regarded as yet another vehicle to advance the university science, integrate research with education, and shape a world-class scientific base.

The peculiarity of the program lies primarily in the scope of its funding, which is in stark contrast with the one the RF Ministry of Education and Science typically awards to “routine” SECs without foreign leaders. The maximum volume of financing available for a “normal” SEC is Rb 15mn for the term of three years, while the said laboratories can apply for a Rb 150mn-worth grant for the same term. That said, requirements to their performance are even more lenient than those to SECs’.

In 2011, as many as 39 projects on creation of university laboratories were selected on the basis of the nationwide competition; thus, the number of the megagrants-supported laboratories totaled 79. During the competition, applications were reviewed by 1,299 experts of whom foreign ones accounted for 46.9% (609 persons). The contest rate was the same as a year ago, that is, 13 applications per project. The country-of-residence pattern of heads of laboratories (see *Table 15*) evidences that, like in 2010, preference was given to projects spearheaded by the diaspora representatives (more than a half of all the grants). The proportion of projects led by foreigners increased substantially, while just a sole Russian resident was awarded a grant (in 2010 – 5 ones). So, greater emphasis was put on attraction of foreign specialists per se to run laboratories, while megagrants appear particularly attractive to Russian-speaking specialists.

¹ The program was launched in 2010. For a greater detail, see: Russian Economy in 2010. Trends and Perspectives. Issue 32.-M.: the Gaidar Institute, 2011, p. 376-379.

For them, megagrants are not just extra funding enabling them to make another leap in their research field, but a possibility to frequent Russia and meet relatives and friends¹.

Table 15

Megagrants Allocation Pattern Depending on the Team leader's Residence

Team leaders' residence	Grants, 2010, as % to the total (N=40)	Grants, 2011, as % to the total (N=39)
Russian researcher	12.5	2.6
Foreign researcher	35.0	46.2
Foreign researcher – representative of the Russian-language diaspora	52.5	51.2

Source: calculated on the basis of the RF Ministry of Education and Science.

The year of 2011 saw intensification of the debate on two problems associated with attraction of foreign researchers: one of them concerned their age (whether it was mainly pensioners who came to Russia) and adequacy of assessment of qualification of attracted researchers using the h-index². The data published at the closure of the competition for 2011 megagrants showed that concerns about pensioners largely being interested in them were vain, as out of heads of 39 laboratories 41% aged 50 to 59 years and another 15.4% - 40-49 years. Meanwhile, the proportion of laboratory heads who aged 70 and above was 17.9%, which is not a small figure, albeit not a critical one.

As to the h-index, most experts reckon it does not allow assessment of an applicant's actual research qualification and should not be used as a selection criterion. According to Acad. G. Georgiev, "the Hirsch index is applicable to an active average Joe"³.

Abstracting from precise metrics of foreign researchers' qualification, it should be noted that it was papers coauthored by Russian and foreign researchers that ensured the Russian science's higher level of citing of publications on the whole. As demonstrated by the data on citing of Russian papers published between 2003 and 2007, 93% of all the intensively cited papers was published in international co-authorship⁴.

So, like other kinds of international cooperation, megagrants should contribute to advancement of the national science. Besides, the initial megagrants outputs exposed a whole range of positive side-effects, namely: more attention is now paid to the English classes, research teams became more focused on a more efficient performance in the form of papers, and the culture of conduct of laboratory research started to change gradually. All these are steps towards the Western mentality which implies a constant proving of research credentials, rather than a life-

¹ Voropaev A. "Here I am back to my home town" // Science and Technologies in Russia. http://www.strf.ru/material.aspx?CatalogId=222&d_no=44701 18.01.2012.

² The h-index is an index that attempts to measure both the productivity and impact of the published work of a scientist or scholar. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other people's publications. The index can also be applied to the productivity and impact of a group of scientists, such as a department or university or country. The index was suggested by Jorge E. Hirsch, a physicist at UCSD, as a tool for determining researchers' relative quality and is sometimes called the Hirsch index or Hirsch number. The index displays a proper accuracy only under comparison of researchers of the same field of science, as citation traditions differ across different branches of science. Like other bibliometric characteristics, the h-index is not strictly correlated with the researcher's profile and performance, because of string of parameters that bias its value, including for example time that has elapsed from the moment the article was published (this is why young authors cannot enjoy a very high h-index).

³ G. Gergiev. The Hirsch Index should be crossed out from assessment of academia. http://www.strf.ru/material.aspx?CatalogId=221&d_no=43481 17.11. 2011.

⁴ V. Pisyakov. High-class work//Poisk, No. 49, 9.12.2011, p.18.

time resting on one's laurels upon winning certain positions and titles, as it happens in Russian science.

That said, the work under megagrants helped expose a number of challenges which need to be addressed to ensure a maximum efficacy of laboratories' performance. Those are, primarily, organizational and bureaucratic problems when it comes to procurement of equipment and reagents, customs procedures, invitation of foreign specialists for a short period of time (in that case they are not subject to the law on highly qualified specialists). As well, it was found out that a whole series of projects failed to regulate rights to created intellectual property objects.

Because of such challenges, heads of laboratories often were in a pensive mood. Here is a typical comment of one of victors in the megagrants competition: "*The efficiency of spending (vis-à-vis Western programs) is 10-15% at best*"¹.

The challenges, though, are not associated only with the situation where huge funding has been allocated while the operational environment is far less conducive than the one at Skolkovo. The approach implying creation of less than a hundred elite laboratories within universities where other research teams operate in a routine mode and on modest money may have a further adverse impact on the research environment in general. It should also be noted that stimulating measures on promotion of international cooperation so far have not centered on internationalization of Russian science, ie. on making sure international researchers work hand by hand with Russian colleagues at Russian laboratories. There appeared elite visitors in the national science, but no progress towards circulation of cadres has so far been in place. And if it were not enough, no internal circulation of cadres, such as, for instance, academic exchanges between different Russian universities, is encouraged, while such an initiative would be quite worth the federal budget support.

Presently, there is an ongoing debate on the possibility of spreading the megagrants program onto academic institutes under RAS. That would be a right move, provided the ultimate objective is to give a new look to the national science, rather than to "drag" university research to an acceptable level. The project aiming at ensuring a broader access to participation in the said program implies modifications of the size of funding available to laboratories: with a new format, it is planned to cut the federal budget allocations to Rb 60mn per laboratory.

Modifications in the Research Infrastructure of Science

The public scientific policy has increasingly centered on the "infrastructure" area, that is, supplies of equipment and apps for researchers' needs, including particularly complex and huge units, *aka* megascience. An important incentive in this process became the government's commitment to expansion of international cooperation in the research area, which suggests unique equipment and apps at hand.

In Russia, one of popular forms of research infrastructure support is centers for collective use of equipment (CCUE). Originally, they were established to ensure research process in the conditions where every given research institute was unable to have much-needed equipment and apps. Plus, CCUEs became home to costly equipment that cannot be bought in mass quantities, while Centers made them available to a broad array of users. Presently, CCUEs also became a minor, albeit critical to research organizations source of extrabudgetary funding. Numerous initiatives sponsored by the RF Ministry of Education and Science suggest

¹Sterligov I. New claims by owners of megagrants. http://www.strf.ru/material.aspx?CatalogId=221&d_no=42123 06.09.2011.

extrabudgetary financing. It is common knowledge that research organizations and universities are short of extrabudgetary funding, while the industrial sector is keen to sponsor corporate research only. That is why incomes from provision of services using the CCUEs' equipment forms one of very few genuinely extrabudgetary sources of financing. According to the Ministry, assignments the CCUES network fulfills include, on average, at 77% academic research projects and at 23% - delivery of services.

CCUEs can form a pivot to a further advancement of the research infrastructure, should the approaches to their financing and monitoring be modified. That said, CCUEs have so far evolved only from the perspective of increase in allocations for equipment purchases, while to date there has been no comprehensive assessment of their performance and operational efficiency.

Indeed, while the RF Ministry of Education and Science annually collects a string of formalized metrics with regard to CCUEs' performance¹, there were no public assessments of their operational efficiency, including, *inter alia*, an assessment of unique apps installed therein.² What's worse, the precise number of up and running CCUEs remained unknown, for there is no clarity as to which organizations qualify for this status. Even the website of the RF Ministry of Education and Science displays controversies in this regard. More specifically, judging the list of CCUEs, which comprises resource centers, technoparks, among other centers, their ultimate headcount is 418³. Meanwhile, an interactive map of the country posted on the very same web-site displays less than a hundred of them, including unique apps. Some experts hold there currently are between 43⁴ and 63 CCUEs in the country (apparently, those ones that received target funding from the Ministry), with 11 centers in possession of 30% of all the research equipment placed with CCUEs⁵. Lately, when the RF Government has begun allocating substantial funding for purchases of research equipment, numerous structures rushed to declare themselves centers for collective use and the competition for funds on support of the infrastructure has grown very fierce. That in turn potentially lowered chances for continuation of receipt of funding out of federal sources for the CCUEs for already several years in operation (though such funding has not ever been guaranteed for more than 1-2 years).

The question of the CCUEs' operational efficiency appears yet a more confusing one. That certain capacity enabling one to efficiently conduct research on the basis of CCUEs is there

¹ The Ministry requests the following kinds of CCUEs' performance indicators: the number of staff, including those holding a degree; equipment loading rate; costs of works; list of methodologies; the list and costs of works; the list of R&D projects, volumes of their financing and conformity with priority avenues; the list of corporate users; the list of publications, research theses and patents produced with the use of the CCUEs' equipment. Source: http://ckp-rf.ru/news/science/Ezhegodnyj_monitoring_effektivnosti/

² In his paper «Methodological approaches to assessment of centers of collective use of research equipment» (published in almanac «Science. Innovation. Education», issue 9, 2010 PP. 189-202), A.B. Gusev suggests a methodology of assessment of CCUEs, including their operational effectiveness; however, the paper fails to cite results of such an assessment, even a selective one. Official presentations by the RF Ministry of Education and Science offer a general perspective on capacity of the supported by the Ministry CCUEs, but not on their efficiency.

³ Most such CCUEs operate under universities, while in the corporate sector, there are just 11 CCUEs, including at 9 universities that have the status of public scientific center (PSC). Source: data of the RF Ministry of Education and Science.

⁴ Centers of collective use of research equipment in the sector of modern research and development. <http://www.fcpir.ru/doc.aspx?DocId=970>

⁵ On the basis of oasis. CCUEs quench the thirst for knowledge// Poisk, No. 10, 5 March 2010, p.7.

raises no question: according to the RF Ministry of Education and Science¹, the average age of CCUE equipment is 8 years, or twice as low as nationwide, while the technical capacity rate of researchers in such centers is nearly 8-fold greater. So, CCUEs form one of the most progressive kinds of research infrastructure in Russia. Meanwhile, expert estimates suggest that there are just a handful of efficient CCUEs in Russia, even without regard to differences in interpretation of their efficiency *per se*. According to a number of CCUE directors, such centers prove efficient only when their equipment loading rate reaches its absolute peak², which is not quite typical of all the centers. Another interpretation suggests that CCUEs are efficient at organizations that have built sound financial and operational models³. That said, many centers fell short of formalizing procedures of granting users with access to their equipment, nor there are normative and legal documents determining forms of organization of such centers and interaction with them⁴. As a result, CCUEs' equipment is not used in an optimal way. Lastly, their operational efficiency depends on organizational peculiarities of their operations. CCUEs have so far been centers of provision of individual gauging services or the basis of implementation of individual fragments of research projects, rather than project research centers (the way they largely operate overseas)⁵. Plus, practically all the CCUEs face such systemic challenges, as lack of funds to compensate for equipment operators' labor costs and to procure spare parts and maintain equipment.

In the US, from where the concept of CCUEs was partially borrowed, the fundamentals of their financing, operations and assessment of operational efficiency offer stark contrast to the Russian practices. One of key agencies supporting the university-based research infrastructure, the National Science Foundation, sponsors establishment of a variety of centers for collective use which form the basis for interdisciplinary research. Presently the US federal budget allocates support to seven kinds of such centers: Centers for Analysis and Synthesis, Centers for Chemical Innovation, Engineering Research Centers, Material Science Centers, Nanotechnology Research Centers, Technology Research Centers, and Education Research Centers. Within each category, the number of centers varies strongly: from 29 Material Science Centers to 2 Centers for Chemical Innovation. In any case, they are not counted in hundreds, like in today's Russia. More than that, the number of government-backed CCUEs in US has recently slightly dwindled, as the Administration is keen to secure robust funding for the strongest centers with the most promising research projects.

The NSF awards grants to each Center in the region between USD 2m and 5m a year, and such a support is provided over a long period of time (usually, in a span of two 5-year long cycles). The NSF encourages cooperation between different participants, Centers' delivery of business services, and creates incentives for their sustainable operations in future, which should be secured through diversification of sources of financing.

The structure of spending of the grant funding of the Centers' operations is worth a particular notice. While in Russia the bulk of funding is spent on equipment purchases, the US Cen-

¹ Data for 2007-2010 rr. <http://www.fcpir.ru/doc.aspx?DocId=970>

² Bykova N. The sunshower for CCUEs. http://ckp-rf.ru/news/science/Ezhegodnyj_monitoring_effektivnosti/20.09.2011.

³ Axenova L. Just a handful of efficient CCUEs. http://strf.ru/material.aspx?CatalogId=221&d_no=4210505.09.2011.

⁴ Golichenko O.G., Kleiner G.B., Samovoleva S.A. An analysis of implementation of main avenues of the public innovation policy in Russia (2002-2010). M.: TSEMI RAN, 2011. P.49.

⁵ Gorbatova A. A non-for-profit effect. http://strf.ru/material.aspx?CatalogId=37188&d_no=4231016.09.2011.

ters spent on that an average 12% of the NSF grant, with the bulk of financing, some 60-65% of the grant, being spent on labor compensations to students, postgraduates, and postdocs¹ working at a Center and, partly, on university professors' salaries². That equipment purchase costs appear relative small can be ascribed to the Centers being established, as a rule, on the basis of universities that already are in possession of a modern material base. Established at different times and with an emphasis on different areas, the Centers are currently linked to each other and even integrated into a single nationwide shared facilities network.

Equally important factor is that the NSF periodically monitors the Centers' performance, with contribution to advance discovery and broader impacts as major criteria. There are just a few quantitative indicators, while the major assessment is expert, informal one, with the quantitative indicators being interpreted in the context of the Center's specialization and other operational peculiarities. That is why support is extended to very versatile centers, be those mono-specialized or diversified, large or small ones. This ensures the much-needed degree of flexibility of the system of material support of research.

The development of the apps base of research in Russian public sector, including, in particular through CCUEs, appears uncoordinated, and a systemic approach to its shaping and renewal is missing. This results in duplication of equipment and in the number of very expensive units not operating at full capacity. These problems were not tackled in 2011, nonetheless, with the Government shifting the focus of attention onto building megascience apps.

Indeed, significance of such centers for the country is hard to overestimate, for they enable one both to obtain fundamentally new research products and technologies, and breakthrough discoveries across a broad array of subjects. By bolstering international cooperation, arresting the brain-drain, and, potentially, forming the basis for the rise of innovation clusters, such centers engender an inflow of qualified cadres.

The Russian Government appears divided on the issue of the path dependency with respect to megascience apps. While some members of the Cabinet believe it is imperative to build supercenters similar to CERN and the likes, others propone the need to strengthen a number of existing infrastructure facilities so that they would be able to cope with the tasks complementing experiments run at the largest international centers. In all likelihood funds will be allocated to beef up the existing capacities to tackle individual problems for the sake of furthering studies into subjects performed using the largest overseas apps. The Government has already approved establishment of at least six facilities to complement international megascience ones, of which two facilities will be located at institutions under the auspices of the RRC Kurchatov Institute³.

It is important to make sure the funding of new apps is concomitant with solutions to the problem of approaches to, and mechanisms of, their operation. Continuation of the policy that

¹ Postdoc is an acronym for Postdoctoral Fellowship, which is a stipendium for a fresh PhD for a 1 to 3 year-long internship with an overseas university or a research center different from the one where his/her PhD was awarded. Accordingly, the successful applicant for Postdoctoral Fellowship is also called Postdoc (with the official title being Postdoctoral Fellow).

² The National Science Foundation's Material Research Science and Engineering Centers Program: Looking Back, Moving Forward. National Research Council of the National Academies. The National Academies Press, 2007.

³ Sterligov I. Megascience will cost the nation Rb 133bn. http://strf.ru/material.aspx?CatalogId=221&d_no=40914 06.07.2011. Sterligov I.V. The Russian Ministry of Education picked six megascience finalists. http://strf.ru/material.aspx?CatalogId=37188&d_no=40541 24.06.2011.

provides for allocation of budget funds exclusively for the purpose of equipment purchases along with cutting costs of its further use and scaling back the maintenance staff and operators payroll will substantially lower the potential of use of new research infrastructure facilities.

Small-Sized Innovation Businesses

The year of 2011 saw no unambiguous assessment of the process of advancement of small-sized innovation businesses. With no uniform database on their performance, any assessments are based upon a set of more or less random evidence, which is why observations that claim such businesses are on the rise co-exist with those suggesting the opposite. Contraction in the number of SSIBs is typically explained by the continuous crisis and the consequent fall in small businesses' activity (as evidenced, in particular, by assessments made by EBRD and OPORA of Russia). Meanwhile, expansion of small businesses is often ascribed to the role played by institutions of development whose number, as well as the rainbow of programs they are implementing, is on the upsurge, and with a changing normative-legal environment for SSIBs' functioning, primarily for those of them which were founded in compliance with Federal Act No. 217-FZ¹.

According to the data on registration of SSIBs established in compliance with the above Act, their number continued to rise and stood at 1,250, of which research institutes became founders only in 39 such firms, while the others were established by universities². Results of the monitoring run by the RF ministry of Education and Science suggest that roughly one-third of these firms are operational, rather than established for the sake of reporting to the Ministry³. The surging number of companies established exclusively for the said purpose remained a persisting challenge. Furthermore, in 2011, the size of the companies' authorized capital continued to shrink, which is most likely to suggest further increase in the share of "paper" companies.

Meanwhile, the normative-legal regulation of companies established under research institutes and universities kept on improving, and more favorable conditions of financing were established for them when compared with other small-sized firms. More specifically, the management of the Foundation for assistance to development of small form of enterprises in the scientific-technical sphere noted that support of the firms established in the frame of Federal Act No. 127 forms a priority task for the Foundation. As of early 2011⁴, financial support was granted to more than 100 of such companies, while by the end of the year more than 350 SSIBs had received funding from the Foundation⁵ by winning respective competitions 3.5 times oftener than other small-sized firms.

The list of normative-legal novelties comprises the following ones:

¹ Federal Act of Russian Federation of 2 August 2009 No. 127-FZ "on introducing amendments to individual legislative acts of Russian Federation on matters of creation by budget research and educational institutions of economic companies for the purpose of practical application (introduction) of results of intellectual activity"

² Gorbatova A. "Minors" always have the green light here. http://strf.ru/material.aspx?CatalogId=223&d_no=44139 20.12.2011.

³ Sterligov I. One-third of small-sized companies under universities exists on paper only. http://www.strf.ru/material.aspx?CatalogId=223&d_no=41450 02.08.2011.

⁴ "Start" in a new manner. Interview with S.G. Polyakov, Director General of Foundation for assistance to development of small form of enterprises in the scientific-technical sphere //Innovation, 01.02.2011. http://fasie.ru/mass_media/Pressa_o_nas_stat/_press_stat_start-ponovomy.aspx

⁵ Gorbatova A. "Minors" always have the green light here. http://strf.ru/material.aspx?CatalogId=223&d_no=44139 20.12.2011.

1. Corporations established under Federal Act of 02.08.2009 No. 217-FZ are permitted to employ a simplified taxation system (per Federal Act of 27.11.2010 No. 310-FZ); in particular, they may pay corporate profit tax at the rate of 6%. Plus, in compliance with Federal Act of 16.10.2020 No. 272-FZ¹, they can enjoy benefits with regard to insurance premiums (in 2011-2017, the insurance premium tariff for such organizations will be 14%, in 2018 - 21%, and in 2019 - 28%).
2. In compliance with Federal Act of 08.05.2010 No. 83-FZ², budget institutions now have a possibility to contribute with cash, equipment and other assets with a value of up to Rb 500,000 to authorized capital of created economic companies.
3. Federal Act No. 22-FZ³ grants to budget institutions the right to rent out to economic companies temporarily idle assets and facilities without holding a tender or an auction.

Meanwhile, according to the procedure of conclusion of the rental contract⁴, while entering in such agreements with respect to federal assets (except for those of the state academies of sciences), the size and procedure of payment of rental charges are set following the conditions below:

- a) year one into the agreement – 40% of the amount of the rental payment;
- b) year two – 60% of the amount of the rental payment;
- c) year three – 80% of the amount of the rental payment;
- d) year four and thenceforward – 100% of the amount of the rental payment.

That said, it was just a handful of small firms that managed to take advantage of the benefits in question and switch to the simplified taxation regime in 2011, as the Acts had become effective right before the deadline for submission to tax authorities of the respective notification for the next year. That is why it is premature to judge how the tax novelties have affected the state of affairs in the area of small investment business.

Thanks to legislative novelties, the possibility to establish SIBs with participation of research institutions or universities as their founders became more appealing to large corporations too. They de facto were given a new way to optimize their R&D-related taxes by incorporating their R&D into small-sized enterprises established jointly with a research institution or a university. On the one hand, this can be viewed as tax dodging, but, on the other hand, if an enterprise is established to develop products and technologies the corporation needs, such a partnership optimizes the R&D logistics and helps drive research and business closer to each other. Notably, such ties emerge on their own, without government's interference or special compulsive measures.

¹ Federal Act of 16.10.2020 No. 272-FZ “On introducing amendments to the Federal Act “On insurance premiums to the Pension Fund of RF, the Social Insurance Fund, the Federal Fund for compulsory medical insurance and territorial funds of compulsory medical insurance” and Article 33 of the Federal Act “On compulsory pension insurance in RF”.

² Federal Act of 08.05.2010 No. 83-FZ “On introducing amendments to individual legislative acts of RF in connection with improvement of the legal status of public (municipal) institutions).

³ Federal Act of 01.03.2011 No. 22-FZ “on introducing amendments to Article 5 of Federal Act “On science and the public scientific-technical policy” and article 171 of Federal Act “On protection of competition”.

⁴ Procedures of conclusion of leasing agreements with respect to public and municipal assets of public educational institutions of tertiary vocational education (including those established by state academies of sciences) or municipal institutions of tertiary vocational education (including those established by state academies of sciences). Approved by Resolution of the RF Government of 12.08.11 No. 677.

Large Corporations: Creation of the System of Incentives to Innovation

It was in 2011 that after a long period of negligence large corporations exhibited a growing interest in innovation activities, with the focus of their attention being on holding or commissioning R&D, rather than technology purchases. Apparently, their production renewal resources and borrowing overseas in the first place were about to exhaust, especially for corporations competing on international markets. Thus, according to a PriceWaterhouse Coopers's survey, 58% of Russian companies operating on the domestic market have innovation technologies in their portfolios, while for those operating both in Russia and overseas the respective index is 85%¹. A series of interviews the NRU HSE's Institute of Management² ran on 22 large industrial corporations revealed that none of them scaled back on R&D spending. Rather, they displayed a "renaissance" of interest in the domestic sector-specific research.

That said, nationwide, the average statistical "interest" of the business sector in funding R&D has not been great, which can be evidenced by the dynamic of extrabudgetary funding of R&D with regard to projects implemented under the aegis of FTPs. The planned volume of the 2011 allocations for extrabudgetary financing of measures under the target programs dwindled vs. the respective figures for 2009 and 2010. Some decrease in the absolute volume of extrabudgetary financing on FTPs can be partially attributed to modification of the composition of respective works. More specifically, the specific weight of the component known as "generation of expertise", which does not require extrabudgetary financing, was on the rise.

It cannot be ruled out that exposed by surveys corporate sector's interest in remnants of the sector-specific research and outsourcing of R&D is dictated by new government measures aiming at strengthening ties between businesses and the public scientific sector (primarily, universities). In this respect it is possible to single out four major measures which appear to some extent intertwined:

- Investment development programs (IDP) (47 large companies);
- Collaboration with universities on conditions established by Resolution of the RF Government of 09.04.2010 No. 218³;
- Contribution to technological platforms⁴ (28 technical platforms to which 200 universities and 300 research institutions contribute)⁵;
- Employment of measures of indirect regulation of innovation activity.

In Russia, according to interpretations by official representatives of the Ministry of Education and Science and the Ministry of Economic Development, the purpose of the cooperation is not just to expand connections in the research and production sphere but restoration, at least, across a range of directions, of sectoral science, which was lost in the post-Soviet time, including, *inter alia*, by means of its partial "transfer" to universities. Indeed, the progress in this direction is already visible: 67% of companies with annual earnings over Rb 1bn already interact

¹ V. Saraev, D. Medovnikov, T. Oganessian. What cannot be sold is developed//Expert No. 44, 7-13 November 2011, p.22.

² R&D management in Russian companies. The National Report.- M: Association of Managers, 2011, p. 30-31.

³ Resolution of the RF Government of 9 April 2010 No. 218 "On measures of state support of development of cooperation between Russian Institutions of tertiary education and organizations implementing complex projects on creation of hi-tech production".

⁴ Out of 47 companies that developed IDPs 37 ones contribute to technological platforms and 9 are coordinators of technological platforms. Source: Meeting of the Government Commission on hi-tech and innovation. 30 January 2012. <http://premier.gov.ru/events/news/17904/>

⁵ Problems of formation of technological platforms are discussed below (see sub-Section 5.5.9).

with universities and corporations established under their auspices; meanwhile, their cooperation with sectoral and departmental research institutes was a bit less intense, with the respective figure accounting for 56%¹.

Indeed, according to the data on large corporations' innovation development programs (IDPs) (*Table 16*), volumes of financing they should allocate for universities will be constantly growing. It is envisaged that expansion of the outsourcing practice should help overcome the internal monopolism at corporate R&D divisions and bolster the efficiency of R&D spending in the corporate sector, while concurrently fueling university research.

Table 16

**Corporate Innovation Development Programs: Increase
in the R&D Outsourcing to Universities**

	2010	2011	2012	2013	2014	2015
Volume of R&D financing by corporate innovation development programs, as Rb bn .	82.9	227.6	291.9	344.1	330.7	304.6
Volume of financing allocated to universities, as Rb bn	2.9	11.5	16.5	20.2	21.0	22.8
Proportion of R&D financing allocated to universities, as %	3.5	5.0	5.7	5.9	6.3	7.5

Source: data of the RF Ministry of Education and Science.

It should be noted that much attention was paid to public corporations' innovation development programs. The RF Government is going to make them catalysts of the business sector's activity in the research and innovation area. In this connection, Prime Minister V. Putin believes that it is imperative, "to tightly link the corporate executives and leading managers' compensations to attainment of key indicators of innovation development", while, at the same time, extending the list of enterprises with government participation which shall devise innovation development programs.

Currently the corporate plans in question appear fairly tentative, as, objectively, the planning time-frame, as a rule, is limited by no more than three years. R&D financing projections are in many ways associated with the anticipation of budget support, which is particularly true as far as defense corporations are concerned. Indeed, some 60% of the R&D spending by the corporations that have developed IDPs is formed by budget funds . Lastly, IDPs have so far appeared loosely coordinated with corporate strategic plans (where the latter exist), as well as with financial plans which are typically developed for just one year.

There also exist challenges to expansion of the cooperation between corporations and universities under IDPs. Those are: a low quality of the university R&D and its management, the external authors' unpreparedness for taking into account corporate requirements, etc. That was exposed by a survey on members of the Association of Managers and the one on companies and universities collaborating in the frame of Resolution of the RF Government of 09 April 2010 No. 218, which is running at the time of preparation of this paper. The search for a "perfect match" appears in many regards a random one, which is why corporations find it difficult to identify university contractors for their R&D even on the basis of competition. That said, 96% of the corporations that developed IDPs included universities in their R&D co-suppliers lists. The same proportion of corporations is going to cooperate with research institutions,

¹ According to a questionnaire survey on 100 large, small- and medium-sized corporations run by the Association of Managers. Source: R&D management in Russian companies. The National Report.- M: Association of Managers, 2011, p. 38.

which, however, is likely to be a form of the R&D outsourcing, rather than a genuine partnership, which is evidenced by the fact that it is only 17% of corporations that plan a joint use of research an experimental capacities at universities or at their own enterprises.

Innovation development programs suggest using a system of monitoring developed in 2011. Monitoring will be run on the basis of a set of indicators a part of which is to be reported on the quarterly basis. That said, every agency is keen to know different aspects of corporations' performance and prioritize different indexes: e.g., the Ministry of Education and Science seeks to promote cooperation between the corporate sector and research institutions and universities, while sectoral ministries emphasize the importance of getting the programs aligned with sectoral development ones, etc. Overall, like other numerous "performance assessment" methodologies, the monitoring in question is based upon assessment of costs, rather than outputs. Clearly, there are too many indicators in this case, which antagonizes companies. Indeed, the data collection and processing methodology appears so sophisticated that companies will be compelled to hire a group of professionals to ensure timely reporting. The quarterly reporting in turn does not match innovation introduction cycles, as it makes it hard to judge results of novelties. Hence, the danger of profanation, as the trustworthiness of data reported would be hard to examine. Perhaps it would make sense to cut the number of indicators to ensure a greater quality of the exercise.

The year of 2011 also saw the indirect regulation of innovation activities unfold, but it is premature to assess its effects. The situation with regard to instruments of indirect regulation is uneven: while tax benefits advance and are adjusted, the development of technical regulations finds itself at a stage close to stagnation. Accordingly, problems exacerbate. Thus, for example, technical regulation in the road construction sector has not been updated over the past 20-30-plus years¹, which means that any attempt to introduce anything innovative would be regarded as a violation of the regulation. This problem also popped up with the launch of the work on Resolution of the RF Government of 9 April 2010 No. 218, and similar comments were received in response to a survey the Association of Managers² ran on corporations. More specifically, the survey demonstrated that the standards comprised obsolete requirements and excessive detalization, while the use of State Standards of the 1970-80s *de facto* meant "the ban on the use and application of new technologies". Novelties in the technical regulation area have so far fell short of justifying themselves, as the possibility for application of new measures has not been ensured. Thus, companies are not ready to use the recently introduced European standards and technical specifications, as the procedure of transition to them has not been specified both to them and certification authorities.

Development Institutions in the Concept of "Innovation Lift"

In 2011, the concept of "innovation lift"³ became popular with the Government. According to the concept, at every stage of the idea's lifecycle – from fundamental and applied research to

¹ S. Kulikov. Novelties were let to drift in a paper sea//Nezavisimaya gazeta, 09.02.2011 p.4.

² R&D management in Russian companies. The National Report.- M: Association of Managers, 2011, p. 70–71.

³ The concept of "innovation lift" was *de facto* used back yet in 2009 and the need for its formation was cited, for example, at meetings of the Commission on technological development and modernization of Russia. See, for example: <http://kremlin.ru/transcripts/6108>

development, prototyping, commodization – there should be institutions and structures to back these stages, thus ensuring the accompaniment of a given project or idea.

In 2011, the “innovation lift” was complemented by another two development institutions, that is, the restored Russian Fund for Technological Development and the Agency of Strategic Initiatives. However the other institutions continued operating too. Those primarily were the Russian Venture Company, ROSNANO, the Fund for Assistance to Development of Small Forms of Enterprises (hereinafter referred to as the Foundation for Assistance), and Skolkovo Foundation. This comment is needed, because last year saw the rise of a trend to label any organization or even an instrument that affects the sphere of research and high-tech as “institution of development”. Because of that, the tag was also put on research foundations and even FTPs, albeit the latter constitute a mechanism of financing, rather than an institution.

So far a grave problem was that like within the national innovation system on the whole, the “innovation lift” comprises numerous elements, but ties between them appear specific and inefficient. Institutions duplicate, rather than complement, each other, across a string of directions, which is why it is hard to arrange projects moving from one development institution to another. Thus, only very few of thousands of small-sized firms’ projects supported by the Foundation for Assistance were granted a subsequent funding from ROSNANO¹ or via venture funds established by RVC². Furthermore, in the venture financing sphere, the search for projects was gradually replaced by the quest for companies with promising technologies, for representatives of development institutions tend to believe that there was too little a number of worthwhile projects³. Thus, for example, the RVS’s Fund for Seed Investment approved just 20 projects in 2011, or roughly the same number as a year before (19 projects)⁴. In other words, the magnitude of operations was small and did not expand.

That said, the cause for a loose succession may also lie in stringent conditions of financing offered by RVC and even more so – by ROSNANO. Until recently there had been yet another remora to advancement of the venture business, namely, the absence of adequate forms of its organization, which would have enabled one both to launch a business and drop it without sophisticated bureaucratic complexities. Some changes in this respect took place in late 2011, and they soon should have a positive effect on development of the national venture industry.

Between November and December 2011 two Federal Acts were passed – namely, “On investment partnerships” (of 28.11.2012, No. 335-FZ) and “On economic partnerships” (of 03.12.2011 No. 380-FZ). Both Acts should become effective as of 2012. Investment partnership is a well-known worldwide means of organization of collective investment without the formal incorporation, and its emergence should facilitate Russian entrepreneurs’ development of investment business. By its form, economic partnership appears similar to a Western LLC,

¹ Thus, out of 83 projects approved by ROSNANO only 16 had been earlier approved by the Foundation for Assistance. Source: “Start” anew. Interview with S.G. Polyakov, Director General of the Foundation for Assistance//Innovations.01.02.2011. http://fasie.ru/mass_media/Pressa_o_nas_stat/_press_stat_start-ponovomy.aspx

² According to Yan Ryazantsev, Director of Department of Investment and Evaluation of JSC “Russian Venture Company”, there are only a handful of recipients of federal and regional grants among projects awarded financing from venture funds with participation of RVC. Source: D. Mindich. Getting innovation into the region// Expert, No. 27, 11-17 July 2011, p. 58.

³ See, for example, Gorbatova A. Venture projects under the Russian jurisdiction? http://www.strf.ru/material.aspx?CatalogId=223&d_no=43796; D. Mindich. Getting innovation into the region// Expert, No. 27, 11–17 July 2011, p. 58.

⁴ Data as of 17 December 2011. Source: the list of projects approved by the RVC’s Fund for seed investment.

and this novel form expands prospective investment mechanisms, which should become more attractive and understandable to foreign investors.

It should also be noted that the development institutions' operations should not be narrowed down to a mere selection and financing of projects. Indeed, all of them are also engaged in complementary initiatives: from contributing to development of the technological infrastructure and holding various educational events to popularization of breakthroughs in research to support of business papers. That said, businesses have so far eyed development institutions "as moneybags, extra sources of financing, rather than partners able to help promote innovation with their expertise, background, business contacts, and organizational capacity".¹

Underpinning this conclusion is in part an insufficient degree of transparency of the development institutions' operations, despite a broad publicity of a range of their projects and initiatives. At the same time, it is hard to discern their funding priorities, decision-making principles and, accordingly, it is difficult to judge not even their performance, but, at least, the quality of resources at their possession. That said, they exhibited a visible progress in certain directions, including growing interest in support of the investment infrastructure, formation of divisions and structures under foreign jurisdictions which would help penetrate international markets, attempts to better coordinate their operations. With regard to coordination, experts believe² its effects so far have been two-fold: on the one hand, where executives of one development institutions sit on another one's board, this bolsters the level of their mutual understanding, while demotivating one to objectively assess the colleagues' performance, on the other.

Agency of Strategic Initiatives

"Agency of strategic initiatives on promotion of new projects" (ASI) was established pursuant to Prime Minister V. Putin's executive order³. The Agency focuses on implementation of strategic initiatives on support of societally significant projects for medium-sized businesses across a range of key directions, including two ones that directly center on fostering innovation, including the technological one. Those are "Support to medium-sized businesses" (including the "Promotion of hi-tech medium-sized business on global markets" initiative) and "Young professional cadres" (the "System of support of leaders and talents" initiative)⁴.

ASI kickstarted in the autumn of 2011, and it is not still clear how it is going to support projects. In all likelihood, funding is going to be mixed, that is, public-private one. Meanwhile, it is already known that the ASI's Expert Council will consider only business projects worth minimum a total of Rb 300mn, with the applicant being bound to invest therein no less than 10% of funding of his own⁵.

The groundbreaking initiative – training overseas of up to 10,000 specialists a year over the next 10 years – sparked the expert's controversial reaction and once again compelled them to consider the degree of the overlap between different departmental initiatives.

¹ R&D management in Russian companies. The National Report.- M: Association of Managers, 2011, p. 57.

² Cited by: Yu. Simachev. A presentation at the dispute club of ANTSEA "Economic policy knots" by the topic "Interim results of development institutions' progress".Moscow: MSU, 19.01.2012.

³ Executive Orders of 17 May 2011 No. VP-P16-3168 (item 15) and of 27 May 2011 No. VP-P13-3511. The ASI's Charter and the composition of its Supervisory Board were established by Resolution of the RF Government of 11 August 2011 No. 1393-r.

⁴ <http://www.asi.ru/agency>

⁵ <http://www.izvestia.ru/news/504218>

Strikingly, the RF Ministry of Education and Science had been designing practically the same initiative before ACI was founded. In April 2011, the Ministry was gearing up for implementation of the President's executive order to send for training overseas 10,000 students over the next decade¹. The Ministry's approach was to send those student who would subsequently be keen to return and work in the research or business sphere, which suggested, accordingly, co-sponsorship of such internships by universities and business. ASI modified the concept and produced a fairly simple, albeit large-scale, scheme, that is, to have up to 10,000 students a year earn Masters or PhD overseas over the next 10 years at the RF Government expense and somehow get them back home (no mechanisms of their return have been designed so far). This ambitious endeavor would demand USD 5bn in a span of 10 years, and this amount would be sufficient to implement far more imperative and less controversial projects, such as, for example, restoration and development of several engineering universities or world-class laboratories, etc. ACI did not care to provide a rationale for appropriateness of the project, nor did it make available a comparative efficiency of possible approaches to boost of the human capital quality.

Russian Fund for Technological Development

The year of 2011 saw the Russian Fund for Technological Development (RFTD) renew its operations for the first time since 2008. RFTD is to form yet another component of the innovation lift by funding final stages of R&D, creating and testing experimental models and prototypes. In the frame of this model, RFTD "captures" successful research projects and project companies which have grown from the start-up level to catapult them to the state of commercially viable firms capable to advance at the expense of their own capital or by attracting credits on the market.

According to the approved by the RF Government on 7 September 2011 "Strategy of innovation development of Russian Federation" (the Strategy), RFTD should stimulate the rise of non-governmental R&D which are understood as a gradual increase in "both non-governmental organizations and the share of funding coming from non-public sources, from the entrepreneurial sector's funds in the first place". More specifically, it is suggested that together with other structures RFTD will sponsor applied R&D, primarily corporate ones. That said, in the frame of its operations there will be secured:

- 1) disbursement of long-term (for 3-5 years) loans for R&D at a preferential rate;
- 2) consulting and methodological accompaniment of the projects.

The Strategy holds that "RFTD will combine provision of financial support to corporations' innovation activities with delivery of services and formation of conditions necessary for boosting the efficacy of the corporate technological management, shaping up corporate R&D centers, corporate venture funds and other modern innovation management institutions". Lastly, RFTD was assigned to provide *institutional, organizational and consulting support to the functioning of the technological platforms* included in the list.

RFTD is currently launching operations along four major avenues:

- selection, on the basis of a respective evaluation procedure, and financing with its loans of corporate R&D projects, with the funding to be repaid within 5 years from the moment of its disbursement;
- provision of information and consulting assistance to projects under development;

¹ Poisk, No. 16, 22.04.2011, p.4.

- provision of institutional, organizational and consulting assistance to the technological platforms' functioning and funding of R&D projects presented by them;
- teaming up with the Agency of Strategic Initiatives in disbursing loans to medium-sized businesses, provided there is a large consumer of their innovation produce.

So, the RFTD's mandate is ample and versatile, while its financial capacity appears fairly limited, particularly vis-à-vis other development institutions (*Table 17*).

It is planned that amounts of RFTD's loans will vary from Rb 10mn to 300mn. Applications for funding are set to pass through 4 kinds of examination: science-technical, technological (technological audit), financial and economic, and legal examination. The evaluation system is built quite efficiently, as it allows completion of the project assessment within 4-5 months, ie. from the moment the applicant's registration at the RFTD website to disbursement of the loan. The key factors affecting the length of consideration of applications are the quality and adequacy of the borrower's business plan and Terms of Reference.

Table 17

Budgets of Development Institutions Implementing Programs of Support of Research, Technological and Innovation

Organization	The 2012 budget, as Rb bn
Fund for assistance to development of small forms of enterprises in the research and technical area	4,0
Funds established by Russian Venture Company	30 (the RVC's aggregate budget)
ROSNANO	22,2
Scolkovo Foundation	22,0
RFTD	1,3
MSP Bank	50,0 (бюджет Банка)
Vnesheconombank	383,1 (бюджет Банка)

Source: M. Rogachev. The role and place of RFTD in the system of state support of innovation development. Presentation of 29.11.2011.

Priority is given to technology development projects, even where there are going to be no breakthroughs. That is why the examination focuses on a product' usefulness for development of production (a new technical quality of the product and/or its lower production costs), rather than on its research novelty. Also important is the clause which holds that the right to the output of such R&D projects belong to their operators.

One of key directions of RFTD's operations is financial support to R&D projects developed in the frame of technological platforms. To exclude duplication in development institutions' operations RFTD picked 12 technological platforms to support (in such areas as medicine and bioindustry, photonics, energy, new materials, mineral production and processing, environment).

Given the structure of Russia's economy which is dominated by huge production enterprises whose activity in the area of technological innovation is low, albeit on the upsurge, RFTD is keen to support huge integration projects in the first place, including those with participation of small- and medium-sized businesses. It is implementation of large-scale R&D projects that corporations most often lack funding for. But, according to expert estimates, such projects come up with a price tag in the region of Rb 150-200mn, thus RFTD is doomed to momentarily run out of cash. So, RFTD will find it hard to follow its peers in generating a favorable environment for investment activity.

Skolkovo and the satellites of its concept

In 2011, the i-city of Skolkovo was developed at an unprecedentedly high pace and at high costs (Rb 22bn). While in mid-December 2010 there were 16 registered participants therein, by early 2012 they had outnumbered 300¹, with successful candidates having been selected from more than 1,500 aspirants. Plus, there started a grant-based financing of the projects, which were classified into 4 main groups by the stage of their commercial maturity². By the end of the year, 40 companies had already been awarded grants to implement their projects. In parallel with that the project application evaluation system advanced: by late-2011, there was formed an expert panel of 368 experts, of whom 80% were Russian ones. However, the work is under way to attract foreign specialists so that their number would match the Russians³.

During the year, new amendments to the national legislation were adopted in order to create yet more favorable conditions for the Skolkovo residents to implement their projects.

Finally, a kind of defining moment was the signing on 26 October 2011 of a Cooperation Agreement between MIT and Skolkovo Foundation on creation of the Skolkovo Research and Technology Institute. The project is to be completed in a span of 3 years and should result in shaping up both a university and interdisciplinary research centers. That MIT finally decided to take part in the Skolkovo project – it took the MIT leadership quite a while to make up their mind – evidences that the project has proved credible and foreign professionals consider it possible to locally form a university of a new type.

The Skolkovo project is eyed with envy by many territories, especially those ones which have long made innovation development a priority. That is why the year of 2001 saw a more visible replication of Skolkovo by a number of regional administrations striving for creation of some “mini-Skolkovos”, if not ideology-wise, then, at least, in terms of principles of development. The ingredients of the success are clear: huge funding, exclusive benefits, universities’ contribution, and attraction of foreign specialists.

By the end of the year, there had emerged 2 regional leaders which managed to catch up with Skolkovo as close as possible. Those are: the city of Tomsk and its concept of “INO Tomsk 2020”, which ultimately came with the price tag of Rb 39.9bn³, and the city of Belgorod (Aurora-Park, worth a total of Rb. 23.3bn)⁴. In Tomsk, it is planned to focus on two priorities of “technological breakthrough” out of five, namely, nuclear and biomedical research, as well as on development of infrastructure, including transportation one, and on pooling local universities and research organizations’ efforts to deliver on the project⁵.

So, while i-city Skolkovo has not yet been completed, there emerged the followers of its model. This should soon give an interesting material to compare which would prove more effi-

¹ Svetina B. Matrix at the junction//Poisk, No. 5, 3.02.2012, p. 23.

² The stages are classified into the following ones: “0” (ideas); “1”(seed stage); “2” (early stage); and “3” (advanced stage. A half of all the 2011 investments was designated for the early stage (projects with the volume of financing of up to Rb 150mn, with extrabudgetary funds making up half of the funding). Source: Investment Committee of the Skolkovo Foundation agreed upon principles of financing of resident companies of the Innovation Center Skolkovo <http://www.unova.ru/article/7997> 16.05.2011.

³ Authorities are set to establish a center of cluster development in the frame of “INO Tomsk 2020”. http://ria.ru/nano_news/20111109/484586234.html 09.11.2011.

⁴ A Skolkovo’s clon: // Poisk, No. 6, 11.02.2011, p. 2.

⁵ The consortium of Tomsk universities and research organizations “UniTomsk” was established on 16 November 2011. Source: O. Bulgakova. Precedent//Poisk, No. 47, 25.11.2011, p. 20.

cient – a city built from scratch or an attempt to shape up a cluster where already existed a certain research, educational and other capacity.

Technological Infrastructure of Innovation Activity

The traditional infrastructure of innovation activity, including technoparks, business incubators, technology transfer centers, continued to unfold in 2011. It can even be asserted that these infrastructure elements experience now a new cycle of development whose distinctive features became a regional authorities' more vigorous contribution thereto, programs of the RF Ministry of Education and Science on support of university infrastructure, and development institutions' initiatives. That said, the number of technoparks and incubators established, and all the more so - in operation, in Russia remains unknown. By some estimates, there are some 100 technoparks and 120 business incubators in the country. At the onset, many technoparks were created as real estate objects, which is why they used to face the dilemma: either to develop projects, or to make money by leasing out office space. Plus, there was no previous record of development of projects (which can be partly ascribed to the fact that technoparks initially were not tasked to do that). In 2011, the Association of Hi-Tech Technoparks initiated development of a statute on the *status* of technopark¹, which will be awarded basing on strictly defined notions, such as “innovation”, “resident”, and “technopark” *per se*. This should help identify genuine innovation infrastructure objects. Other lacunas are being filled in, too, including establishment of back offices at technoparks and incubators. Until recently, most operating incubators had not adhere to the classical rules which read that an incubator shall not be a permanent “hotel” for businesses; nor shall they be home to mature companies already selling their products; and local corporate residents should have various kinds of services at hand. Technoparks, too, faced similar challenges, and, in many instances, had loose ties with universities or research organizations, which encouraged their transformation into mere real estate objects.

Presently, new approaches to formation of technoparks have emerged. Thus, a technopark under construction at Novosibirsk Science Campus since August 2010 has thus far been the only one wherein construction of more than a half of objects is funded by private corporate investors which will subsequently reside there. That bolsters their eagerness to have robust logistics and operations on the spot. Inside the technopark, there is an incubator to host 30-35 firms for the term of up to three years. In summer, the technopark hosts summer schools, with mentors delivering tuition and training students and postgraduates in the art of going into innovation business in particular. For businesses such events form a source of both prospective projects and cadres. Besides, such training sessions enable one to expose challenges facing the current university education system from the businesses' perspective, which, once agreed upon by the parties concerned, allows incorporation of more down-to-earth elements into the university curricula. The technopark thus contributes to shaping up a “classical” interplay between education, research and business.

Some business incubators can boast success stories. While their overwhelming majority was created as office centers with beneficial rental fees available to fresh entrepreneurs, rarely were companies provided with various kinds of backing, be those counseling or assistance with finding an investor. Hence a very low rate of new businesses survival and hatching and, consequently, development institutions' laments about the scarcity of innovation projects and companies. The analysis of successful projects highlights the importance of the regional

¹ Kolesova O. What is the name?//Poisk, No. 5, 3.02.2012, p. 2.

administrations' stance on the issue and well thought-through operational conditions of infrastructure objects.

The above conclusion can be proved by the record of the Nizhny Novgorod Innovation Business Incubator (NIBI). Founded in 2007 with the federal and regional governments' support, it offers to its residents a whole lot of services, including, *inter alia*:

- fully equipped office space (office machines, furniture, telephone and access to the Internet) on easy terms;
- free training and consulting services in the area of management, marketing, law, accounting, and technical consulting;
- assistance with drafting the business plan;
- assistance with promoting the company's product or service;
- assistance with searching for investment;
- organization of a free participation in exhibitions and conferences at the national and international levels.

Since the business incubator's onset, out of 18 resident companies initially picked on the basis of competition 7 ones have already hit the commodization stage, while another 6 companies have left the incubator and successfully operates on the market. Most importantly, their products and services enjoy demand both at the regional and federal levels, and some foreign organizations got interested in their technologies¹.

So, the new forms of fostering entrepreneurship boast constantly increasing success stories and it is critical to ensure their diffusion and, where necessary, institutionalization. The proper vehicle for this is the Association of the Innovation Regions of Russia (AIRR), which was established in September 2011. The Association unites 8 Russian regions: Republics of Tatarstan and Mordovia, Tomsk, Novosibirsk, Irkutsk, Kaluga oblasts, and Krasnoyarsk and Perm krais. That Mr. I. Bortnik, the founder of the Fund for Assistance to Development of Small Forms of Enterprises in the Research and Technical Sphere was appointed the CEO of the Association adds much to its positioning.

The Charter of the Association reads that its mission lies in "pursuing an efficient public regional policy which helps promote socio-economic development of Subjects of Russian Federation and Russian Federation on the whole by means of inter-regional cooperation between Subjects of Russian Federation which hold membership in the Association".

The Association began to operate quite vehemently both in its capacity of an expert body, a lobbyist of regional interests, and as an important intermediary in various initiatives. Thus, the Association and Skolkovo Foundation signed a cooperative agreement, in accordance with which the Association promotes projects of the Fund for Assistance's grantees for their subsequent development at Skolkovo, thus attempting to translate the still eclectic concept of "innovation lift" to practice.

Technological Platforms as a new Mechanism of Creation of New Ties

The rise of technological platforms can be interpreted as a new phase of the advancement of the cluster policy under which clusters are shaped up following the territorial, rather than thematic, sign. At the same time, technological platforms form a new element aiming at fostering the ties between main stakeholders to the innovation process - academia, education and busi-

¹ <http://www.government-nnov.ru/?id=61209>

ness in the first place The instrument was not concocted in Russia – it was borrowed from the European Union, but has already begun exhibiting Russia-specific features.

In compliance with the “Procedure of formation of the list of technological platforms”¹, technological platform “is understood as a communication lever aimed at bolstering efforts on creation of promising commercial technologies, new products (services), attraction of additional resources to conduct research and development on the multistakeholder basis (business, academia, government, the civil society), improvement of the normative-legal base in the area of scientific-technological, innovation development” (p. 2 of the “Procedure”).

So, the ultimate objective of formation of technological platforms lies in generation of promising commercial technologies. Plus, technological platforms widen corporations participating in them by:

- granting access to new resources to carry out R&D;
- ensuring their contribution in development of priority avenues of industries’ advancement;
- respective technical regulations and standards (lobbying of corporate interests);
- expanding the planning horizon and ensuring optimization of business planning, as it is both developers and producers of technologies, and their consumers that participate in the platforms;
- bolster efficiency of spending by expanding outsourcing;
- promoting international cooperation;
- addressing the cadres problem for research and business.

That said, the emphasis is put on the technological platform being a “communication lever”. While correct *per se*, this concept appears somewhat misleading to potential participants in the platforms, as the tradition of the Russian innovative policy implies that concomitant with the granting a certain status usually come extra budget infusions.

A typical European algorithm of shaping up technological platforms and their operational standards includes *three stages*. At the first stage, priorities are identified which de facto predefine the clusters’ agenda. The second stage sees development of “roadmaps” for platforms. At the third stage, there begins projects implementation, including R&D, which are funded out of various sources.

When compared with the last year’s processes in Russia, the present arrangement exhibits its “biases from the Western standards” already at its first stage. As of the moment of collection of proposals on formation of platforms, the nation saw the list of priority avenues and respective critical technologies be revised, with the said list having no relation whatsoever to the initiative on shaping up the platform. The list of 8 priority directions and 27 critical technologies was approved by the presidential Decree of 7 July 2011². In parallel with that, there exists yet another priority list – namely, 5 “presidential” “technological breakthrough” avenues identified yet in 2009³, in accordance with which, for example, clusters in i-city Skolkovo were formed.

¹ Approved by the decision of the Government Commission on Hi-Tech and Innovation of 3 August 2010.

² Decree of the President of RF of 07.07.2011 “On approval of priority directions of development of science, technologies and technics in Russian Federation and the list of critical technologies Of Russian Federation.

³ Energy efficiency and energy saving, nuclear technologies, space technologies, medical technologies, strategic information technologies.

Subjects of the existing 28 technological platforms¹ are consistent with the “technological breakthrough” priorities (albeit cannot be reduced to those) and appear partially overlapping with the eight national priorities and a number of critical technologies identified in pursuance of them. Accordingly, technological platforms found themselves beyond main financing mechanisms of financing of priorities implemented via the federal target programs system and FTP “Research and development across priority avenues of development of the scientific-technological complex of Russia for 2007-2013” in the first place.

Meanwhile, as far as long-term development prospects are concerned, technological platforms draw much attention at the federal level, particularly in the most recent version of the “Strategy of innovation development of Russian Federation for the period of up to 2020” approved by the RF Government on 7 September 2011. The document identifies technological platforms as a key instrument of coordination of the emerging innovation system in the frame of which “science, government, business and consumers will be developing a common vision of prospects of technological advancement of a respective industry or a technological direction, shaping up and implementing a prospective research and development program”. Technological platforms are set to play a special part in the system of fostering the public-private partnership, corporate research, etc.

The second stage, that is, design of “roadmaps” *à la Russe* is linked to innovation development programs of corporations with government participation². Plus, a distinctive feature of Russian platforms is the obligingness of a universities’ contribution thereto. A series of companies have thus far viewed the requirement as a tie in, while universities, on the contrary, are nearly enthused to contribute to shaping up technological platforms. Thus, a recent survey of 193 academics (laboratory, chair, university research center heads, executives of small-sized investment firms under universities) demonstrated³ that such a kind of activity as creation of technological platforms is third most popular one in the list of kinds of cooperation with Russian corporations, trailing behind just such kinds of joint activities as cooperative R&D and research commissioned by the corporate sector. Quite surprisingly, technical platforms proved more popular than training of cadres for corporate partners.

So, while judging the “innovation enforcement” measures from the perspective of the scale of outreach, they prove more effective than promotion of “non-coercive” communication, even in such traditional forms of the latter as training of cadres for corporations. Whether the “enforcement” proves efficient and is going to have a long-lasting effect on development of science and innovation, or the effects fade right once the “pressure” on subjects of innovation activity is over, is another story.

¹ Of a total of 203 applications 28 platforms were selected. As of December 2011, yet another 5 applications were considered for inclusion in the list of technological platforms, Source: data of the RF ministry of Economic Development.

² According to the Executive Order by the RF President by results of the work of the Commission under the RF President on modernization and technological development of Russia’s economy. (No. PR-22 of 4 January 2010, item 5 “b”), corporations with government participation engaged in innovation development programs shall partake in shaping up technological platforms and their operation.

³ Klimov A.A., Frumin I.D. An abridged report on studies into best practices in developing the management system by research and innovation activities in Russian tertiary education institutions. Russian Academy of National Economy and Civil Service under the President of Russian Federation, National Research University “The Higher School of Economics”, Center for Sociological Research MITSAR. M.: 2011.

The first fruits of the cooperation between Russian universities and corporations implemented in the frame of the Resolution of the RF Government of 9 April 2010 demonstrate that corporate partners have gradually identified directions and forms of cooperation with universities which proved to have contributed to development of much-needed technologies. Cooperation is a hard thing to push ahead not only in Russia, but elsewhere: the record of promotion of the Advanced Technology Program in the US demonstrated that it took the corporate sector nearly a decade to grow pro-active as far as their collaboration with the university community is concerned.

The third stage is implementation of R&D projects put forward by technological platforms. This particular stage has not been activated as yet, as the process of shaping up of technological platforms exposed an array of still unresolved problems.

The first of them lies in the methodological backing to the process, which is secured by two agencies: the RF Ministry of Economic Development and the RF Ministry of Education and Science. But the technical platform coordinators lack clarity as to which agency is responsible for what and to where inquiries regarding *modus operandi* should be placed. Specifically, it is not clear yet who will be considering technical platforms' proposals on formation of the agenda of the future government program on development of science and technologies.

The other problem is the uncertainty with sources of financing of technological platforms projects. Presently, there are no strictly set procedures of financing of technological platforms. It is assumed that there would be a plethora of such sources, including federal target programs, ROSNANO, public corporations, RAS's fundamental research programs, allocations under the aegis of various initiatives by the RF Ministry of Education and Science on cooperation between corporations and universities, to name a few.

As of December 2011, the ministries in question were not ready to finance even the organizational and technical operations of a technical platform (including drafting a strategic development program and a roadmap). Furthermore, an argument against special allocations in that regard is that where businesses and other cash-rich organizations partake in the platforms, they would be fond of sponsoring their operational logistics.

In all likelihood, the future support of technological platforms projects will be provided on a common basis. Somewhat more favorable regime may emerge only because collective projects developed on their basis would prove more ready-to-implement, thus having the greatest chance for getting funding.

In general, two scenarios of development of support of technological platforms projects can be envisaged:

- 1) technological platform is a special status, which suggests a higher quality of projects. Besides, their subjects will be considered priority ones. In such circumstances technical platforms projects would find it easier to receive funding in the frame of the existing financial instruments;
- 2) technological platform is a combination of status and an additional budget funding to be allocated in the frame of an adjusted state program of development of science and technologies for 2013-2020. In such circumstances it is RFTD which may become the operator of allocation of respective funding.

The earlier selected platforms experienced a certain evolution in 2011: the composition of their participants became more balanced, thanks to some influx of business representatives, albeit 11 platforms have thus far displayed a low level of the corporate sector's contribution thereto. There emerged leaders among the platforms, that is, those ones which have outpaced

the others in the advancement along the above stages of formation and deployment. In this regard the “Medicine of the future” platform is particularly noteworthy. It has become the informal leader among its peers since the very onset. Its structure and performance allows assumption of how far a most efficient structure could progress. The platform is a consortium of 160 organizations, of which a half is corporations, 25% - educational institutions and 20% - academic ones¹. In the course of the project’s evolution there unfolded 9 scientific-technical councils which cover more detailed directions of research in the frame of the platform’s overarching agenda. Furthermore, there already is a 120 project-strong base, of which 35 projects have already earned support in the frame of FTP “Research and development across priority directions of development of the scientific -technological complex of Russia for 2007-2013” and “Farma-2020”. Notably, the platform focuses on implementation of the cluster policy: specifically, task forces on development of innovation clusters were established in a number of regions, including Moscow, St. Petersburg, Samara, Ekaterinburg, among others.

* * *

The analysis of the development of science and innovation in 2011 allows the following conclusions:

1. Last year, innovation rhetoric and support of innovation on the government level proved very intense. The budget funding of R&D was on the upsurge, implementation of initiatives at Skolkovo was gaining momentum, the normative-legal environment for science and innovation activity was being modified, and new development institutions were unfolding. Importantly, the business sector’s attention to sponsoring R&D was on the rise and that can partly be ascribed to Government’s measures on promotion of the cooperation with the public research sector, primarily at universities.
2. By the end of the year, new legal acts had come in effect, which lifted a number of general economic barriers to advancement of innovation activities, including legal acts that concerned various forms of venture investment.
3. Meanwhile, the last year witness growing inequality in terms of assignment of budget funds, with main priorities being the university science and megaprojects, such as Skolkovo and megagrants on creation of laboratories led by prominent researchers from overseas. In the future, there may well emerge a string of other cash-intensive priorities, including cadres training overseas and creation of megascience units. Given that the public sector of science has remained unreformed, the innovation system may slip out of balance.
4. Measures on “forcing” business to get engaged in innovation have become increasingly widespread. Their efficiency appears ambiguous. The phenomenon of “forcing” corporations into innovation and collaboration with universities makes one recall recent plans to force young researchers to stay in the academic sector for several years in exchange for certain public benefits (such as the so called “departmental housing”, or a paid-for internship overseas, etc.). At the time, the idea was present only in draft concepts and strategies and, fortunately, was not adopted. It was academics themselves who opposed the idea in the first place, as an unmotivated researcher is a threat to equipment, a cause for an inaccurate ful-

¹ All the data on the technological platform “Medicine of the Future” are cited by the presentation: V.I. Dovgy. “Russian technological platform “Medicine of the Future”: development record and new opportunities” made at an international workshop “Russian and European technological platforms: boosting cooperation”. Moscow, NRU HSE, 7 December 2011. <http://issek.hse.ru/announcements/38687293.html>

fillment of experiment, etc. That is to say, an incorrect “enforcement” can cause a considerable damage.

5. New initiatives (developments in Skolkovo, shaping up technological platforms) in many ways are based upon customization of foreign experiences. But once borrowed, the instruments in question undergo a certain transformation in the Russian economic environment, which often ends up quite unpredictably. Meanwhile, the country sees new domestic developments unfold, and they are worth examination and a wider spread.
6. The State has remained the principal controlling and regulating agent, with bottom-up initiatives (such as scientific funds) left with no chance for advancement. That results in loose ties in the innovation system, while the “innovation lift” has thus far existed only in the form of a segmental set of development institutions.
7. In all, the level of the State’s involvement in development of the research and innovation activity has remained high and tended to further increase. Consequently, the innovation sphere focuses, primarily, on public financing, and such “uniqueness” of the economic structure blocks Russia’s integration in the global innovation system.