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The review provides a detailed analysis of main trends in Russia's economy in 2014. 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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6.4. Public Policy for Stimulating Scientific and Industrial Cooperation

6.4.1. The evolution of public policy for promoting scientific and industrial cooperation in the 2000s: a brief summary

The state policy for promoting cooperation between science and business has been widely developed over the last few years. It was, and remains, fully immersed 'into the context' of the implementation of a policy of public stimulation of science and innovation, the configuration of which has been determined by a combination of the current resource capabilities of the state and the ideas of the role and place of innovation in the development of the national economy that has dominated the upper echelons of power at different periods time. The key stages in the evolution of public policy towards stimulating scientific and industrial cooperation have coincided with the stages of development of innovation policy in general.[1]

From the collapse of the Soviet Union to around the start of the last decade, Russia's innovation policy was not a primary focus of the state, for a whole range of objective and subjective reasons. The principal of these were the difficult socio-economic situation in the country, the scarcity of budgetary resources and even the disbelief in the possibility of resolving acute economic problems by fostering innovation, on the part of the representatives of government directly involved in shaping the agenda and determining the emphases of public policy. Measures implemented by the Government in this regard were aimed mainly at supporting at least a minimum level of operation of the extremely large and cumbersome system for organising the research and development sector which had been 'inherited' from the USSR. At the same time, questions regarding the commercialisation of the results of supported work and their application within the manufacturing sector were, in most cases, either not raised at all or considered only formally, without giving rise to any real commitments. This policy, which was relatively low-cost for the state but, of course, haphazard, obviously ended up preserving the problems which already existed in the development of national science, technology and engineering and did not result in any tangible or significant innovative breakthroughs.

The economic growth that began in the late 1990s quite quickly led to a considerable softening of budgetary limitations, thus, providing an opportunity to extend the range of real priorities of the policies implemented by the state and to increase the resources available to some of the fields that had previously been 'on the periphery' of the state's attention. One of these new priorities of the state was support for innovation; although, of course, the process of 'building' it into the relevant public policy agenda was by no means instantaneous and took the major part of the last decade.

The first clear sign of change in the attitude of the state towards innovation was the initiation in 2002-2003 of an essentially new instrument of innovation policy: the key innovation projects of national significance (KIP), which was unprecedented, both in terms of the extent of support provided and the level of state attention to its initiation and 'launch'.

A considerable intensification of innovation policy occurred in 2005-2008 due to the favourable economic situation and stable growth of budgetary revenues. This resulted, among other things, in the creation of new instruments of the state to stimulate scientific and industrial cooperation. During this period the TEMP and PUSK Programmes of the Foundation for Assistance to Small Innovative Enterprises were launched (the second programme was implemented jointly with Rosnauka, the Federal Agency for Science and Innovations) while R&D support mechanisms

[1] See, for example, Kuzyk, M., Simachev, Yu. Russia's Innovation Promotion Policies: Their Evolution, Achievements, Problems, and Lessons. Published Papers 164, Gaidar Institute for Economic Policy, 2013.

proposed by the business sector were introduced by the state. Moreover, the conditions for writing off R&D costs when determining taxable profit were significantly softened.

The financial and economic crisis erupted in the second half of 2008 and the 'mobilisation' of state resources for the implementation of the large-scale anti-crisis programme which it triggered, as was noted above, resulted (although with a certain time lag) in the curtailing of a number of public policy measures and tools aimed at stimulating scientific and industrial cooperation including the TEMP and PUSK Programmes of the Foundation of Assistance to Innovations and the support for business projects and KIPs which had been sponsored by the Ministry of Education and Science. It must be said, though, that even at the most acute stage of the crisis, the state did not refuse to create new initiatives in this area, including those relating to support for interaction between science and business. However, for obvious reasons, most emphasis was placed on tools which did not require additional budgetary expenditure: profit tax relief was introduced on R&D costs included in a special-purpose list, and the abilities for scientific and educational budgetary institutions to create small innovative enterprises (SIEs) were significantly extended.

Around the end of 2009 and early 2010, when clearer signs of the post-crisis recovery had began to appear, innovation policy was brought to the fore in the Government's active agenda. At the same time, in a new round of development, the stimulation of interaction between the different participants in innovation processes (including, of course, science and business) was named among the key priorities of innovation policy implemented by the state, along with support for the research and innovation activities of higher education institutions. In this context, we should note the launch of joint projects between businesses and higher education institutions for creating new manufacturing facilities, programmes for developing the innovation infrastructure of higher education institutions, the initiation of new technology platforms and regional innovation clusters whilst forcing the largest state-owned companies to adopt programmes for innovation-driven development with the mandatory inclusion of a 'cooperative element' in each programme.

Finally, starting about 2013, in a period that was at first marked by increasing uncertainty in respect of the prospects for development, and later by more distinct manifestations of a new crisis, the initiation of new areas and measures for state stimulation of scientific and industrial cooperation almost ceased.

An overview of the development of governmental policy for stimulating interaction between science and business in the last fifteen years is presented in *Table 18*.

The main form of public stimulation of scientific and industrial cooperation was, and still is, budgetary funding of the R&D conducted by scientific organisations and higher education institutions in the interests of business. Here, the direct recipients of budgetary funds could be both organisations performing R&D (typical example – business projects) and 'end user' companies ('Mechanism 218'). Moreover, financial support of 'cooperative' R&D has also been carried out by state development institutes: the Foundation for Assistance to Small Innovative Enterprises, and the Russian Foundation for Technological Development (RFTR).

With the development of public innovation policy and the 'enrichment' of its set of active tools, the list of the areas of support for scientific and industrial cooperation was also extending: mechanisms of budgetary and quasi-budgetary funding were supplemented by fiscal incentives (the main one of which was profit tax relief for certain R&D costs included in a special-purpose list), special legislative mechanisms (a set of legal provisions stimulating the creation of inculcation companies by budgetary scientific and educational institutions), organisational tools (technology platforms) and policy measures (approval of the innovation-driven development programmes of the largest state-owned companies).

Table 18

Development of public policy for stimulating scientific and industrial cooperation

	Stable growth					Crisis		Recovery			Uncertainty	
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Key innovation projects of national significance	Ministry of Industry, Science and Technology	Ministry of Industry and Energy/Ministry of Industry and Trade/ Ministry of Education and Science				Ending of funding of KIPs by Ministry of Education and Science						
TEMP Programme of the Foundation for Assistance to Innovations												
PUSK Programme of the Foundation for Assistance to Innovations and Rosnauka												
Softening of the accounting procedure for R&D costs in profit taxation				Used – 2 years, with no result – 100%	1 year					In the tax period of R&D completion		
Projects for commercialisation of technology in thematic areas proposed by the business sector												
R&D projects in thematic areas proposed by the business sector												
VAT relief for certain types of R&D												
Profit tax relief for expenditure on R&D included in a speciallist										Requirement to submit a report to the tax authorities		
Stimulation of the creation of SIEs by budgetary institutions							Simplification of the procedure for SIE creation	Support of partnerships between SIEs and SECs (Scientific Educational Centres)	Extension of the rights of institutions for their disposal of assets; possibility of using the simplified taxation procedure for SIEs; reduction of payment rates to non-budgetary funds for SIEs			
Joint projects of companies with higher education institutions and scientific institutions								Higher education institutions		Higher education institutions and scientific institutions		
Programmes for development of the innovation infrastructure of higher education institutions												
Creation and development of technology platforms									Creation of a list of platforms; RFTR funding		Budgetary funding of R&D in the interests of the platforms	
Programmes for innovation-driven development by the largest state-owned companies									47 companies	60 companies		
Possibility to reduce taxable profit through reserves for future R&D												
Programmes for development of regional innovation clusters										Selection of 25 clusters	Funding of 15 clusters	Funding of 15 clusters

Source: prepared by the authors.

6.4.2. Key areas and tools of public policy in the field of development of scientific and industrial cooperation

From the quite active and multi-faceted policy for stimulating scientific and industrial cooperation applied by the state in the 2000s, the following key areas can be highlighted:

- key innovation projects of national significance;
- TEMP and PUSK Programmes;
- softening of the accounting procedure for R&D costs when determining taxable profit;
- R&D and technology commercialisation projects in thematic fields proposed by the business community;
- VAT relief for certain types of R&D;
- profit tax relief for expenditure on R&D included in a special-purpose list;
- stimulation of the creation of inculcation companies by budgetary scientific and educational institutions;
- support for cooperation between companies, higher education institutions and state scientific institutions as part of a framework of projects for the creation of advanced manufacturing facilities;
- support for the development of innovation infrastructure within higher education institutions;
- creation and support for the activities of technology platforms;
- creation and monitoring of programmes for innovation-driven development of the largest state-owned companies;
- possibility of reducing the amount of taxable income through creating reserves for future R&D;
- support of programmes for the development of regional innovation clusters.

We should note that some of these areas were implemented in several stages and, more importantly, were often realised using a variety of different measures and tools (*Table 19*.). For instance, stimulation of the creation of inculcation companies by budgetary scientific and educational institutions, which had formerly been of a regulatory nature, soon also acquired financial and tax 'components', while technology platforms which were at first solely communication tools, later 'set up' special funding mechanisms.

Table 19

Key areas and tools of public policy for stimulating interaction between research and development sector organisations and business in the fields of research and/or innovation

Area	Tool (content)	Type	Application period	Key documents
Key innovation projects of national significance (mega-projects, or KIPs)	Non-repayable budgetary funding of R&D within the framework of innovative projects	Financial (budget)	From 2003	Order of the Ministry of Industry, Science and Technology of Russia of 11 February 2002 No. 22 'On the Organisation within the Ministry of Industry, Science and Technology of Russia of Work for the Preparation of Proposals on Projects (Programmes) of Particular National Significance' Federal Target Scientific and Technical Programme (FTSTP) 'Research and Development in Priority Areas of the Development of Science and Engineering' for 2002-2006 (as amended by the Resolution of the Government of the Russian Federation of 12 October 2004 No. 540) Federal Target Programme (FTP) 'Research and Development in Priority Areas of the Development of the Scientific-Technological Complex of Russia for 2007-2012' (approved by the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613) Resolution of the Government of the Russian Federation of 6 April 2011 No. 253 'On Making Amendments to the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613'

Area	Tool (content)	Type	Application period	Key documents
				Order of the Ministry of Industry and Trade of Russia of 30 April 2009 'On Approval of the Regulation on the Selection of Key Innovation Projects of National Significance by the Ministry of Industry and Trade of the Russian Federation' Order of the Ministry of Industry and Trade of Russia of 3 November 2010 No. 991 'On the Organisation within the Ministry of Industry and Trade of the Russian Federation of Work Relating to Applied Scientific Research and Development' State Programme of the Russian Federation 'Development of Industry and Increasing Its Competitiveness' (approved by the Resolution of the Government of the Russian Federation of 15 April 2014 No. 328)
TEMP (Technology for Small Enterprises) Programme of the Foundation for Assistance to Small Innovative Enterprises	Quasi-non-repayable funding of R&D required extend activities under licences	Financial (developme nt institute)	2005-2011	Internal documents of the Foundation
PUSK (Partnership of Universities and Companies) Programme of the Foundation for Assistance to Small Innovative Enterprises and Rosnauka	Non-repayable state funding of research activities and quasi-state – of development activities	Financial (budget and development institute)	2006-2009	Internal documents of the Foundation and Rosnauka
Softening of the accounting procedure for R&D costs when determining taxable profit	Reduction of the period of writing off costs on R&D the results of which are used in manufacturing, from 3 to 2 years; increase of R&D cost write-off rate for R&D which gave no positive results, from 70 to 100%	Tax (profit tax)	2006	Federal Law of 6 June 2005 No. 58-FZ 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation on Taxes and Duties'
	Reduction of the period of writing off costs on R&D to 1 year	Tax (profit tax)	2007-2011	Federal Law of 27 July 2006 No. 137-FZ 'On Making Amendments to Part I and Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation in Respect of Taking Measures for the Improvement of Tax Administration'
	Writing off R&D costs in the tax period of the R&D completion	Tax (profit tax)	From 2012	Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I, Part II of the Tax Code of the Russian Federation in Respect of the Creation of Favourable Tax Conditions for Innovation Activities and Article 5 of the Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation'
Projects for commercialisation of technologies in thematic areas proposed by the business community (business projects)	Non-repayable budgetary funding of R&D related to innovative projects	Financial (budget)	2007-2010	Federal Target Programme 'Research and Development in Priority Areas of Development of the Scientific-Technological Complex of Russia for 2007-2012' (approved by the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613) Resolution of the Government of the Russian Federation of 6 April 2011 No. 253 'On Making Amendments to the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613'
R&D projects in thematic areas proposed by business community	Non-repayable budgetary funding of R&D	Financial (budget)	2007-2013	Federal Target Programme 'Research and Development in Priority Areas of Development of the Scientific-Technological Complex of Russia for 2007-2012' (approved by the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613) Resolution of the Government of the Russian Federation of 6 April 2011 No. 253 'On Making Amendments to the Resolution of the Government of the Russian Federation of 17 October 2006 No. 613'

Area	Tool (content)	Type	Application period	Key documents
VAT relief for certain types of R&D	VAT relief for R&D including certain types of works	Tax (VAT)	From 2008	Federal Law of 19 July 2007 No. 195-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation in Respect of Creation of Favourable Tax Conditions for Funding Innovation Activities'
Profit tax relief for costs on R&D included in a special-purpose list	Writing off R&D costs at a 1.5 rate in the period of the actual conduct of those R&D activities	Tax (profit tax)	From 2009	Federal Law of 22 July 2008 No. 158-FZ 'On Making Amendments to Chapters 21, 23, 24, 25 and 26 of Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation on Taxes and Duties' List of scientific research and developments, the taxpayer's expenses on which are included, in accordance with clause 2 of Article 262 of Part II of the Tax Code of the Russian Federation, in other expenses in the amount of the actual costs multiplied by the rate of 1.5 (approved by the Resolution of the Government of the Russian Federation of 24 December 2008 No. 988, as amended by the Resolutions of the Government of the Russian Federation of 13 October 2011 No. 836 and of 6 February 2012 No. 96) Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I, Part II of the Tax Code of the Russian Federation in Respect of the Creation of Favourable Tax Conditions for Innovation Activities, and Article 5 of the Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation'
Stimulation of the creation of inculcation companies by budgetary scientific and educational institutions	Simplification of the procedure for the creation of business entities by budgetary institutions	Normative	From 2009	Federal Law of 2 August 2009 No. 217-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation on Matters of the Creation by Budgetary Scientific and Educational Institutions of Business Entities for the Purpose of the Practical Application (Implementation) of the Results of Intellectual Activity'
	Non-repayable budgetary funding (Rosnauka) of research activities of scientific and educational centres and quasi-state funding (Foundation for Assistance to Innovations) of development activities of small inculcation companies	Financial (budget and development institute)	2010-2012	Internal documents of Rosnauka and the Foundation
	Extension of rights of budgetary institutions in respect of property disposal	Normative	From 2011	Federal Law of 8 May 2010 No. 83-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation in Relation to Improvement of the Legal Status of State (Municipal) Institutions'
	Non-competitive procedure for leasing out property by budgetary institutions to inculcation companies	Normative	From 2011	Federal Law of 1 March 2011 No. 22-FZ 'On Making Amendments to Article 5 of the Federal Law 'On Science and Scientific and Technical Policy' and Article 17.1 of the Federal Law 'On Protection of Competition'
	Possibility to apply a simplified taxation system for inculcation companies	Tax	From 2011	Federal Law of 27 November 2010 No. 310-FZ 'On Making Amendment to Article 346.12 of Part II of the Tax Code of the Russian Federation'
	Reduction of payment rates to non-budgetary funds for inculcation companies	Quasi-tax	From 2011	Federal Law of 16 October 2010 No. 272-FZ 'On Making Amendments to the Federal Law 'On Insurance Payments to the Pension Fund of the Russian Federation, the Social Security Fund of the Russian Federation, the Federal Compulsory Medical Insurance Fund and the Regional Compulsory Medical Insurance Funds' and Article 33 of the Federal Law 'On Compulsory Medical Insurance in the Russian Federation'
Support of cooperation between companies and higher education institutions and state scientific institutions within the framework of projects for the creation of advanced	Non-repayable budgetary co-funding of R&D activities conducted by higher education institutions and (from 2012) by state scientific institutions for business companies within the	Financial (budget)	From 2010	Resolution of the Government of the Russian Federation of 9 April 2010 No. 218 'On Measures for the Public Support for the Development of Cooperation between Russian Higher Education Institutions and Organisations Carrying Out Complex Projects for the Creation of Advanced Manufacturing Facilities' Order of the Ministry of Education and Science of Russia of 16 July 2010 No. 786 'On

Area	Tool (content)	Type	Application period	Key documents
manufacturing facilities ('Mechanism 218')	framework of innovative projects			Approval of the Form of an Agreement between an Organisation Carrying Out a Complex Project for the Creation of an Advanced Manufacturing Facility and the Ministry of Education and Science of the Russian Federation on the Conditions for the Provision and Use of Subsidies for the Implementation of Complex Projects for the Creation of an Advanced Manufacturing Facility Carried Out with the Involvement of a Russian Higher Education Institution' Resolution of the Government of the Russian Federation of 12 October 2012 No. 1040 'On Making Amendments to the Resolution of the Government of the Russian Federation of 9 April 2010 No. 218' Order of the Ministry of Education and Science of Russia of 7 November 2012 No. 904 'On Approval of the Form of an Agreement between an Organisation Carrying Out a Complex Project for the Creation of an Advanced Manufacturing Facility and the Ministry of Education and Science of the Russian Federation on the Conditions for the Provision and Use of Subsidies for the Implementation of Complex Projects for the Creation of an Advanced Manufacturing Facility Carried Out with Involvement of a Russian Higher Education Institution or State Scientific Institution' Resolution of the Government of the Russian Federation of 5 April 2014 No. 269 'On Making Amendments to the Resolution of the Government of the Russian Federation of 9 April 2010 No. 218'
Support for development of the innovation infrastructure of higher education institutions	Non-repayable budgetary funding of programmes for the development of the infrastructure of higher education institutions	Financial (budget), infrastructure	2010-2012	Resolution of the Government of the Russian Federation of 9 April 2010 No. 219 'On Public Support for the Development of Innovation Infrastructure in Federal Educational Institutions of Higher Professional Education'
Creation and support for the activities of technology platforms	Approval of a list of technology platforms	Organisational, communication	From 201 1	Procedure for the Creation of a List of Technology Platforms (approved by the Decision of the Government Commission for High Technology and Innovation of 3 August 2010, Minutes No. 4). List of technology platforms (approved by the Decision of the Government Commission for High Technology and Innovation of 1 April 2011, Minutes No. 2, as amended by the Decisions of the Government Commission for High Technology and Innovation of 5 July 2011, Minutes No. 3, of 21 February 2012, Minutes No. 2) Presidium of the Council of the President of the Russian Federation for Economy Modernisation and the Innovation-Driven Development of Russia, of 20 November 2012, Minutes No. 1, of 31 July 2013, Minutes No. 2
	Quasi-state repayable funding by RFTR of R&D undertaken within the framework of projects presented by the technology platforms	Financial (development institute)	From 2011	Internal documents of the RFTR
	Assignment of the President of the Russian Federation to the Government of the Russian Federation to link state programmes for the development of the industrial and agricultural sectors and the strategy for development of the leading sectors of the economy with top-priority technology platforms	Normative, directive	From 2012	Decree of the President of the Russian Federation of 7 May 2012 No. 596 'On Long-Term Public Economic Policy'
	Non-repayable budgetary funding of R&D proposed	Financial (budget)	2013	Internal documents of the Ministry of Education and Science of Russia

Area	Tool (content)	Type	Application period	Key documents
	by the coordinators of technology platforms			
	Non-repayable budgetary funding of R&D that is in line with the strategic research programmes of technology platforms	Financial (budget)	From 2014	Internal documents of the Ministry of Education and Science of Russia
Programmes for innovation-driven development of the largest state-owned companies	Approval of programmes for innovation-driven development and monitoring of their implementation	Directive, monitoring	From 2011	Recommendations for Designing Programmes for Innovation-Driven Development of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises, Regulation on the Procedure for Monitoring of Development and Implementation of Programmes for Innovation-Driven Development of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises, List of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises Designing Programmes for Innovation-Driven Development (approved by the Decision of the Government Commission for High Technology and Innovation of 3 August 2010, Minutes No. 4). List of Assignments of the President of the Russian Federation Based on the Results of the Meeting of the RF President's Commission on Modernisation and Technological Development of the Russian Economy, 3 November 2011, No. Pr-3291. Amendments to the Regulation on the Procedure for the Monitoring of Development and Implementation of the Programmes for Innovation-Driven Development of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises, amendments to the List of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises Designing Programmes for Innovation-Driven Development (approved by the Decision of the Government Commission for High Technology and Innovation of 30 January 2012, Minutes No. 1)
Possibility to reduce taxable profit through creaking reserves for future R&D	Taking reserves for future R&D into account when determining taxable profit	Tax (profit tax)	From 2012	Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I and Part II of the Tax Code of the Russian Federation in Respect of the Creation of Favourable Tax Conditions for Innovation Activities, and Article 5 of the Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation'
Support of programmes for the development of regional innovation clusters	Assignment of the President of the Russian Federation to the Government of the Russian Federation to link state programmes for the development of the industrial and agricultural sectors and the strategy of developing the leading sectors of the economy with regional innovation clusters	Normative, directive	From 2012	Decree of the President of the Russian Federation of 7 May 2012 No. 596 'On Long-Term Public Economic Policy'
	Subsidies to the constituent entities of the Russian Federation for the implementation of programmes for pilot clusters	Financial (budget)	From 2013	Procedure for the Creation of a List of Pilot Programmes for the Development of Regional Innovation Clusters (approved by the Decision of the Working Group for the Development of Private and Public Partnerships in Innovation Sector of 22 February 2012, Minutes No. 6-AK). Assignment of the Chairman of the Government of the Russian Federation of 28 August 2012 No. DM-P8-5060. Rules for the Distribution and Provision of Subsidies from the Federal Budget to the Budgets of Constituent Entities of the Russian Federation for the Implementation of Measures Envisaged by the Programmes for the

Area	Tool (content)	Type	Application period	Key documents
				Development of Pilot Regional Innovation Clusters (approved by the Resolution of the Government of the Russian Federation of 6 March 2013 No. 188). Resolution of the Government of the Russian Federation of 15 September 2014 No. 941 'On Making Amendments to the Rules for the Distribution and the Provision of Subsidies from the Federal Budget to the Budgets of Constituent Entities of the Russian Federation for the Implementation of the Measures Envisaged by the Programmes for the Development of Pilot Regional Innovation Clusters'

Source: prepared by the authors on the basis of regulatory legal acts and internal documents of the federal authorities and development institutes.

Areas of public policy initiated in the period of stable growth (2002 – mid-2008)

Key innovation projects of national significance (KIPs, or mega-projects)

Support for projects in this category (in the form of targeted budgetary funding) was particularly mentioned in a fundamental document adopted in early 2002 in the field of scientific and technological development – 'The Fundamentals of the Policy of the Russian Federation in the Field of Science and Technology Development for the Period until 2010 and Further Prospects'[2] –as one of the key measures of public stimulation of scientific, scientific-technical and innovation activities.

One can highlight a whole range of features of mega-projects that markedly distinguish them from any of the earlier applied public innovation support tools. Firstly, there is the quite the significant volume of both projects themselves and budgetary resources allocated for their implementation – up to Rb 1.5bn; furthermore, those budgetary funds were provided on a non-repayable basis and could cover up to one half of the project cost. Secondly, the duration of the projects: although the official limit of their implementation period was 4 years, in practice, most of these projects continued for 5-6 years, and some of them even longer. Thirdly, each project covered several consecutive stages of the innovation cycle – from the development of a new product or technology to the commencement of bulk sale. The latter circumstance determined both the scale and duration of the projects and established the necessity for a consortium of contractors to participate in each project (including at least the developer organisation and the company responsible for large-scale commissioning of the created products or technologies). This is what enables us to view mega-projects as a tool contributing to the development of scientific and industrial cooperation.

However, with the undoubted importance of the above features of mega-projects, the main peculiarity of this tool was that the recipients of support were required not only to develop and launch production of new products but also to gain revenues from the sale of such products in an amount that exceeded the costs incurred by the state to support the project by a factor of at least five times. This requirement, in our opinion, was the key one in the entire 'structure' of mega-projects, because it was through its help that the state attempted not only to ensure support for innovations that were in real demand in the market, but also to guarantee that it recovered (although with a significant delay) the invested funds – in the form of tax or other payments generated mainly at the stage of mass production and sale of the products. It was also assumed that each KIP was able to ensure a significant contribution to meeting the most important public objectives, such as an increase in the level of national security level and improvement in the quality of life of the population or, at least, having a considerable economic impact at the level of individual industries and sectors. However, it is important to note that the state initially suspected that not all mega-projects would give the expected quantitative results.[3] In 2001, according to the main 'ideologist'

[2] Letter of the President of the Russian Federation of 30 March 2002 No. Pr-576.

[3] Imamutdinov, I. Innovative Choice. Expert, 2002, No. 46.

of the creation of this tool – the Deputy Minister of Industry, Science and Technology of the Russian Federation, Andrei Fursenko – a fundamental effect of the implementation of KIPs should have been the creation of successful project teams and the generation of positive examples, stories of success.[4]

The state's considerable 'stake' on the implementation of mega-projects as one of the main stepping stones for building the economy of knowledge[5] was clearly evident at the stage of the initial selection of their themes. The relevant process was quite complex and costly, included several stages, and lasted for about a year. In early 2002 the Ministry of Industry, Science and Technology of Russia organised a call for project proposals. The received applications (over two hundred) underwent preliminary scientific and technical expert examination in the Republican Research Scientific and Consulting Centre of Expertise (RRSCCE), after which they were referred for review to specially created thematic working groups, including, along with representatives of the Ministry, subject matter experts and independent innovation brokers and investors. The next stage of review of the projects was carried out by a representative expert council consisting of leaders of the Ministry, large business structures and academic institutes. Finally, a list of projects compiled by this expert council was submitted to the Government for approval.[6]

In 2003, based on the results of this selection, the Ministry of Industry, Science and Technology of Russia launched 12 KIPs, for which the total volume of budgetary funding had amounted to Rb 1.2bn by the end of the year (comparable, for example, to the annual volume of budgetary funding for the basic technological Federal Target Programme 'National Technological Base'). After the said Ministry had been abolished in 2004,[7] six of the mega-projects were transferred to the Ministry of Education and Science of Russia, five – to the Ministry of Industry and Energy of Russia, and one – to the Ministry of Regional Development of Russia. The first two Ministries 'assimilated' the KIP tool and soon started initiating new projects. The relevant expenditure item of the Ministry of Education and Science of Russia was included first in the FTSTP 'Research and Development in Priority Areas for the Development of Science and Engineering' for 2002-2006 [8] and after its completion – in the FTP 'Research and Development in Priority Areas for the Development of the Scientific-Technological Complex of Russia for 2007-2012.'[9] The development of new mega-projects sponsored by the Ministry had continued until 2009; and funding of previously initiated projects within the framework of the FTP 'Research and Development…' – until 2010.[10] As for the launch and funding of mega-projects by the Ministry of Industry and Energy of Russia, and subsequently by the Ministry of Industry and Trade of Russia, this process is ongoing – with KIPs being named amongst the tools for the implementation of the State Programme 'The Development of Industry and Increase in its Competitiveness.'[11]

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[4] Myazina, E. Five Rubles for One. Izvestiya of 8 July 2002.

[5] Leskov, S. Andrei Fursenko: How to Benefit from Natural Propensity of a Russian Man. Izvestiya of 17 October 2003.

[6] Imamutdinov, I. Innovative Choice. Expert, 2002, No. 46.

[7] Decree of the President of the Russian Federation of 9 March 2004 No. 314 'On the System and Structure of Federal Executive Bodies.'

[8] As revised by Resolution of the Government of the Russian Federation of 12 October 2004 No. 540 'On Making Amendments to Federal Target Scientific and Technical Programme (FTSTP) 'Research and Development in Priority Areas of Development of Science and Engineering' for 2002-2006 and Invalidating Certain Legal Acts of the Government of the Russian Federation.'

[9] Approved by Resolution of the Government of the Russian Federation of 17 October 2006 No. 613 'On Federal Target Programme (FTP) 'Research and Development in Priority Areas of Development of the Scientific-Technological Complex of Russia for 2007-2012.'

[10] Resolution of the Government of the Russian Federation of 6 April 2011 No. 253 'On Making Amendments to Resolution of the Government of the Russian Federation of 17 October 2006 No. 613.'

[11] The effective version is approved by Resolution of the Government of the Russian Federation of 15 April 2014 No. 328 'On Approval of State Programmes of the Russian Federation 'Development of Industry and Increase of Its Competitiveness'. However, it should be noted that the state programme provides for relevant budgetary funding only until 2014 and only on item 'Support of innovation-driven development of companies in the field of technical regulation, standardisation, assurance of uniformity of measurements and information.'

In general, for the period from 2003 to 2014 about 70 mega-projects were initiated, out of which over 2/3 were 'in the line' of the Ministry of Industry and Energy/Ministry of Industry and Trade of Russia. Interestingly, the supported KIPs were by no means only from the high technology sectors: for instance, some of the projects represented the wood processing, paper and pulp, and metallurgy sectors. However, at the level of the entire group of supported mega-projects, two priority sectors were clearly distinguishable: the machine building complex and the medical and pharmaceutical industry (predominantly the KIPs were associated with these sectors). The total volume of budgetary funding of KIPs over the last 12 years has been around Rb 24bn.

The experience of application of the KIP tool by the state and the results achieved within the framework of supported projects were, on multiple occasions, positively assessed by not only representatives of the relevant Ministries,[12] but also by representatives of the expert community.[13] Among the key positive effects of the implementation of mega-projects the following were most often noted: the creation and successful development of a new scheme of private and public partnership ensuring a rational combination of interests of the state and business within the framework of implementation of large-scale innovative projects and the development of effective and mutually beneficial collaboration between organisations of the research and development sector and industrial companies. Moreover, in respect of certain projects one could often hear mention of results such as significant growth in the manufacture of new and improved products, their widespread use in different sectors and the development of new markets, including for export.

Along with the merits and positive effects of KIPs, both experts and representatives of the government authorities noted considerable problems with their realisation. For instance, in some cases, the executives had difficulties ensuring the required level of non-budgetary co-funding of projects – there was even a precedent of the early termination of a state contract due to a failure to fulfil the relevant obligations.[14] Moreover, the not insignificant problems of the practical realisation of mega-projects were related to the distribution of rights for created intellectual property being limited by the possible forms of use of the allocated budgetary funds, the necessity to comply with legal requirements for state purchasing and unilateral changes to the rules and conditions of support by the state.[15]

Viewing the results of the KIP tool in general, one has to admit that the 'stake' on mega-projects as a means of assuring meaningful technological changes on a national scale was something of a failure rather than a success: even with the undoubted successes reached within the framework of implementation of a considerable proportion of the projects, the achieved results were mostly of a 'local' nature and failed to ensure significant progress in technological development, at least at the level of particular industries and sectors.

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[12] See, for example, Ministry of Education and Science of Russia. Improvement of Mechanisms of Formation and Implementation of the Key Innovation Projects of National Significance. Theses of the Report of the Minister of Education and Science of the Russian Federation Andrei Fursenko. 2006. http://www.fcntp.ru/ page.aspx?page=99; Ministry of Industry and Trade of Russia. On Implementation of the Key Innovation Projects of National Significance. Theses of the Report of the Minister of Industry and Trade of the Russian Federation S. Naumov. 2009. http://old.minpromtorg.gov.ru/industry/radioelectronic/1

[13] Voronkina, L., Ivanova, O. Key Innovation Projects of National Significance as an Element of National Innovative System. Almanac 'Science. Innovations. Education'. No. 2. Moscow: Languages of the Slavic Culture, 2007; Rykova, I., Bogachev, Yu., Oktyabrsky, A. Innovation Projects of National Significance: Principles and Methodology of Formation of the Key Innovation Projects of National Significance. In the book: Effective Public Administration in the Conditions of the Innovative Economy: Policy of Innovation-Driven Development. Edited by S.N. Silvestrov, I.N. Rykova. Moscow: Dashkov and Co., 2011.

[14] Ministry of Education and Science of Russia. Improvement of Mechanisms of Formation and Implementation of the Key Innovation Projects of National Significance. Theses of the Report of the Minister of Education and Science of the Russian Federation Andrei Fursenko. 2006. http://www.fcntp.ru/page.aspx?page=99

[15] Parmon, V., Noskov, A., Anfimova, N. Problems of Innovative Interaction between the Russian Science and Large Manufacturing Facilities. Innovations, 2010, No. 5; Rykova, I., Bogachev, Yu., Oktyabrsky, A. Innovation Projects of National Significance: Principles and Methodology of Formation of Key Innovation Projects of National Significance. In the book: Effective Public Administration in the Conditions of the Innovative Economy: Policy of Innovation-Driven Development. Edited by S.N. Silvestrov, I.N. Rykova. Moscow: Dashkov and Co., 2011.

TEMP Programme

In 2005 the Foundation for Assistance to Small Innovative Enterprises (Foundation for Assistance to Innovations) began the implementation of the TEMP (Technologies to Small Enterprises) Programme aimed at supporting the commercialisation of developments made by state scientific organisations (academic and sectoral research institutes) and higher education institutions. Under the Programme the Foundation provided non-repayable (grant) funding for the R&D required for the extension of work under the licences acquired by enterprises from state organisations; the major part of the works financed by the Foundation (at least 70%) was carried out by licensees. Supported projects were supposed to result in the development of manufacturing and introduction to the market of new promising products and services in volumes at least 3 times greater than the corresponding investment by the Foundation. The total duration of the supported projects could reach 4 years, with the maximum share of the Foundation's funds in the total cost of the project set at 30%. The following were admitted to participation in the Programme: small enterprises already selling their products in the market in sufficiently large volumes (from Rb 30m per year) and consortia consisting of a small enterprise and a medium or large company.

Competitive selection of projects within the framework of the TEMP Programme had been carried out until 2008, after which the Programme implementation was terminated due to the re-allocation of state resources in favour of anti-crisis measures (in the implementation of which the Foundation for Assistance to Innovations was partly involved). Within the framework of the Programme the Foundation financed over 70 projects to the tune of about Rb 1bn in total. At the same time, for certain projects the volume of funds provided by the Foundation reached Rb 30m.

In general, the results of implementation of the TEMP Programme have been considered quite positive (although, mainly by representatives of the Foundation).[16]

The key advantage of this support mechanism was its strict orientation towards the commercialisation of particular developments and its key limitation – the necessity to use existing intellectual property items. However, it should be noted that this limitation was reasonably determined by the aim to ensure the real effectiveness of the projects (reaching the stage of sufficiently large sales) with relatively small predetermined volumes of support.

PUSK Programme

In 2006 the Foundation for Assistance to Innovations and the Federal Agency for Science and Innovations (Rosnauka) jointly initiated the PUSK (Partnership of Universities and Companies) Programme. This Programme was oriented towards the support of joint projects between Russian higher education institutions and small innovative companies envisaging the development and application of new products and technologies. The support recipients here were both higher education institutions developing technologies, and small companies implementing these technologies in manufacturing. Selection of projects to be supported was carried out on the basis of the results of parallel tenders conducted by Rosnauka and the Foundation for Assistance to Innovations. Based on the tender results, Rosnauka financed the conduct of research activities by the higher education institutions[17] aimed at the creation of new technology and its adaptation to the needs of particular enterprises; the Foundation, in its turn, provided the funds to the enterprises for carrying out development activities required for the implementation of the technology in manufacturing. Moreover, within the framework of each project the higher education institution was supposed to train, using its own or third-party funds, experts in the field of the newly-

[16] See, for example, Bortnik, I. Foundation of Assistance: Development Logic. Innovations (special issue), February 2009; Innovations: Mechanisms of Search for Ideas. Record of the Round Table – meeting of Expert Group No. 5 'Transfer from Stimulation of Innovations to the Growth on Their Basis' on work over 'Strategy 2020' of 24 March 2011 http://2020strategy.ru/data/2011/07/22/1214726205/3.doc

[17] We should note that funding of projects on the part of Rosnauka was carried out within the framework of FTP 'Research and Development…,' however, it was not documented as a separate mechanism but was performed using the funds allocated to the existing programme activities.

developed technology for the purpose of promoting further use of this technology by the enterprise. The duration of the supported projects was 2-3 years, with a relatively small total volume of funding – up to Rb 16m – and allocated in equal parts between Rosnauka and the Foundation for Assistance to Innovations.

The key feature of the PUSK programmes was, together, of course, with the 'parallel' scheme of selection and funding of small enterprises and higher education institutions, in the obligations which it envisaged requiring higher education institutions to provide personnel to support small enterprises in the realisation of joint projects.[18] This circumstance was, in our opinion, a key advantage of the tool in question. The most significant of its disadvantages was the necessity to 'break down' projects into two different (although still interrelated) parts, each of which was actually a separate object of support. Generally speaking, such a scheme posed a risk of significant problems when transferring the results of developments made by the higher education institution to the enterprise – not least, due to the inevitable differences in their research and business cultures. However, the training by the higher education institution resulting in highly-qualified personnel for each 'particular project' envisaged by the Programme was aimed, among other things, at contributing to the elimination of possible conflicts between the project participants.

According to the available data, from 2006 to 2009, within the framework of the PUSK Programme 22 projects were implemented the participants in which, on the part of the educational sector, were both relatively small higher education institutions and the largest universities, such as the Lomonosov Moscow State University or the Bauman Moscow State Technical University. The total volume of their funding from the Foundation for Assistance to Innovations and from Rosnauka was about Rb 260m. When the 2008 financial crisis broke, the PUSK Programme suffered the fate of the TEMP Programme, with its termination being initiated by Rosnauka this time[19]. Despite the quite modest scale of application of the support mechanism provided by the Programme, its results were positively assessed not only by its direct participants[20] but also by representatives of the expert community.[21]

Softening of the accounting procedure for R&D costs when determining taxable profit

Starting from 2006 the state has made a number of steps aimed at creating more attractive conditions for the funding of R&D by organisations (from the perspective of taxation on profits). The measures implemented were related both to independent R&D conducted by organisations which were 'end consumers' and the placement of relevant orders with third-party contractors, so this enables us to consider this area in the context of a stimulation of scientific and industrial cooperation.

Before the end of 2005, R&D costs incurred by organisations were accounted uniformly in determining the amount of taxable profit over the three years subsequent to the completion of the relevant work. In this case, if the R&D results were used by the organisation in manufacturing or in the sale of products and services, the relevant costs were to be written off in full; otherwise, only 70% of costs incurred were 'taken into account' when calculating taxable profit.[22]

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[18] For this reason this mechanism has some similarity with sufficiently successfully applied abroad (mainly, in the UK) 'Teaching Company Scheme' providing for delegating by universities of students and post-graduates to companies for the conduct of research and development (Dezhina, Kiseleva, 2008).

[19] Innovations: Mechanisms of Search for Ideas. Record of the Round Table – Meeting of the Expert Group No. 5 'Transfer from Stimulation of Innovations to the Growth on Their Basis' on work over 'Strategy 2020' of 24 March 2011 http://2020strategy.ru/data/2011/07/22/1214726205/3.doc. We should note that in 2010 the Agency and Foundation initiated a new joint programme oriented on the support of partnerships of small innovative enterprises with scientific and educational centres – structural subdivisions of state-owned scientific organisations or higher education institutions (see below).

[20] Polyakov, S., Zybim, D. About the Implementation of the PUSK Programme. Innovations, 2007, No. 5; Bortnik, I. Foundation of Assistance: Development Logic. Innovations (special issue), February 2009.

[21] Dezhina, I., Kiseleva, V. State, Science and Business in the Innovation System of Russia. Scientific Works/Institute of the Economy in the Transition Period; No. 115P. Moscow: Institute of the Economy in the Transition Period, 2008.

[22] Tax Code of the Russian Federation (Part II) of 5 August 2000 No. 117-FZ.

From early 2006 the period for writing off expenditure on R&D the results of which were used by the organisation, was reduced to two years; meanwhile, costs on R&D which gave no positive results were still to be written off within three years but in their full amount.[23] From 2007 the accounting period for R&D expenditure (regardless of the result) when determining taxable profit, was reduced to one year.[24] Finally, since 2012 such expenses must be written off in the same tax period (year) in which relevant R&D activities were completed.[25]

In general, the gradual softening by the state of the tax regime in respect of R&D costs certainly deserves a positive view. However, it should be noted that the mechanism being implemented is not tax relief in the traditional meaning of the term because it provides neither for the scaling of the expenses actually incurred (unlike the mechanism of the 1.5-rate write off of costs on certain types of R&D described below) nor their write-off 'ahead of time' (as in the case of the formation of reserves for future R&D costs, also described below).

Funding of R&D conducted in the interests of business

When the previously mentioned FTP 'Research and Development…' was initiated in 2007, two new mechanisms of support for interaction between science and business were introduced.

The first mechanism provided for budgetary co-funding of projects for the commercialisation of technology in the interests of particular Russian companies ('business projects'). Companies initiated projects by submitting their proposals in respect of their subject matter and key parameters to the state. Then, on the basis of the results of a review of the received proposals, the state announced a tender for undertaking the R&D required for the implementation of the projects. The initiating company was provided with an opportunity to participate in the preparation of the tender documents and the expert examination of the applications received, but neither the initiating company nor its affiliates could, themselves, participate in the tender. The organisation selected on the basis of the results of the tender would then conduct the R&D at the request of the state and the results received were to be transferred to the initiating company for commercialisation. The maximum duration of such supported projects was 3 years, with the annual volume of budgetary funding of the business project not exceeding Rb 100m. It was also established that the budgetary funds could account for no more than 30% of the total cost of the project.

It is important to note that such business projects had a whole range of features in common with KIPs. For example, in both cases the initiators of the projects were particular business structures, with the state being responsible only for the conduct of the R&D, and the expected result of the projects was not only the creation of new products and technologies, but also their application by manufacturing facilities. This explains both strengths and weaknesses of the two instruments: their implementation of several stages of the innovation cycle, the emphasis on commercialisation and their regulatory restrictions. However, the scheme of support for business projects had one principal peculiarity which, in our opinion, significantly limited its potential efficiency: in contrast to KIPs, the recipient of support was not the company initiating the project and directly interested in the results of the R&D financed by the state, but a third-party contracting organisation that, notably, was selected by the state (even if with some participation of the initiating company). Generally speaking, this posed substantial risks for companies in relation to the extent to which the R&D results eventually transferred to them would meet their needs.

[23] Federal Law of 6 June 2005 No. 58-FZ 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Some Other Legal Acts of the Russian Federation on Taxes and Duties.'

[24] Federal Law of 27 July 2006 No. 137-FZ 'On Making Amendments to Part I and Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation in Respect of Taking Measures for Improvement of Tax Administration.'

[25] Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I, Part II of the Tax Code of the Russian Federation in Respect of Creation of Favourable Tax Conditions for Innovation Activities and Article 5 of Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation.'

However, the above disadvantage of business projects did not lead to a lack of interest on the part of Russian companies: 2007 and 2008 saw the commencement of implementation of 12 projects initiated by, inter alia, a number of large state and private companies: Scientific Production Organisation (NPO) 'Saturn', TNK-BP, Rocket and Space Corporation 'Energia', etc. The annual volume of budgetary funding of business projects in 2007-2009 was about Rb 1.5bn; while the total budgetary expenditure on the implementation of any one project usually did not exceed Rb 150m.

The period of application of the business project tool was quite short – starting from 2009 no new projects were initiated, and budgetary funding of previously launched projects was cut off in 2010. At the same time, despite such a short period of its existence, this instrument received positive assessment not only in official documents but even from some representatives of the expert community.[26]

The second mechanism initiated within the framework of the FTP 'Research and Development…' provided for budgetary co-funding of R&D conducted in the interests of business. The scheme of its implementation was quite similar to that described above for the support of business projects: projects were initiated by high-tech Russian companies, and, on the basis of their proposals, the state announced a tender for the conduct of R&D. Initiating companies had a chance to participate both in the preparation of the tender documents and in expert examination of the received applications, but the selection of contractors was carried out by the state. The latter financed up to half of the conducted R&D, with the volume of support being Rb 30-50m per year and with durations not exceeding 3years. The principal difference of this tool of support for business projects was that, in this case, the projects covered only the R&D stage but did not include the further commercialisation of the results, which were entirely the responsibility of the initiating companies for 'buy-back'.

Thus, this scheme of R&D support in the interest of business fully replicated the key flaw of the business project tool – the 'secondary' role of the initiating companies in the selection of the R&D contractors and further interaction with them in project realisation together with the related risks of receiving results which did not quite meet their needs – but, at the same time, it lacked the important advantage of the latter – its orientation towards practical application of the supported developments.

However, as in the case of the business projects, the possibility of receiving state co-funding of R&D, even with the 'load' of the contractor being selected by the state, aroused great interest in Russian companies, both small and quite large: among the project initiators were, for example, MMC Norilsk Nickel and JSCB Gazprombank. At the same time, in contrast to the extremely limited practice of support for business projects, application of this mechanism was quite lengthy and large-scale: budgetary funding of R&D projects in the interests of business continued all the way until the completion of implementation of the FTP 'Research and Development…' in 2013,[27] while the initiation of new projects ceased in 2012 – one year before the completion of the Programme. During this period about 80 projects received public support and the total volume of budgetary funding of such projects was about Rb 8bn (from Rb 0.5m to Rb 2.2bn per year). The amount of support for any one project, however, usually did not exceed Rb 100m.

VAT relief for certain types of R&D

In early 2008 the state introduced a new mechanism of tax stimulation for R&D activities (and, hence, their funding – including funding within the framework of scientific and industrial cooperation). This tax benefit provided VAT relief for the conduct of R&D relating to the creation of new products and technologies or improvement of existing ones. However there was the

[26] Gurvich, V. At the Threshold of the New World. Political Journal, 2008, No. 2.

[27] By Resolution of the Government of the Russian Federation of 6 April 2011 No. 253 'On Making Amendments to Resolution of the Government of the Russian Federation of 17 October 2006 No. 613' implementation of the programme was extended for one year.

constraint that the relevant work should include the development of a design for an engineering facility or a technical system, a new technology, or the creation of development prototypes of machines, equipment, materials (not for further resale) and their testing.[28]

We should note that the spectrum of works eligible for the tax relief was quite wide, which was an undoubted advantage for the prospect of stimulating research and innovation activities. At the same time, the very fact that the tax relief applies only to a part of R&D (although a considerable part) somewhat complicates its application and administration. However, the dynamic growth of the scale of its use observed up to and including 2013 (when the volume of R&D 'covered' by the tax relief was Rb 53bn[29]) evidences the successful 'adaptation' of taxpayers to the peculiarities of this tax mechanism.

Areas of public policy initiated in the crisis period (second half of 2008 and 2009)

Profit tax relief for costs on R&D included in a special-purpose list

In early 2009 profit tax relief was introduced in respect of R&D costs in a range of thematic areas included in a special-purpose list,30 based on a list of critical technologies and, in fact, detailing the major part of the items included therein. This tax relief envisaged that expenditure on such R&D conducted in the interests of the taxpayer organisation itself (but not on behalf of third parties) would be taken into account at a rate of 1.5[31] when determining the taxable profit of the organisation. In this case the preferential tax treatment applied both to the independent conduct of R&D by the company itself and to the placement of relevant orders with third-party organisations, which allows us to consider it as a tool, not only for stimulating expenditure on R&D in certain areas of utmost importance to the state, but also for promoting scientific and industrial cooperation in these areas.

The 'selectiveness' of the introduced tax mechanism (meaning that it covered only particular thematic areas, although, in fact, quite a substantial number) explains some of the difficulties in its application by the taxpayer organisations. In our opinion, it was because of this that the scale of its application, at first, was not particularly great: based on the results of 2009 the tax relief covered only 4% of all R&D costs accounted for the purposes of taxation. However, in the following two years, with taxpayers 'becoming familiar' with this mechanism, its application expanded greatly: in 2010 the tax relief was applied to 11% of the total R&D costs of taxpaying companies and in 2011 – to almost a quarter.

From 2012 the legal regime of the tax relief application was modified considerably: taxpayers applying this mechanism were now supposed to submit reports on the relevant R&D (documented in accordance with a standard form) to the tax authorities; the latter were granted the right to appoint experts to examine the received reports to verify their compliance with the R&D specified by the government list.[32] This change that had been aimed at preventing unjustified application of the tax relief, at the same time considerably complicated its application by good-faith 'users' and

[28] Federal Law of 19 July 2007 No. 195-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation in Respect of Creation of Favourable Tax Conditions for Funding Innovation Activities.'

[29] For comparison: the volume of expenses on R&D eligible for the profit tax relief described in the next sub-clause in 2013 was Rb 9bn.

[30] Federal Law of 22 July 2008 No. 158-FZ 'On Making Amendments to Chapters 21, 23, 24, 25 and 26 of Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation on Taxes and Duties'; Resolution of the Government of the Russian Federation of 24 December 2008 No. 988 'On Approval of the List of Scientific Research and Developments, the Taxpayer's Expenses on Which are Included, in Accordance with Clause 2 of Article 262 of Part II of the Tax Code of the Russian Federation, in Other Expenses in the Amount of Actual Costs Multiplied by 1.5.'

[31] Costs on R&D not included in the list were accounted, for the purposes of profit taxation, in the amount of actually incurred costs during the year after the completion of relevant works (or certain stages of works).

[32] Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I, Part II of the Tax Code of the Russian Federation in Respect of Creation of Favourable Tax Conditions for Innovation Activities and Article 5 of Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation.'

burdened the tax authorities with additional organisational and financial costs, especially in requirement to appoint experts to examine the documents). Thus, to a considerable extent, this tax mechanism lost its previous key advantage of the relative simplicity of application and administration. As a result, in 2012 the share of costs on R&D formally eligible for the tax relief decreased by a factor of two, to 12%.

Stimulation of the creation of inculcation companies by budgetary scientific and educational institutions

Together with the launch of the above tax mechanisms, in 2009 the state commenced the implementation of measures stimulating the creation of inculcation companies by budgetary scientific and educational institutions. The first step on this path was the softening of the legislative norms regulating the creation of business entities by such institutions: the authorisation-based procedure for their creation that had been effective before was replaced by a notification-based procedure. There was a separate requirement for the activities of the created companies to be aimed at implementing the results of intellectual activity, the exclusive rights to which belonged to the creating institutions. Moreover, restrictions were established in respect of the minimum participation share of the 'parent' institutions in the capital of the inculcation companies (for OJSCs – one quarter; for LLCs – one third) and the disposal of the shares or units of the latter (only with the consent of the owner of the institution's property).[33]

In mid-2010 'in line with' the adopted legislative changes, Rosnauka and the Foundation for Assistance to Innovation launched a programme for the support of partner projects between scientific and educational centres (SEC)[34] and small innovative companies. Its scheme of implementation was close to that described above for the joint implementation by the same participants in the PUSK Programme: the recipients of support were simultaneously SECs (or, to be more exact, scientific organisations and the higher education institutions that created them), and small innovative firms. Based on the results of the parallel tenders, Rosnauka financed research conducted by the SEC teams[35] while the Foundation supported R&D by small companies conducted for implementing the SEC developments. It is remarkable that, as in the case of the other Foundation for Assistance to Innovations programme – TEMP, not only small business entities, but also larger firms were admitted to participation in the projects, provided that they involved smaller companies as joint contractors. The duration of supported projects was limited to 3years, with the volume of funding provided to each participant not exceeding Rb 15m. Within the framework of the programme, 23 SEC partner projects and inculcation companies created by budgetary scientific and educational institutions, were supported, with the total volume of support provided amounting to about Rb 1.5bn.

It should be admitted that the regulatory measure taken in 2009, with its undoubted importance, was of a 'half-way' nature: budgetary institutions were granted the right independently to create inculcation companies and to include into their authorised capital the rights to the results of their intellectual activities, however, they were unable to transfer to them equipment, money or other property without the owner's consent. Moreover, even the leasing of property by the 'parent' institutions to the inculcation companies was permitted only in accordance with the standard procedure – based on the results of auctions or tenders.

[33] Federal Law of 2 August 2009 No. 217-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation on Matters of Creation by Budgetary Scientific and Educational Institutions of Business Entities for the Purpose of Practical Application (Implementation) of the Results of Intellectual Activities.'

[34] Scientific and educational centres were recognised officially documented (by special-purpose resolution approved by the head of the organisation) structural subdivisions of public scientific, scientific and industrial organisations or higher education institutions conducting scientific research and training personnel of the highest qualification.

[35] Relevant funds were allocated within the framework of FTP 'Scientific and Scientific-Pedagogical Personnel of Innovative Russia' for 2009-2013, however, as in the case of PUSK Programme, this area of support was not documented as a separate mechanism.

The above obstacles were eliminated when a number of new regulative norms came into force in early 2011. Budgetary institutions were granted the right to dispose, independently, of all of their property with the exception of immovable and especially valuable movable property, and performance of major and related-party transactions.[36] Furthermore, a non-competitive procedure was established for the lease by budgetary institutions of their property to inculcation companies which they had created.[37]

In addition to the above measures, a requirement preventing inculcation companies from applying the simplified taxation system in the absence of a participating organisations owning over one quarter of capital, was cancelled.[38] Finally, for the period from 2011 to 2019 reduced rates of insurance payments to state non-budgetary funds were established in respect of inculcation companies created by budgetary institutions.[39]

In general, this process launched by the state, of the creation of inculcation companies by budgetary institutions, was quite large-scale and dynamic: while by November 2010 about 600 such companies had been established (out of which about 60% were in compliance with the standards of the 'basic' law No. 217-FZ), by April 2012 there were almost fifteen hundred (out of which 84% complied with the above law). It is important to note that the overwhelming majority (about 99%) of these companies were created by educational institutions.[40] Obviously, this fact may be partially explained by the greater interest of higher education institutions in the implementation of their results through small innovative firms. However, in our opinion, it was to a much greater extent explained by the fact that higher education institutions were 'forced' by government authorities (mainly by the Federal Agency for Education) to create small enterprises. For example, a large number of universities (including the federal ones) included the relevant indicator into their development programmes. Moreover, programmes for the development of the innovation infrastructure of higher education institutions, implemented in 2010-2012, had a significant effect on the creation of small enterprises by higher education institutions (see below): their support of small innovative firms was among the top priorities in these programmes and their number was one of the target indicators.

As a result, according to available estimates, about two thirds of companies created by higher education institutions exist either only nominally or are unviable.[41] However, at the level of individual higher education institutions the activities of inculcation companies were often assessed positively,[42] although even in these cases it was noted that not all the created companies successfully operated in the market.[43]

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[36] Federal Law of 8 May 2010 No. 83-FZ 'On Making Amendments to Certain Legal Acts of the Russian Federation in Relation to Improvement of the Legal Status of State (Municipal) Institutions.'

[37] Federal Law of 1 March 2011 No. 22-FZ 'On Making Amendments to Article 5 of Federal Law 'On Science and Scientific and Technical Policy' and Article 17.1 of Federal Law 'On Protection of Competition.'

[38] Federal Law of 27 November 2010 No. 310-FZ 'On Making Amendment to Article 346.12 of Part II of the Tax Code of the Russian Federation.'

[39] Federal Law of 16 October 2010 No. 272-FZ 'On Making Amendments to Federal Law 'On Insurance Payments to the Pension Fund of the Russian Federation, Social Security Fund of the Russian Federation, Federal Fund of Compulsory Medical Insurance and Territorial Funds of Compulsory Medical Insurance' and Article 33 of Federal Law 'On Compulsory Medical Insurance in the Russian Federation.'

[40] Andreeva, A., Kaigorodov, A. The Financial Mechanism of Commercialisation of Results of Intellectual Activity as a Key Element of Innovation Infrastructure of Regions. News of Higher Education Institutions. Series: Economy, Finance and Industrial Management, 2013, No. 1.

[41] Sterligov, I. One Third of Small Enterprises at Higher Education Institutions Exist Only on Paper. Science and Technology of Russia – STRF.ru, 2 August 2011 http://www.strf.ru/material.aspx?CatalogId=221&d_no= 41450#.VNqByeY0Enh

[42] See, for example, Shigapov, Z., Vasiliev, V., Bakaev, A. Analysis of Development of Innovative Entrepreneurship in Higher School (on the example of the Tupolev Kazan National Research Technical University – Kazan Aviation Institute). Innovations, 2014, No. 2.

[43] Ruposov, V. Analysis of Economic Activities of Small Innovative Companies of the Irkutsk State Technical University. Bulletin of the Irkutsk State technical University, 2014, No. 4.

Areas of public policy initiated during the period of post-crisis recovery (2010-2012)

Support for cooperation with higher education institutions and state scientific institutions within the framework of projects for the creation of advanced manufacturing facilities

One of the state's main steps in stimulating scientific and industrial cooperation, in 2010, was the initiation of a mechanism of support for cooperative projects between companies and higher education institutions for the creation of advanced manufacturing facilities (known by the number of the Resolution of the Government of the Russian Federation determining the procedure for its application – Resolution 218[44]). This mechanism envisaged budgetary co-funding of innovative projects carried out jointly by companies acting as the initiators (at least formally) and chief contractors of the project, and higher education institutions playing the role of R&D contractors. The direct recipient of the budgetary subsidies here was the company which, however, referred all the funds received from the state to the higher education institution to pay for the R&D conducted. Moreover, the company had to invest funds which were at least equal to the amount of budgetary funding in the project implementation, and at least 20% of these funds had to be provided for carrying out the R&D. The period of project support was limited to 3 years, with the amount of budgetary funds allocated for implementation of any one project not exceeding Rb 100m.

The support scheme stipulated by Resolution No.218 had significant particularities that distinguished it from the tools of support for the partnership projects initiated earlier – the PUSK Programme and both the schemes of R&D funding in the interests of business, specified by the Federal Target Programme (FTP) 'Research and Development…' In contrast to the latter, within the framework of 'Mechanism 218' the higher education institution carrying out R&D was determined by the initiating company and not by the state, and this guaranteed the mutual interest of the partners in collaboration and a mitigation of the risks that any conflicts may arise (or initially exist) between them. Moreover, unlike all the above mentioned tools, works performed by the higher education institution were ordered by the company that planned to implement them in its industrial activities. This scheme of interaction between partners is obviously the most rational.

Generally speaking, the above positive aspects of the support mechanism for such cooperation projects as provided by Resolution No.218 ensured its 'new quality' when compared with the tools applied before.[45] In the context of the positive aspects of this mechanism we should also mention that, in addition to developments in the manufacture of new and improved products, each project envisaged the partners' obligations to involve young scientists, specialists, students and post-graduates in conducting the R&D, to publish articles, to patent[46] and, starting from 2012, to create new jobs.[47] It is also important to note that the project monitoring period is not limited to the 3 years of provision of support, but also includes the subsequent five years.

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[44] Resolution of the Government of the Russian Federation of 9 April 2010 No. 218 'On Measures of Public Support of Development of Cooperation of Russian Higher Education Institutions and Organisations Carrying Out Complex Projects for Creation of Advanced Manufacturing Facilities.'

[45] Essentially, this mechanism represents a Russian analogue of the widespread (and well-proven) in industrially developed countries 'matching-grants' mechanism (see, for example, Dezhina I., Simachev Yu. Matching Grants for Stimulating Partnership between Companies and Universities in the Innovation Sector: Start Effects of Application in Russia. New Economic Association's Journal, 2013, No.3).

[46] Order of the Ministry of Education and Science of Russia of 16 July 2010 No. 786 'On Approval of the Form of an Agreement between an Organisation Carrying Out a Complex Project for Creation of an Advanced Manufacturing Facility and the Ministry of Education and Science of the Russian Federation on the Conditions of Provision and Use of Subsidies for Implementation of Complex Projects for Creation of an Advanced Manufacturing Facility Carried Out with Involvement of a Russian Higher Education Institution.'

[47] Order of the Ministry of Education and Science of Russia of 7 November 2012 No. 904 'On Approval of the Form of an Agreement between an Organisation Carrying Out a Complex Project for Creation of an Advanced Manufacturing Facility and the Ministry of Education and Science of the Russian Federation on the Conditions of Provision and Use of Subsidies for Implementation of Complex Projects for Creation of an Advanced Manufacturing Facility Carried Out with Involvement of a Russian Higher Education Institution or State Scientific Institution.'

The key disadvantage of the support scheme defined by Resolution 218 was the limitation stipulating that only higher education institutions could partner with the initiating companies. In 2012 this requirement was somewhat softened – state scientific institutions were included in the list of potential project participants,[48] – however, in our opinion, it was not softened enough, as a considerable proportion of the state scientific institutions functioning as unitary enterprises and joint stock companies that could be potentially interested in application to this mechanism still remains beyond the scope of its operation. The second significant flaw of the mechanism described is the existence of the possibility of potential 'skewing' of the implemented projects towards R&D – to the disadvantage of the remaining components. Indeed, in the case where a project was approximately equally financed by the state and the initiating company (which happened quite often), the share of R&D in the total project cost exceeded 2/3, and that could adversely affect (and, most likely, did affect) the viability of a proportion of the projects.

In general, the practical application of 'Resolution 218' turned out to be quite large-scale and long-lasting. Initially, only one cycle of support was envisaged by Resolution No.218 (in 2010-2012 – with an orientation towards the development of cooperation between companies exclusively being with higher education institutions), within the framework of which about 100 projects were selected. However, afterwards three more phases were initiated – in late 2012, early 2013 and mid-2014. It is remarkable that, while in 2010 and 2012, the maximum limit of requested subsidy was limited to Rb 300m, in 2013 it was Rb 190m and in 2014 – Rb 160m, with a maximum payment of no more than Rb 100m being envisaged for the third year of support.

At present, more than 200 cooperation projects are supported, and the total volume of their budgetary funding for 2010-2014 amounted to about Rb 30bn. Many of the largest Russian companies and higher education institutions became project participants: RZD, ALROSA, Magnitogorsk Iron and Steel Works, RSC Energia, Transneft, KAMAZ, Ilim Group, Moscow State University and St. Petersburg State University. Some of these organisations participated in several projects.

The results of application of the support mechanism provided by Resolution No. 218 are generally assessed as quite positive by the Ministry of Education and Science of the Russian Federation which has been responsible for the realisation of this mechanism, and by representatives of the expert community. The Ministry highlighted the quantitative results of the implementation of the projects: the wide involvement of the employees of higher education institutions, including young scientists, students and post-graduates, the creation of a large number of new jobs, and sufficiently high publication activity.[49] Experts, on the other hand, pointed out a range of qualitative effects of the support, such as the stimulation of mutual interest of companies and higher education institutions to collaborate with each other, the enhancement of orientation towards the demands of real business for the research activities of higher education institutions, and the building of relevant capabilities.[50] Among the significant problems of implementation of the joint projects were the initial non-readiness of higher education institutions and companies to engage in effective cooperation (in particular, the lack of necessary skills and education), a lack of skilled staff in the higher education institutions able to implement innovative projects (scientific

[48] Resolution of the Government of the Russian Federation of 12 October 2012 No. 1040 'On Making Amendments to Resolution of the Government of the Russian Federation of 9 April 2010 No. 218.'

[49] Ministry of Education and Science of the Russian Federation. Report on the Results and Key Areas of Activity of the Ministry of Education and Science of the Russian Federation for 2014-2016. 2013. http://минобрнауки.рф/%D0%B4%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D1%8B/4693/%D1%84%D0%B0%D0%B9%D0%BB/2074/%D0%94%D0%A0%D0%9E%D0%9D%D0%94-2014.pdf

[50] Veprev A., Sergunov A., Golovnykh I., Pashkov A., Akhatov R., Shmakov A., Savilov A. Experience and Prospects of Academic Science Participation in the Creation of Innovative Aircraft Construction Technologies on the Basis of Irkut Corporation. The Defence Complex to the Scientific and Technological Progress of Russia, 2012, № 4; Dezhina I., Simachev Yu. Matching Grants for Stimulating Partnership between Companies and Universities in the Innovation Sector: Start Effects of Application in Russia. New Economic Association's Journal, 2013, No.3; Tashlykova E., Petrochenkov A., Tashkinov A. About Performance Indicators of Advanced Manufacturing Facilities. Scientific and Technical Reports of St. Petersburg Polytechnic University, 2013, No.183.

and engineering as well as managerial), and 'conflicts' in the distribution of the rights to the results of the intellectual activity.[51]

Support of programmes for the development of the innovative infrastructure of higher education institutions

Simultaneously with the initiation of support for cooperative projects between companies and higher education institutions the state launched a mechanism for realising programmes for development of the innovative infrastructure of higher educational institutions.[52] Relevant programmes could provide for budgetary funding of a wide range of measures aimed both at creating and equipping a wide range of infrastructure facilities (business incubators, technoparks, innovative technological centres, engineering centres, accreditation centres, technology transfers, innovative consulting, etc.). Additionally there was support for the development and implementation of programmes for training and qualification upgrades in small innovative business, the estimation and legal protection of the results of intellectual activity, payment for the services of consultants in the field of technology transfer, and the creation and development of small innovative companies, including the involvement of academic teaching staff in normative, methodological and practical support for the creation of such companies. Each programme was supposed to define a set of numerical performance indicators, including the volume of R&D carried out by the higher educational institution, the number of small innovative enterprises created, the number of employees working at these enterprises and the infrastructure facilities created, the number of students, post-graduates and teachers involved in activities of the small enterprises, as well as the volume of high-tech products created with the use of elements of the innovative infrastructure. Infrastructure development programmes were selected on a tender basis, with a period of implementation not exceeding three years and the maximum amount of budgetary funding being limited to Rb 50m per year.

From 2010 to 2012 the state financed about 80 programmes for the development of the innovative infrastructure of higher education institutions, annually spending about Rb 3bn for these purposes. As in the case of the mechanism of stimulation of cooperation between higher education institutions and companies discussed above, the state initially set a one-time support regime for the infrastructure development programmes. However, in contrast to 'Mechanism 218' (and to another support tool introduced in 2010 and oriented towards higher education institutions– targeted grants solicited by higher education institutions for scientists), the first round of support for infrastructure programmes turned out to be the only one, which obviously provides evidence for their lack of success and effectiveness. At the same time, current assessments of the results of the programme implementation, both by the Ministry of Education and Science of Russia (the 'operator' of this field of support) and by a number of experts, is generally positive. In particular, they highlighted the mass creation of small innovative enterprises supported by higher education institutions, the wide involvement of employees and students of higher education institutions in the activities of such companies, the fairly large-scale manufacture of high-tech products, and the dynamic growth in the volume of works and services of the innovative infrastructure

[51] Dezhina I., Simachev Yu. Matching Grants for Stimulating Partnership between Companies and Universities in the Innovation Sector: Start Effects of Application in Russia. New Economic Association's Journal, 2013, No.3.

[52] Resolution of the Government of the Russian Federation of 9 April 2010 No. 219 'On Public Support for the Development of Innovation Infrastructure in Federal Educational Institutions of Higher Professional Education.'

organisations.[53] Additionally, the implementation monitoring system of the programme received a positive response.[54]

Creation and activities of technology platforms

In mid-2010 the state started implementing measures aimed at a 'reproduction' under Russian conditions of the long-term tool successfully applied in the EU for prioritisation of R&D areas which are in demand for business, and a consolidation of the efforts of business, science and state in these areas – technology platforms. Platforms created in Russia were designated to stimulate the efforts of the main interested parties – business, science, state and civil society – for the expansion of R&D funding and the creation of advanced commercial technologies, products and services through, among other things, extending scientific and industrial cooperation and the formation of new partnerships in the innovation sector. For this purpose, each technology platform envisaged the development of a strategic research programme defining both medium-term and long-term R&D priorities and providing for the setting-up of mechanisms for scientific and industrial cooperation and the creation of an organisational structure ensuring the necessary conditions for realisation of the interaction between enterprises, scientific and educational organisations. The central link within such a structure was supposed to be a technology platform coordinator – an organisation carrying out management and information support for interactions between the platform participants. Technology platforms could be created by initiative 'from above' (federal and regional government authorities) and 'from below' (companies, scientific and educational organisations, development institutes, business associations, etc.). The procedure for the creation of technology platforms was, in fact, authorisation-based – they were included in a special-purpose list by the Government Commission for High Technology and Innovation, on the basis of the review of relevant applications by a working group.[55]

In 2011-2013 the Government Commission (and the Presidential Council for Economy Modernisation and the Innovation-Driven Development of Russia, that replaced it) made decisions on the inclusion in the list of 34 technology platforms,[56] almost one third of which were related to the energy sector (including nuclear) and the extraction and processing of natural resources. At the same time, some areas of considerable social significance, such as construction (except for road construction) or solutions to the complex problems of urban development, remained almost 'unrepresented' by technology platforms. In most cases platform coordinators were the largest state-owned companies and corporations (RZD, Rosatom), universities (Lomonosov Moscow State University, Gubkin Russian State University of Oil and Gas) and academic centres (Kurchatov Institute, VIAM (Scientific Research Institute of Aviation Materials)).

[53] Ministry of Education and Science of the Russian Federation. Report on the Results and Key Areas of Activity of the Ministry of Education and Science of the Russian Federation for 2014-2016. 2013. http://минобрнауки.рф/%D0%B4%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D1%8B/4693/%D1%84%D0%B0%D0%B9%D0%BB/2074/%D0%94%D0%A0%D0%9E%D0%9D%D0%94-2014.pdf; Ministry of Education and Science of the Russian Federation. Report on the Results and Key Areas of Activity of the Ministry of Education and Science of the Russian Federation for 2015-2017. 2014.http://минобрнауки.рф/%D0%B4%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D1%8B/4692/%D1%84%D0%B0%D0%B9%D0%BB/2982/%D0%94%D0%A0%D0%9E%D0%9D%D0%94_%D0%9C%D0%B8%D0%BD%D0%BE%D0%B1%D1%80%D0%BD%D0%B0%D1%83%D0%BA%D0%B8_24-03-14_1.doc; Andreev Yu. About the Results of Monitoring of Programmes for Development of the Innovative Infrastructure of Higher Education Institutions. Innovation Theory and Expert Review: Scientific Works. 2013. No.1 (10).

[54] Andreev Yu., Lukashova N. The Problem of Monitoring of Effects of Activities of Higher Education Institutions. Innovation Theory and Expert Review: Scientific Works, 2014, No. 1.

[55] Procedure for Creation of a List of Technology Platforms (approved by the Decision of the Government Commission for High Technology and Innovation of 3 August 2010, Minutes No. 4).

[56] Decisions of the Government Commission for High Technology and Innovation of 1 April 2011, Minutes No. 2, of 5 July 2011, Minutes No. 3, of 21 February 2012, Minutes No. 2; Presidium of the Council at the President of the Russian Federation for Economy Modernisation and Innovation-Driven Development of Russia of 20 November 2012, Minutes No. 1, of 31 July 2013, Minutes No. 2.

It is important to note that initially no special measures and tools of support were envisaged for the technology platforms. It was established only that government authorities would provide institutional, management and consulting support for the activities of technology platforms while the platforms themselves would develop proposals intended to improve public policy in the scientific-technical and innovation sector, including those in relation to the specification of government-supported areas of R&D, the perfection of mechanisms for stimulating innovative activities, the improvement of technical regulation, the determination of future requirements for the qualities of products purchased for state purposes, the specification of programmes for the innovation-driven development of large state-owned companies (see below), and the areas and principles of support for the development of scientific-technical and innovative activities by state institutes. Moreover, the results of the activities of the technology platforms were supposed to be taken into account in the planning and implementation of state support measures aimed at ensuring socio-economic development and the improvement of scientific-technical and innovative activities. At the same time, the lack of a pre-determined set of tools for supporting the technology platforms did not imply any principal refusal by the state to determine this; quite the opposite, the working group responsible for the selection of technology platforms was required to prepare proposals on state support measures and their contribution to the effective implementation of the technology platforms.

The first tool of 'field-specific' support for technology platforms was the Russian Foundation for Technological Development that resumed its activities in 2011[57]: in its 'new life' it was oriented mainly towards supporting projects (in the form of easy loans for the conduct of R&D) approved by the technology platforms. To date, the Foundation has participated in funding 18 such projects, out of which 16 were initiated by six technology platforms: Photonika, Medical Science of the Future, Materials and Technologies of Metallurgy, Bioindustry and Bioresources, Small Distributed Generation and Environmentally Friendly Thermal Energy.

In 2012 the issue of the involvement of technology platforms in the 'sphere' of the implementation of public policy in particular sectors and areas of activity attracted the attention of government authorities at the highest level: within the framework of one of the 'programme-oriented' Decrees of the President of the Russian Federation adopted in May 2012 (known as the 'May Decrees'), the Government of the Russian Federation was given an assignment to link the state development programmes in the industrial and agricultural sector and the strategies for development of the leading sectors of the economy with the top-priority technology platforms (and the pilot projects of the regional innovation clusters – see below).[58]

In the second half of 2012, technology platforms were involved in the process of formation of a set of topics of problem-oriented exploratory research supported within the framework of the Federal Target Programme 'Research and Development in Priority Areas of Development of the Scientific-Technological Complex of Russia for 2007-2013': the coordinators of the platforms submitted relevant proposals to the Ministry of Education and Science of Russia for review, on the results of which, in 2013, over 400 works were financed for the total amount of about Rb 3bn. Around two thirds of the projects were based on the proposals of 8 technology platforms: Medical Science of the Future, Materials and Technologies of Metallurgy, Radiation Technologies, Bioindustry and Bioresources, Environmentally Friendly Thermal Energy, the National Information Satellite System, Small Distributed Generation and Environmental Development Technologies. The major proportion of the contractors (over 80%) was represented by large state-owned scientific and educational organisations.

Support for R&D carried out in the interests of technology platforms continued in 2014 – already within the framework of the new Federal Target Programme 'Research and Development in Priority Areas of Development of the Scientific-Technological Complex of Russia for 2014-2020.' Then, in respect of initiated projects a requirement was established for compliance with

[57] Five years earlier the Foundation almost ceased its activities due to problems of legal nature.

[58] Decree of the President of the Russian Federation of 7 May 2012 No. 596 'On Long-Term Public Economic Policy.'

strategic programmes for the development of technology platforms (officially confirmed by the coordinator of the relevant platform). The duration of the support of projects was limited to 3 years, with the maximum volume of budgetary funding for each project being Rb 15m per year. Furthermore, at least half of the cost of the projects should be covered by non-budgetary co-funding, with at least 20% of the non-budgetary funds being referred for funding R&D. Each project should be oriented towards a particular consumer – a real-sector enterprise providing at least 10% of the non-budgetary co-funding. In 2014 about 150 projects were initiated, with the total volume of budgetary funding in the first year of implementation amounting to about Rb 2bn. It is remarkable that, as in 2013, the major proportion of the contractors (over 80%) was represented by large state-owned scientific and educational organisations.

We should note that the creation and development of technology platforms in Russia were carried out in a somewhat different manner from that in the EU. In foreign practice the key factors considered in the creation of technology platforms are the current and forecasted business needs in new technologies, while the support of the activities of the platforms remains within the common 'context' of the scientific and technical and innovation policy. In Russia, by contrast, the creation of technology platforms was initially related to the basic scientific and technological priorities of the state (priority areas of development of science, technology and engineering and a list of critical technologies), while research aimed to contribute to the development of platforms was supported on special grounds – within the framework of special-purpose procedures and tenders. In general, while European technology platforms are rather a tool of technological and industrial policy, oriented towards the formation of new sources of sustainable growth,[59] Russian platforms, to a much greater extent, represent aspects of the scientific and technological policy of the state.[60]

It should be admitted that, despite the obvious 'ideological' novelty of technology platforms for Russian innovation policy, in practice their creation and development fits quite well the traditional Russian model of the public stimulation of innovation being directed towards the priorities established by the state, and existing large players, and the provision of 'perceivable' socio-economic effects with the creation of special-purpose channels of public support. On the one hand, this can hardly be said to be unexpected, but, on the other hand, when creating the principally new (at least for Russia) tool of innovation policy that technology platforms were meant to be, it would be reasonable, in our opinion, at least to try to use new approaches and principles in its organisation.

At the moment, the activities of technology platforms have revealed a number of risks that had been noted by experts at the initial stage of their formation. For example, the priority areas for the creation of platforms were, mainly, predetermined 'at the top', the major part of platforms turned out to be too 'secluded' within the framework of in-country cooperation, and the attempts of platforms to 'capitalise' on their status in the form of the receipt of public support[61] became apparent. At the same time, it should be noted that not all of the concerns which were raised actually turned out to be true in practice: the extent of creation of technology platforms did not go beyond reasonable limits and the participation of the state in their development was not limited to simple approval of the relevant list.

In general, there is no obvious dominance of positive or negative evaluations in expert opinions in respect of the results of the creation and activities of technology platforms. In particular, among

[59] Simachev, Yu., Kuzyk, M., Kuznetsov, B., Pogrebnyak, E. Russia Is on the Way to New Technological and Industrial Policy: Among Attractive Prospects and Fatal Traps. Foresight, 2014, No. 4.

[60] Lenchuk, E. Technology Platforms as a New Tool of Scientific and Technological Policy of Russia. In the book: Effective Public Administration in the Conditions of the Innovative Economy: Policy of Innovation-Driven Development. Edited by S.N. Silvestrov, I.N. Rykova. Moscow: Dashkov and Co., 2011.

[61] Simachev, Yu. Areas of Lending Best Practice of European Technology Platforms: Problems and Opportunities. Presentation to the Report at the Seminar of NRI-HSE 'European Experience of Formation and Functioning of Technology Platforms and Prospects of Distribution of Best Practices in Russia', Moscow, 2 December 2010 http://www.iacenter.ru/publication-files/100/78.pdf

the significant achievements of technology platforms were: the organisation of productive interaction between representatives of the state, science and business communities, the mutual explanation of interests of the parties, agreements on positions and views on the development of relevant technological areas, including for the long-term.[62] As a rule, critics note the excessive 'deviation' of Russian technology platforms from the European prototype, their insufficient linkage with other elements of the innovation system, excessive emphasis on the attraction of budgetary resources and the weak participation of private business in their formation and development.[63] However, even the sceptics frequently accept the positive impact of the creation and activities of technology platforms on the intensity of interaction between science and industry.[64]

Formation and monitoring of the programme for innovation-driven development of the largest state-owned companies

Along with technology platforms, the 'active agenda' of public innovation policy was supplemented in mid-2010 by another area directly related to the development of scientific and industrial cooperation: 47 of the largest companies in the public sector were assigned to develop and integrate into their business strategy, mid-term programmes for innovation-driven development (IDP) aimed at developing and implementing world class new technologies, innovative products and services, and at innovation-driven development within the relevant sectors. Each programme should have provided for considerable improvement of the key performance indicators of manufacturing activities: reduction in the costs of products and services by at least 10%, the rational use of energy resources, increased labour productivity, environmentally friendly manufacturing and an improvement in the consumer-friendly properties of manufactured products. When determining the target values for energy consumption and labour productivity indicators, the companies were supposed to refer to the equivalent aspects of similar foreign companies.

Considerable attention in the programmes should have been paid to measures aimed at developing cooperation between the companies and higher education institutions and, to a somewhat lesser extent, between the companies and scientific organisations: in particular, it was proposed to determine priority areas for cooperation and to prepare joint research programmes. In this regard, it was proposed to include in the IDP indicators performance indicators characterising the interaction with external sources of development and innovation: the number of innovative proposals from third-party organisations and the percentage of sales of external developments in the total sales. Moreover, 'cross-participation' of the representatives of companies, scientific organisations and higher education institutions in collegial management bodies and consulting authorities was mentioned as a possible organisational mechanism of the development of such interaction. Finally, the programmes were supposed to envisage participation of companies in the

[62] Inter-Departmental Analytical Centre. Certain Conclusions and Recommendations on Improvement of the Institute of Technology Platforms. Summary of the Round Table 'Technology Platforms as a Tool of Development or Private and Public Partnership in Innovation Sector,' Nizhny Tagil, 10 September 2011 http://www.iacenter.ru/publication-files/154/130.pdf; Chekmarev, V. Harmonisation of Industrial Policy and Processes of Reindustrialisation. Bulletin of the Nekrasov Kostroma State University, 2014, No. 6.

[63] Lenchuk, E. Technology Platforms as a New Tool of Scientific and Technological Policy of Russia. In the book: Effective Public Administration in the Conditions of the Innovative Economy: Policy of Innovation-Driven Development. Edited by S.N. Silvestrov, I.N. Rykova. Moscow: Dashkov and Co., 2011; Dushin, A. Institutes of Development of Resource-Producing Regions under the Conditions of Neoindustrialisation. News of the Ural State Mountain University, 2014, No. 4; Lebedev, A. Russian Practice and Tools of Self-Funding of Scientific and Technical and Innovation Activities. Bulletin of the Tver State University. Series: Economy and Management, 2014, No. 4.

[64] Lenchuk, E. Technology Platforms as a New Tool of Scientific and Technological Policy of Russia. In the book: Effective Public Administration in the Conditions of the Innovative Economy: Policy of Innovation-Driven Development. Edited by S.N. Silvestrov, I.N. Rykova. Moscow: Dashkov and Co., 2011.

creation and activities of technology platforms.[65] The implementation of the programmes for innovation-driven development was the subject of annual monitoring on the part of the Government Commission for High Technologies and Innovations (for the 22 largest and most significant companies) or the relevant sector departments for which the companies were required to submit reports on the progress of their IDP implementation.[66]

It is important to note that initially the companies were required to publish their programmes for innovation-driven development – the relevant requirement arose as early as within one year and related, not to the full texts of the programmes, but only to their summaries ('passports') and lists of planned innovative projects and R&D areas.[67]

In early 2012 the list of companies developing programmes for innovation-driven development increased by about a quarter – up to 60 companies, mainly, through extension of the first 'elite' group of companies, for which the IDPs are monitored by the Government Commission.[68]

It is quite difficult to speak about the results of programmes for innovation-driven development because, as a rule, the companies not only do not disclose the content of the reports on IDP implementation, but they even refrain from publishing the full texts of the programmes, confining themselves only to programme 'passports'. For this reason any detailed expert estimates of the effectiveness of IDPs are currently almost non-existent.

Possibility to form reserves for future R&D expenses

From the beginning of 2012 organisations were provided an opportunity to reduce the amount of their profits subject to tax through creating reserves for future R&D expenditure. The amount of such reserves may not exceed 3% of the sales revenues, with their term being limited to 2 years. It should also be noted that for the creation of a reserve the taxpaying company should develop and approve a programme for the conduct of its R&D.[69]

The key advantage of the relief in question is stimulation of the planning of R&D and a certain simplification of the relevant budgeting. At the same time, the main disadvantages of the mechanism for small and newly created companies are both the relatively small maximum amount of the payments for reserve creation and its link to sales revenues, while for large businesses the maximum 2-year term of the reserving of funds may seem insufficient.

Support for programmes for developing regional innovation clusters

In 2012 Russian innovation policy 'put into service' another tool successfully applied abroad – regional innovation clusters. The territorial proximity of such companies and participating organisations along with the availability of the scientific and manufacturing chain in one or more sectors uniting both them and the mechanism of coordination of the activities and cooperation of the cluster participants were established as the key characteristics of a cluster. Moreover, a cluster

[65] Recommendations for Designing Programmes for Innovation-Driven Development of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises (approved by the Decision of the Government Commission for High Technology and Innovation of 3 August 2010, Minutes No. 4).

[66] Regulation on the Procedure for Monitoring of Development and Implementation of Programmes for Innovation-Driven Development of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises (approved by the Decision of the Government Commission for High Technology and Innovation of 3 August 2010, Minutes No. 4).

[67] List of Assignments of the President of the Russian Federation Based on the Results of a Meeting of the Commission at the President of the Russian Federation for Modernisation and Technological Development of Economics of Russia, 3 November 2011, No. Pr-3291.

[68] Amendments to the List of State-Owned Joint-Stock Companies, State-Owned Corporations and Federal State Unitary Enterprises Designing Programmes for Innovation-Driven Development (approved by the Decision of the Government Commission for High Technology and Innovation of 30 January 2012, Minutes No. 1).

[69] Federal Law of 7 June 2011 No. 132-FZ 'On Making Amendments to Article 95 of Part I, Part II of the Tax Code of the Russian Federation in Respect of Creation of Favourable Tax Conditions for Innovation Activities and Article 5 of Federal Law 'On Making Amendments to Part II of the Tax Code of the Russian Federation and Certain Legal Acts of the Russian Federation.'

was expected to provide a synergistic effect, manifesting itself as an increase in the economic efficiency and effectiveness of the activities of each enterprise or organisation through the high degree of their concentration and cooperation.

As in the case of technology platforms, a cluster was supposed to have a central element – an organisation ensuring methodological, organisational, expert, analytical and informational support for the development of the cluster. In addition, within each cluster a coordinating body was to be created – a council including representatives, not only of the key participants of the cluster, but also of the government authorities.

The core document of a cluster is its development programme, including, in particular, measures for the development of R&D, the system of personnel training, the manufacturing potential of the cluster and its infrastructure.

It is remarkable that, as opposed to the technology platforms, public support for the development of clusters was declared from the very beginning.[70]

We should note that prior to the official documenting of the first (and still the only) 'series' of clusters, the President of the Russian Federation assigned the Government to link state programmes for the development of industrial and agricultural sectors and the strategy of development of the leading sectors of the economy with the pilot regional innovation clusters projects.[71]

In mid-2012, based on the tender results, 25 pilot regional innovation clusters were selected.[72] At the same time, the the 'Rules for the Distribution and Provision of Subsidies from the Federal Budget to the Budgets of the Constituent Entities of the Russian Federation for the Implementation of Measures Provided by Programmes for the Development of Pilot Regional Innovation Clusters' adopted in early 2013[73] provided for the allocation of funds to support only 15 clusters. The relevant funding volume in 2013 amounted to Rb 1.3bn. However, in 2014 the list of recipients of support already included 25 clusters[74] and the amount of funds allocated from the federal budget was Rb 2.5bn.

As in the case of other tools of public support, significant interest in the activities of the clusters was shown by the largest state-owned structures, such as Rosatom, Gazprom, RSC Energia, Kurchtov Institute, etc.

In general, it must be admitted that, as with the other cooperation and communication tool assimilated from foreign practice – technology platforms – Russian innovative clusters were 'designed' on the basis of a traditional (Russian) approach which places a focus on the existing leaders, and creation of special-purpose channels of direct public support. However, despite a number of sceptical assessments of the effectiveness of the approach used in Russia for the implementation of the cluster policy[75] in respect of the functioning of certain clusters, some positive effects have also been noted, primarily in respect of the increased effectiveness of communications between business, education and government authorities.[76]

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[70] Procedure for the Creation of a List of Pilot Programmes for Development of Regional Innovation Clusters (approved by the Decision of the Working Group for Development of Private and Public Partnership in Innovation Sector of 22 February 2012, Minutes No. 6-AK).

[71] Decree of the President of the Russian Federation of 7 May 2012 No. 596 'On Long-Term Public Economic Policy.'

[72] Assignment of the Chairman of the Government of the Russian Federation of 28 August 2012 No. DM-P8-5060.

[73] Approved by Resolution of the Government of the Russian Federation of 6 March 2013 No. 188.

[74] Resolution of the Government of the Russian Federation of 15 September 2014 No. 941 'On Making Amendments to the Rules for Distribution and Provision of Subsidies from the Federal Budget to the Budgets of Constituent Entities of the Russian Federation for Implementation of Measures Envisaged by Programmes for Development of Pilot Regional Innovation Clusters.'

[75] See, for example, Korolev, V. Regional Innovation Clusters: Foreign Experience and Russian Conditions. Russian Foreign Economy Bulletin, 2013, No. 11; Ivanova, V., Tarasenko, V., Khafizov, R. Influence of Clusters on the Competitiveness of the Economy of Constituent Entities of the Russian Federation. News of the Volgograd State Technical University, 2014, vol. 20, No. 17.

[76] Ayupov, A., Mikhailov, R. The Mixed Model of Development of an Economic Cluster (on the example of the Kama Regional Innovation and Manufacturing Cluster). Bulletin of the Tatischev Volga University, 2013, No. 4 (29).

6.4.3. Peculiarities of public policy for stimulating scientific and industrial cooperation; inherent problems and lessons for the future

When considering the practical results of the implementation of the different areas of public stimulation of scientific and industrial cooperation, their strengths and weaknesses (*Table 20*), we should firstly note the 'local nature' of the successes reached: even the largest-scale mechanisms, whether through engaged resources (mega-projects) or subjective coverage (VAT and profit tax relief) failed to ensure particularly significant effects, such as the mass implementation of new technology (at the level of industry or sector) or a considerable expansion of R&D funding.

Secondly, with the undoubtedly positive influence of measures taken by the state for the development of scientific and industrial cooperation, one should take into account that in most cases this development was nothing but 'capitalisation' of the already existing business connections which had arisen as early as in the Soviet period.

Thirdly, a distinctive feature of substantially all the financial mechanisms (including 'quasi-state' support by development institutes) was the strict limitation in respect of possible forms of use of allocated resources and the attempt at strict documentation of target results, limiting attention on the possible indirect positive effects.

Table 20

Strength and weaknesses of key areas of public policy for stimulating scientific and industrial cooperation

Area	Strengths, successes	Weaknesses, problems
Key innovation projects of national significance	• Large scale of projects and long terms of implementation, significant volumes of support • Coverage of several stages of the innovation cycle – from product and development to their application in production • Emphasis on the real commercialisation, orientation towards the creation of products and technologies demanded by the market • Long period of application, proven processes • Creation of a range of new industrial facilities, considerable sales of new and improved products	• Problems of distribution of rights to results of intellectual activity • Limited possibilities for the use of allocated budgetary resources • Deficit of well-developed ideas and solutions suitable for initiation of projects • Particularly frequent change of the rules and conditions of support, sometimes in the course of project implementation • As a rule, the 'local' nature of successes and achievements
TEMP Programme	• Strict orientation towards the real commercialisation, introduction of new products to the market • Sufficiently long duration of supported projects • Partner organisations are selected by the company implementing the project • Substantial (as compared to the size of support) volumes of new and improved products • Assurance of receipts to scientific organisations and higher education institutions holding the licences • Possibility of participation of large companies (in consortium with small ones)	• Possibility to use only already existing R&D results in projects • Possibility to acquire licences only from public organisations • Limited possibilities to use allocated resources
PUSK Programme	• The composition of project participants was determined by the participants themselves, suggesting mutual interest in cooperation • Personnel support by higher education institutions of developments transferred to companies, employment of trained specialists • Adaptation of development technologies to the needs of a particular company, support for their implementation • Support of both sides of a partner project	• Limited experience of application • Insignificant size of projects • Limited possibilities to use allocated resources • 'Split' of projects into two separate parts with different contractors and customers • Risk of conflicts between the developer and consumer of the technology at the stage of its transfer and implementation
Softening of the accounting procedure for R&D costs when determining taxable profit	• Wide circle of beneficiaries • Relevant simplicity of application and administration • Stimulating influence of R&D costs of the business	• Not an actual relief

Area	Strengths, successes	Weaknesses, problems
Projects for commercialisation of technologies in thematic areas proposed by the business community	• Orientation towards the satisfaction of business needs, real commercialisation of created products and technologies • Increase in production of new and improved products	• 'Secondary' role of the initiating company in selection of a contractor to conduct R&D and acceptance of work results; risk of obtaining results which do not correspond to the initiator's interests • Limited possibilities of using allocated budgetary resources • Limited experience of application, small number of launched of projects
R&D projects in thematic areas proposed by the business community	• Sufficiently large scale and long term of application, proven procedures	• 'Secondary' role of the initiating company in selection of a contractor to conduct R&D and acceptance of work results; risk of obtaining results which do not correspond to the initiator's interests • Limited possibilities for use of allocated budgetary resources • No obligations for commercialisation of obtained results
VAT relief for certain types of R&D	• Wide circle of beneficiaries • Stimulation of creation of new or improvement of existing products and technologies • Relevant simplicity of application • Significant scales of application	• 'Selectiveness' of application – by certain types of works
Profit tax relief for costs on R&D included in a special-purpose list	• Wide circle of beneficiaries • Stimulation of R&D in thematic areas being of top priority for the state • Until 2012 – relevant simplicity of application • Dynamic growth of scales of application up to and including 2011	• 'Selectiveness' of application – by compliance of the R&D subject with the special-purpose list of thematic areas • Since 2012 – excessive complication of the procedure for application and administration
Stimulation of creation by of inculcation companies budgetary scientific and educational institutions	• Orientation towards the commercialisation of R&D results • Significant number of created inculcation companies • High demand by higher education institutions	• Low activity of budgetary science institutions • Nominal nature and non-viability of a considerable proportion of the created companies
Support for cooperation between higher education institutions and state scientific institutions within the framework of projects for the creation of advanced manufacturing facilities ('Mechanism 218')	• The composition of project participants was determined by participants themselves, suggesting mutual interest in cooperation • The initiating company orders R&D itself, which lowers the risk of obtaining results not meeting its needs • Orientation towards the creation of advanced manufacturing facilities, production of new and improved products, involvement of students and post-graduates to the conduct of R&D, publication activities • Sufficiently large scale and long term of application, proven procedures • Major participation in implementation of employees of higher education institutions, students and post-graduates, creation of a significant number of new jobs, sufficiently high publication activity • Stimulation of mutual interest of companies and higher education institutions to interact • Strengthening of orientation of research activities of higher education institutions towards real business needs • Building top-of-the-agenda research, engineering and educational capabilities of higher education institutions	• Too strict limitations in respect of the composition of R&D contractors: until 2012 – only higher education institutions, from 2012 – higher education institutions and state scientific institutions • Excessive emphasis on assurance of a considerable (and often major) share of R&D in the project structure • Limited possibilities to use allocated budgetary resources • Reduction of the maximum value of budgetary subsidies from Rb 300m (2010, 2012) to Rb 190m (2013) and then Rb 160m (2014) • Insufficiently flexible funding structure of projects initiated in 2013 and 2014 • Formal nature of a part of partnerships, non-viability of certain projects • Problems with distribution of rights to the results of intellectual activity among participants
Support for development of the innovation infrastructure of higher education institutions	• Wide spectrum of possible areas of use of budgetary funds • Sufficiently developed and effective system for monitoring of results • Mass creation of small innovative firms, wide employment in their activities of employees and students of higher education institutions, substantially significant scales of manufacturing of high-tech products, dynamic growth of volumes of works and services of organisations of the innovation infrastructure	• Perhaps, excessive orientation towards the support of small innovative firms
Creation and support of activities of technology platforms	• Application of successful international experience • Development of communication between the state, science and business, contribution to approximation of their views	• Dominating orientation towards scientific and technological priorities of the state, rather than business needs

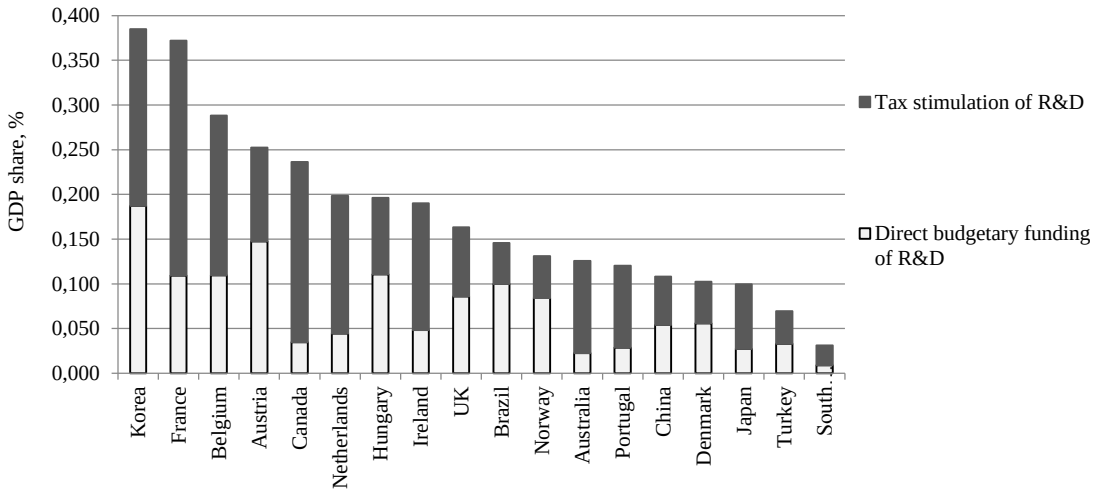
Area	Strengths, successes	Weaknesses, problems
	• Facilitation of long-term R&D planning • Reasonable number of platforms	• Excessive orientation towards large public players (companies, scientific centres, higher education institutions) and their interests • No coverage of a number of socially important areas • Relatively weak involvement of private business • In some cases – insufficient attention to development of international cooperation • Emphasis on attraction of public resources
Development and monitoring of programmes for innovation-driven development of the largest state-owned companies	• Determination of particular areas of innovation-driven development and modernisation of the largest state-owned companies on the medium-term perspective • Orientation towards similar foreign companies, considerable improvement of the effectives of manufacturing activities	• Closed nature of a major part of programmes and results of their implementation; no public discussion
Possibility to reduce taxable profit through creating reserves for future R&D	• Wide circle of beneficiaries • Relevant simplicity of application and administration • Stimulating influence of R&D planning, simplification of relevant budgeting	• Too strict limitations in respect of the amount of payments to create reserves and periods of their existence
Support of programmes for development of regional innovation clusters	• Application of successful international experience • Positive influence on interaction between business, science, education and government	• Excessive orientation towards large public players (companies, scientific centres, higher education institutions) and their interests • Emphasis on attraction of public resources

Source: prepared by the authors.

In general, the analysis of the set of tools of public support for scientific and industrial cooperation applied in the last fifteen years allows us to make *a number of observations*.

Firstly. The set of measures of public stimulation of interaction between science and business, as with Russian innovation policy in general, was characterised by excessive 'focus' on direct financial support tools. It is remarkable that some of the areas of implemented policy that had not initially been designed to provide direct financial support (stimulation of the creation of inculcation companies by budgetary scientific and educational institutions and the activities of technology platforms) over time acquired 'financial component'.

It is important to note that in many foreign countries tax measures play a significant (and often major) part in stimulating the R&D expenditure of businesses (*Fig. 1*). In Russia the situation is different: in 2012 the volume of budgetary revenues not received due to the above tax reliefs was only about Rb 5bn, while direct budgetary funding of R&D within the framework of the highlighted tools for stimulating cooperation exceeded Rb 14bn.



Source: (OECD, 2014).

Fig. 1. Public stimulation of R&D costs of businesses in a number of foreign countries in 2012

One should take into account that tax and financial tools of support have different 'target audiences' and, generally speaking, lead to different results. Financial measures are *a priori* designated for a smaller circle of beneficiaries than tax incentives and require expenditure on the selection of recipients of support and means of control of the allocated spending. At the same time, financial mechanisms allow for providing point-wise and selective support, mitigating the risks taken by the recipients.[77] As evidenced by results of empirical research, direct budgetary funding of R&D ensures longer-term effects as compared to tax incentives.[78] Financial support more often 'pushes' companies to initiate new projects and contributes to mitigation of the risks of their implementation,[79] while tax tools mostly stimulate investments in existing projects.[80]

Secondly. The crisis of 2008-2009 resulted in 'rethinking' by the state of its role in ensuring economic development and the appropriate optimal model for stimulating innovation. While before, innovation policy had been built within the framework of the model (let us nominally call it 'consolidating'), suggesting orientation towards priorities set by the state, existing large players, the assurance of 'perceivable' socio-economic effects and the creation of special-purpose channels of support, at the stage of crisis and post-crisis recovery actions of the state acquired signs of a new 'search-oriented' model (*Table 21*). This was distinguished by its orientation towards the identification of new areas of scientific-technological development, new growth drivers based on the demands of business and society, the formation of new groups of interests and the 'horizontal' nature of the relationship with the state.[81]

Table 21

Alternative models of innovation policy formation

Consolidating model	Search-oriented model
Consolidation of efforts on implementation of already formed areas of technological development	Identification of new promising areas of scientific-technological development, new growth drivers, structuring of interests of business and science
Key driver – state priorities and programmes	Key driver – demand from business and society
Interaction with the state occurs in accordance with the 'classic' scheme – top-down	Interaction with the state are of 'horizontal coordination' nature
Orientation towards the key leaders – economic or scientific and technological	Orientation towards groups of leaders, including those under formation
Participants are united around leaders	Participants are united by common vision of promising area of development
Direct results are important (number of created companies, production and export volumes, employment)	Indirect effects are important (demonstration, institutional effect, agreed vision), change in the attitude towards innovations
Combination of the initiative 'from above' (from the state) and 'from below' (from large companies and organisations)	Initiative comes 'from below', from medium and small businesses, business unions and associations
Priority of direct support tools	Considerable attention is paid to indirect and coordinative tools

Source: prepared by the authors.

A range of areas and tools of public innovation policy initiated in the period from 2008 to 2012 (normative stimulation of creation by budgetary scientific and educational institutions of inculcation companies, 'Mechanism 218', technology platforms, regional innovation clusters, etc.) was initially in compliance with the 'ideology' of the search-oriented model. However, in practice,

[77] See, for example, Berube, C., Mohnen, P. Are firms that receive R&D subsidies more innovative? UNO-MERIT Working Paper Series No. 15, 2007.

[78] Guellec, D., Van Pottlesberghe, B. The impact of public R&D expenditure on business R&D. Economics of Innovation and New Technologies, 2003, 12 (3).

[79] Simachev, Yu., Kuzyk, M., Feigina, V. Public support for innovation in Russia: What Can Be Said about the Influence of Tax and Financial Mechanisms on Companies? – Russian Management Journal, 2014, vol.12, No.1.

[80] Guellec, D., Van Pottlesberghe, B. The impact of public R&D expenditure on business R&D. Economics of Innovation and New Technologies, 2003, 12 (3); Jaumotte, F., Pain, N. An Overview of Public Policies to Support Innovation. OECD Economic Department Working Paper No. 456, 2005.

[81] Simachev, Yu., Kiselev, V. Technology platforms: the case of a system innovation in Russia. OECD System Innovation Project Template workshop, Helsinki, Finland, November 29, 2013. http://www.iacenter.ru/ publication-files/192/171.pdf

almost all of these mechanisms were implemented in accordance with the principles of the traditional consolidating model. For instance, the 'soft' mechanism of stimulating budgetary institutions soon 'acquired' relevant target indicators, while in the creation of technology platforms and their activities the orientation towards priorities set by the state, existing large players and building special-purpose channels of public support became apparent.

Thirdly. Along with the evolution of a public 'cooperative' policy, in general, it is important to note the significant development of its complete range of areas and tools (*Table 22*). However, not in all cases should the results of such development be recognised as totally positive. For example, the gradual softening of the procedure for writing off R&D costs and the supplementation of the notification-based procedure for the creation of inculcation companies by budgetary institutions with the wider rights of the latter in respect of property disposal, undoubtedly, expanded the potential for the use of these mechanisms and promoted their contribution to the development of scientific and industrial cooperation. In the case of the mechanism of public support for the cooperative projects of companies and higher education institutions the situation does not look so unambiguous. On the one hand, inclusion of state budgetary institutions in the circle of possible business partners allowed increasing the scope of application of 'Mechanism 218'. On the other hand, the reduction of the maximum amount of support firstly to Rb 190m and then to Rb 160m accompanying the introduction of an inflexible funding structure with a maximum in the third year of project implementation, by contrast, decreased the potential of the useful application of this mechanism. Finally, the modification of the mechanism of preferential write-off of expenditure on R&D included in a special-purpose list requiring the submission of reports to the tax authorities complicates significantly both its application and administration.

Table 22

Development of certain areas of public stimulation of scientific and industrial cooperation

Area	Condition before the change	Main changes	Result
Softening of the accounting procedure for R&D costs when determining taxable profit	Writing off R&D costs during 3 years; for R&D that gave no positive results – 70% of costs	• Writing off R&D costs, the results of which are used in production, during 2 years; writing off R&D costs that gave no positive results in full • Writing off R&D costs during 1 year • Writing off R&D costs in the tax period of R&D completion	Extension of the scale and potential of influence
Stimulation of creation by budgetary scientific and educational institutions of inculcation companies	Notification-based procedure for creation by budgetary institutions of business entities	• Extension of rights of budgetary institutions in respect of property disposal • Non-competitive procedure for leasing property by budgetary institutions to inculcation companies • Possibility to use simplified taxation system by inculcation companies • Reduction of payment rates to non-budgetary funds for inculcation companies	Extension of the scale and potential of influence
Profit tax relief for costs on R&D included in a special-purpose list	Writing off R&D costs at 1.5 rate in the period when they are actually incurred	Necessity to submit a report on R&D to tax authorities	Complication of application and administration, reduction of the scale
Support of cooperative projects for creation of advanced manufacturing facilities ('Mechanism 218')	Support of partnerships between companies and higher education institutions, maximum amount of support – Rb 300m (Rb 100m per year)	• Inclusion of state scientific institutions in a number of possible partners • Maximum amount of support – Rb 190m (1st year – up to Rb 30m, 2nd year – up to Rb 60m, 3rd year – up to Rb 100m) • Maximum amount of support – Rb 190m (1st year – up to Rb 30m, 2nd year – up to Rb 60m, 3rd year – up to Rb 100m)	Extension of the scope of application but limiting the scale and potential

Source: prepared by the authors.

We should also note that in creating these new tools of public policy one can often trace a succession from mechanisms initiated earlier, with both their advantages and disadvantages being reproduced. In particular, the programme of support for cooperation of small innovative firms and scientific and educational centres implemented jointly by the Foundation for Assistance to Innovations and Rosnauka, on the one hand, reproduced one of the important merits of the TEMP Programme, namely, the possibility for the participation of a consortium of a small company and

larger enterprise and, on the other hand, – replicated a fundamental disadvantage of the PUSK Programme consisting of the separate and isolated support of the two participants in the partner project. However, in some cases, the 'designing' of new measures was most probably based on the experience of application of the previously launched mechanisms, including the negative aspects, which enabled avoidance of a repeat of their problems. For example, the mechanism of support for cooperative projects between companies and higher education institutions did not 'inherit' the key disadvantage of the tools of R&D funding in the interests of business: now R&D was commissioned not by their direct 'consumer' but by the state (*Table 23*).

Table 23

Comparison of key mechanisms of financial support of innovative projects

Commencement of application	Key innovation projects of national significance	Projects for commercialisation of technologies in thematic areas proposed by the business community	Cooperative projects for creation of new manufacturing facilities (mechanism 218)
	2002	2006	2010
Volume of budgetary funding of the project	Formally – up to Rb 500m (in practice in certain cases – up to Rb 600m and more)	Formally up to Rb 300m (in practice – no more than Rb 260m)	Initially – up to Rb 300m, then – up to Rb 190m, then – Rb 160m
Duration of support	Formally – up to 4 years (in practice in certain cases – up to 6 years and more)	Up to 3 years	Up to 3 years
Required level of non-budgetary co-funding	Initially – at least 50%, later – at least 60%	At least 70%	At least 50%
Scale of application	Point-wise – few projects per year	Medium – about 10 projects per year	Significant – up to one hundred projects per year
Features	Large-scale and long duration of projects, strict requirements for end results	Creation of a list of topics for R&D business proposals, tender-based selection of R&D contractors	Participation in the tender of partnerships of companies and higher education institutions (later also state scientific institutions); monitoring period exceeds the support period
Support scheme	A direct recipient of support is the key project contractor that engages required subcontractors	A direct recipient of support is the R&D contractor selected by the state	A direct recipient of support is the project initiating company, which finances R&D of higher education institutions (scientific institutions)

Source: prepared by the authors.

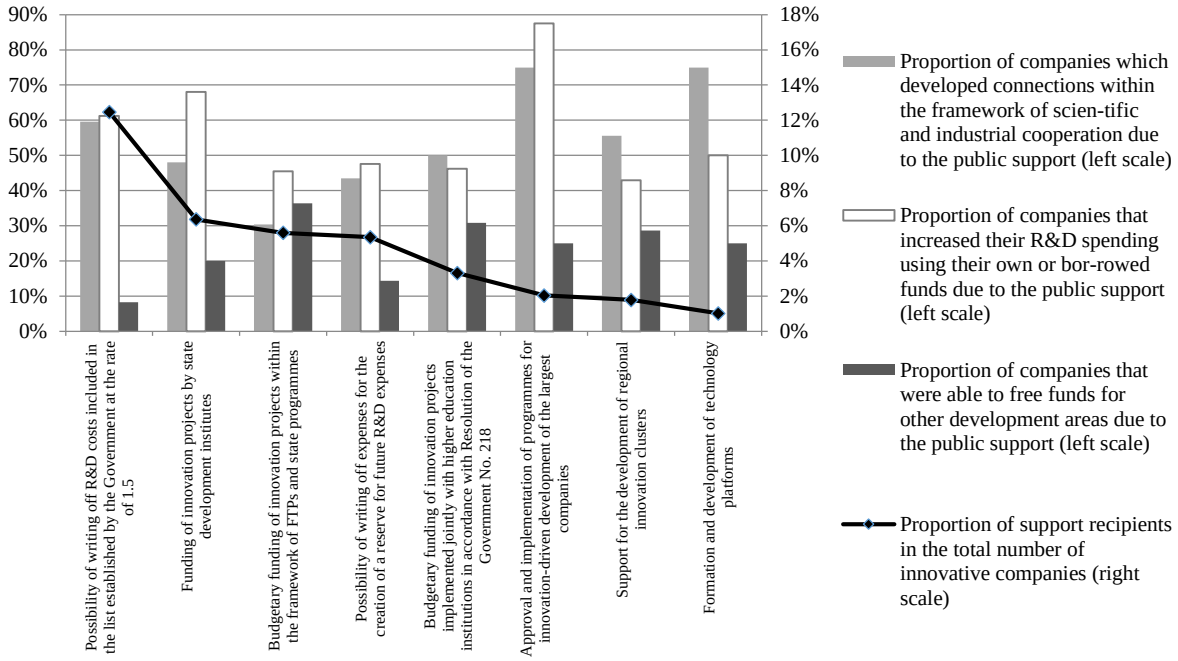
Fourthly. A major part of the selective measures for public stimulation of scientific and industrial cooperation (with the exception of, mainly, 'highly specialised' mechanisms – oriented only towards small business, higher education institutions or budgetary institutions) is characterised by the participation of a certain circle of 'loyal customers' which, as a rule, are represented by quite large state-owned companies, leading scientific centres (industrial and academic) and certain higher education institutions. This situation reflects a widespread effect called the 'Matthew effect' in the economic literature.[82] It implies that the state, when selecting recipients for support within the framework of a new tool (or round), mainly relies on the companies' previous history of getting support and their successful fulfilment of undertaken obligations. This results in the creation of quite a narrow circle of companies attractive (in terms of provision of support) to the state, which are regularly granted state funding. However, with the obvious negative influence of the 'Matthew effect' on the total number of companies supported by the state, at the level of the beneficiaries, the repeated support gives rather positive results.[83]

[82] Falk, R. Measuring the Effects of Public Support Schemes on Firms' Innovation Activities. WIFO Working Paper, Austrian Institute of Economic Research, Vienna, 2006; Aschhoff, B. The effect of subsidies on R&D investment and success: do subsidy history and size matter? ZEW Discussion Paper 09-032, Mannheim, 2009; Antonelli, C., Crespi, F. Matthew effects and R&D subsidies: knowledge cumulability in high-tech and low-tech industries. Working Paper 11/2011, University 'Roma Tre', 2011.

[83] Falk, R. Measuring the Effects of Public Support Schemes on Firms' Innovation Activities. WIFO Working Paper, Austrian Institute of Economic Research, Vienna, 2006; Aschhoff, B. The effect of subsidies on R&D investment and success: do subsidy history and size matter? ZEW Discussion Paper 09-032, Mannheim, 2009.

Fifthly. The principally important question, which defines materially the effectiveness of the support provided by the state, is in the degree to which the support provided by the state is 'additional' for the innovation activities of the companies. In other words, whether the receipt of support resulted simply in a replacement (or rather 'displacement') of private resources with public ones, while the total amount of R&D expenditure actually remains unchanged. At the same time, while in foreign countries the displacement effect is most often seen in the case of direct state funding,[84] in Russian practice it is approximately equal for both the financial and tax tools for support.[85]

It seems impossible to receive a comprehensive answer to these questions – at least due to the lack of practice of any comprehensive assessment of results of the application of the various measures of public innovation policy (assessments usually cover only the direct results of support and do not allow us to determine the extent of their 'complementary nature'). However, certain ideas about this can be obtained on the basis of the data of 'subjective statistics' – the results of surveying companies' chief executives (*Fig. 2*).[86]



Source: calculated by the authors on the basis of the data provided by the Inter-departmental Analytical Centre.

Fig. 2. Scales and effects of application of certain measures of public stimulation of innovations

As it was reasonable to expect, the tax relief for R&D expenditure included in a special-purpose list was characterised by the largest 'coverage' while technology platforms and regional innovation clusters were characterised by the smallest, which is also not surprising because both of these areas

[84] See, for example, David, P., Hall, B., Toole, A. (). Is Public R&D a Complement or Substitute for Private R&D? A Review of the Econometric Evidence. Research Policy, 2000, 29 (4-5); Lach, S. Do R&D subsidies stimulate or displace private R&D? Evidence from Israel. The Journal of Industrial Economics, 2002, 50 (4).

[85] Simachev, Yu., Kuzyk, M., Feygina, V. Public Support for Innovation in Russian Firms: Looking for Improvements in Corporate Performance Quality. International Advances in Economic Research, 2015, vol. 21, issue 1.

[86] The used data set was obtained on the basis of a questionnaire-based survey of 652 Russian manufacturing companies conducted in the second half of 2012 by the Centre of Market Research of the Institute of Statistic Research and Economic Knowledge of NRU-HSE and commissioned by the Inter-departmental Analytical Centre. The survey was oriented, among other things, on assessment of influence of different measures of public stimulation of innovations on companies. From about 20 measures considered, 8 were related with stimulation of scientific and industrial cooperation (see *Fig. 2*).

of support had arisen not so long before the survey was conducted. However, the development of scientific and industrial cooperation in supported companies was, in most cases, happening in the setting of both the application of the said tax relief and their participation in the creation of technology platforms and regional innovation clusters and was connected with the approval and implementation of the programmes for innovation-driven development of the largest state-owned companies. The latter mechanism, along with the support of state development institutes and, again, the profit tax relief for expenditure on R&D included in the special-purpose list, was characterised by its positive connection with the additional R&D spending of the supported companies. Finally, the displacement of private resources with public was most often observed with the use of the tools related to direct budgetary funding. Interestingly, while for the entire set of measures of tax stimulation of innovation the displacement effect was quite significant,[87] for the tax profit relief for R&D expenditure this problem is obviously secondary.

* * *

In conclusion, it seems important to note that, to date, the world has accumulated a wide experience of the empirical assessment of the influence on companies of different tools for stimulating innovation. In accordance with the established practice, such assessment is performed breaking the effects down into several groups, including changes in the resources available for innovations, the competitiveness of companies, behavioural changes. A special part here is played by the assessment of effects of 'behavioural complimentarity' relating mainly to internal and poorly formalised factors – the specifics of the organisational structure of the companies, interests and motivations of the various parties, the company's potential to gain new knowledge and to perceive new technologies. It is behavioural changes that determine the stability of the stimulation mechanisms on such companies.

It would be reasonable to introduce into the Russian practice the assessment of 'behavioural complimentarity' and development of relevant methodology. This would allow us to ensure more objective analysis and comparison of the influences of the different mechanisms of stimulation of the innovative activities of companies.

In foreign countries empirical research for the assessment of innovation policy is deeply integrated into the decision-making system – such research activities are of a regulatory nature, performed on the basis of statistical data over long observation periods (over 10 years), the results of assessment are publicly available and continuously compared between countries. In this regard, in accordance with Russian innovation policy, it seems important to introduce the system of regular assessment of the influence on companies of the mechanisms of support for innovation. As for initiating new mechanisms of stimulating innovation for the assessment of potential beneficiaries and their possible effects, it is necessary to develop a methodology and practice of ex-ante assessment.

All this would create a basis for the accumulation and discussion of research results, improvement of our understanding of the specifics of their influence on Russian companies, an extension of training processes on the basis of the implemented initiatives and a redistribution of resources in the interests of up-scaling successful practices.

Significant factors for the increase in the effectiveness of stimulation mechanisms are their long-term stability and user-friendliness. It is in this case that they become an element of business planning and preventive decision-making in companies. Noting that there are substantial reserves for further increase in the effectiveness of the stimulation mechanisms, it should be admitted that improvements of the institutional environment, the development of competition and the labour market, and an increase in the predictability of public socio-economic policy are not any less important for the development of the innovation activities of businesses.

[87] Simachev, Yu., Kuzyk, M., Feygina, V. Public Support for Innovation in Russian Firms: Looking for Improvements in Corporate Performance Quality. International Advances in Economic Research, 2015, vol. 21, issue 1.