

# Russian R&D policy 1996-2015: processes and progress

**Anna Trifilova<sup>1</sup>, Elena Korostishevskay<sup>2</sup>, Asadulaev  
Asadula<sup>3</sup>, Valentina Ostankova<sup>4</sup> and Raigul Doszhan<sup>5</sup>**

<sup>1</sup>University of Exeter, UK Streatham Court, Streatham Campus, Building 1, Business School, Exeter, Devon, EX4 4 ST, United Kingdom & St. Petersburg State University, Universitetskay Nabereshnaya, 7/9, Saint Petersburg, 199034, Russia, a.trifilova@exeter.ac.uk

<sup>2</sup> St. Petersburg State University, Universitetskay Nabereshnaya, 7/9, Saint Petersburg, 199034, Russia, lenkor7@mail.ru

<sup>3</sup> St. Petersburg State University, Universitetskay Nabereshnaya, 7/9, Saint Petersburg, 199034, Russia

<sup>4</sup> St. Petersburg State University, Universitetskay Nabereshnaya, 7/9, Saint Petersburg, 199034, Russia, V.v.ostankova@gmail.com

<sup>5</sup> Al-Farabi Kazakh National University, Al-Farabi Avenue 71, Almaty, Kazakhstan, raiguldos2011@gmail.com

**Since Russia started its transition from a closed communist state to an open market economy in the 1990s there have been major economical and political changes. The central idea of this paper is to look at what has been done so far in the R&D sector. Prior to the 1990s Russia outperformed the world in many spheres of science whereas countries like Finland, Korea, Israel, India or China had relatively underdeveloped R&D systems of performance. Yet these countries have moved to the forefront whilst Russia has lost its leadership position and struggles to compete in innovation. To address the query of what has happened to Russian R&D sector after the collapse of the Soviet Union this study reviews publications over the last twenty years focusing around Russian innovation policy. The findings of this study shed some light on the challenges Russian R&D organisations experience in the global R&D arena. It also explores the potential for international cooperation with former Soviet R&D centres in an era of open innovation.**

## 1. Introduction

In Soviet Russia, prior to the 1990s, R&D was given political support and priority due to its perceived strategic significance and importance for the international prestige of a communist country. This period was characterised by few financial limitations in terms of budgetary flows (Watkins, 2003). As a result, this created a unique R&D sector which was highly educated, geographically dispersed, militarily structured, extremely large and functionally segregated (Radovilsky, 1994).

In Russia, at the beginning of the 1990s, the shift from the state controlled R&D system of the Soviet Union to the market-based economy seemed to offer enormous business opportunities. Compared with the time of the Iron Curtain, the prospects of Russian R&D organisations for building international collaboration were significant; however in practice only a limited number of Russian R&D organisations managed to reach the global R&D arena. Equally, it should be pointed out that "[f]orty years ago Finland, Korea, Israel, and China, all started with a relatively underdeveloped enterprise sector **AND** an underdeveloped science and technology base....[including] research capability, technically trained workforce, and technical research universities" (Watkins, 2003, p. 1 [emphasis is in the original]). Thus, the main research question of this study is why Russia lost its leadership?

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK

The paper is organised as follows. First, we look into details of the transition from Soviet to post-Soviet era for Russian R&D organisations trying to understand the challenges shift created. Next, we present the results of studies in the area focusing on literature related to innovation policy during this transition. Particularly, we explore the question of what the transition period implied and how things were organised (or even disorganised). Then, we present the results of qualitative interviews with Russian experts involved into development and implementation of innovation policy in Russia. Finally, we provide conclusions looking at the results through the lenses of the open innovation paradigm and globalisation of R&D processes.

## 2. Russian R&D background

### 2.1 Russian science under the command economy

In Soviet Russia, centralised planning systems allowed devotion of significant resources to R&D paying little attention to economic return. Achievements of Russian scientists in physics, astronomy and space, chemistry and new materials, life and earth sciences, mathematics, new technologies, laser application, high frequency plasma, etc. were gained through “great concentration of labour and material resources, with virtually no financial limitations in the period of the former Soviet Union” (Radovilsky, 1993, p. 46).

*“Before the market reforms R&D was supplied to industrial enterprises as a free good of the centrally planned economy and all inventions were state property. In the USSR, intellectual state property was freely available for anyone to use without licences or royalty payments, provided that such usage was deemed to be in the interests of the state. In the Soviet period, an inventor received public recognition in the form of an Authors’ Certificate. Under no circumstances did the Authors’ Certificate grant the inventor an exclusive right for patent protection”* (Watkins, 2003).

Being centrally directed and totally financed by the Soviet Government, the R&D sector ill-suited liberalisation and market policy of the 1990s (Gokhberg and Shulanova, 2004). Without being targeted to improve the overall health of the economy, the Soviet science sector “may have even contributed to the economic stagnation that was beginning to manifest itself by the late-1970s and early-1980s” (Watkins, 2003, p. 7).

Contrary to the western pattern of research done in universities (Ettlie, 2006) and most innovations grown in industrial companies or start-ups, in the Soviet era, R&D increasingly concentrated in Research Institutes of the Academy of Sciences and Ministries. Such independent research institutes still outnumber both research departments in universities and industrial enterprises in modern Russia (Gokhberg *et al.*, 2001).

The collapse of the Soviet Union and the transition to the market economy at the very beginning of the 1990s radically affected R&D in Russia. Among the initial structural shifts that faced R&D organisations in the journey to the market economy were a complete disintegration of hierarchical administrative systems and a tremendous decrease in federal budget expenditure. In addition to the bureaucratic stratification that caused the loss of government-oriented support and most importantly demand, R&D within ex-USSR found itself in the situation of attracting practically no domestic interest in innovation from the enterprise sector.

Watkins (2003) outlines the historical state-of-affairs in the Soviet R&D sector helpful explain the present matter-of-facts. The main country-specific factors have also been described by others (Watkins, 2003; OECD, 2004; Gokhberg, 2004; Gokhberg and Shuvalova, 2004; Lachinov, 2005; S&T Overview, 2006, Trifilova *et al.*, 2007; Yegorov, 2009) and include such attributes as:

*historical* – R&D had always been a way of achieving state political objectives and considerations of the former Soviet Union in terms of international prestige and military power rather than a means of addressing internal industrial needs and servicing commercial orientation;

*structural* – R&D organisations used to be located in closed or isolated cities for security reasons, and there was no robust system for establishing close direct ties between technology supply and industrial demand;

*entrepreneurial* – R&D was characterised by a rather weak focus on innovation, as its primary aim in the Soviet period was stimulating scientific activity and basic research;

*economic* – such factors as brain drain, lack of private R&D capital and venture funds, raw material export orientation, high internal credit rates, a non-competitive domestic enterprise sector and slow R&D reforms, retard the development of a modern knowledge economy;

*managerial* – R&D, as well as the industrial sector, still lacks a suitable cadre of managers capable of tackling the issues of transferring and adapting new technologies and providing managerial assistance in improving technological absorption and development capacity in the market economy.

Providing a vivid description of modern Russian R&D, Gokhberg (2004, p. 19) claims that, at present, "it is not so much that the science and technology sector is pulling the rest of the country's economy up as it is that the rest of post-Soviet Russia's economy is pulling the science and technology sector down".

## 2.2. Russian R&D after transition to the market economy

Since the beginning of the reforms R&D organisations have been trying to narrow the gap between the legacies of the Soviet command system and the market policy. While the government is transforming Russian science and adjusting it to the knowledge economy, R&D organisations are making their own efforts to use their research capabilities (Gokhberg *et al.*, 2001) and technological potential to overcome institutional problems. Adjusting to the demands of the market economy, Russian research institutes search for production and/or marketing partners who can help develop and expand consumer-demanded rather than military-oriented innovations. Older types of R&D organisations, having the mission of achieving governmental political objectives, were rarely intended to address internal industrial demand. Due to the former political reasons, Russian scientists used to concentrate their major R&D efforts on military and defence technologies (space, aircraft, and new materials) and civil innovations (as well as the needs of the consumer market) were out of the scope of R&D sector. They hardly ever had experience in addressing direct market needs, most of R&D organisations seldom engaged in new product development (NPD), and still rarely do. In the Department of Trade and Industry there is an example:

*"Weapon designers at The Russian Federal Nuclear Centre, Sarov, have for decades been manufacturing electric devices from lightweight, high strength alloys and plastic. These are essential for long-range missiles and space-flown devices. During a CNCP UK partnering road show in 2003, an opportunity was identified to apply this technology to western medical equipment markets. This Russian aerospace-derived technology is being used to develop lighter weight drivers, with long battery life, for the rapidly growing market for home healthcare of elderly and infirm"* (DTI Report, 2006, p. 71).

The historical predominance of process innovations over NPD in Soviet R&D organisation leads to the present situation that most innovations from Russia are sold directly to producers; and end-users hardly hear of technological breakthroughs with a Russian origin. To illustrate more, the findings of a "Mission to Russia" supported by the UK Department for Trade and Industry (DTI) provide recent empirical evidence for the world-class research capability of the Russian science and for their desire to develop collaborative links. In 2005, the DTI organised a visit to Russian establishments developing research in the area of microwave power. Reporting upon the results of the visit, participants of the mission concluded the following:

*"Russia maintains a significant capability in the design and manufacture of high power microwave devices and systems; the country retains a desire and ability to initiate innovative projects; there are many opportunities for cooperation; and that other nations have taken up many of the opportunities offered better than the UK has"* (Global Watch Mission Report, 2005).

This provides a vivid example of how Russian R&D could potentially benefit from recognition of the interests of foreign partners in technology collaboration with respect to one chosen area of R&D. However, Russian statistics show mainly negative trends in science and innovation over recent decades.

*"Worrying developments include reduction of the scope of scientific research, loss of human resources, and degradation of research infrastructure. Russian scholars retain a prominent position in some research spheres and make a notable contribution to international scientific production, but the country is increasingly far behind both developed and developing countries in the application of research, technology levels, and the effectiveness of government policy in research and innovation"*<sup>1</sup>.

Today in Russia there are almost "4 000 organisations representing science and research. Among them are more than 400 universities (in all, Russia has over 1 000 institutions of higher learning), 1 200 state research institutions and 450 institutions of the Russian Academy of Sciences. The infrastructure to encourage innovative science currently comprises 76 research and development parks, 15 education and technology innovation centres based at the universities, 11 centres for technology transfer, 16 regional training centres for innovative management, 12 regional analytical information centres, ten regional innovation centres, 12 regional centres for assistance in development of R&D

---

<sup>1</sup> See 'Russian Science in Figures' (TsISN. Moscow, 2003), page 80 (in Russian).

Paper submitted to:

R&D Management Conference 2016 “From Science to Society: Innovation and Value Creation” 3-6 July 2016, Cambridge, UK  
*entrepreneurship and a foundation for assistance in development of innovation in higher education*<sup>2</sup>.

Two main areas of innovative activity in Russia are defence industry as well as fuel and power. Most science-intensive companies are in the defence sector, but their “R&D potential is underused due to reduction of state orders, which has made it impossible to fund large-scale projects. Fuel and power are not high-tech industries, but they are among a few flourishing segments of the Russian economy, and they are building a completely new innovation model, mainly by the efforts of private fuel and power companies, which badly need to improve their levels of technology” (Yukhnov, 2003, p. 15).

To exemplify more, it might be appropriate to refer to the results of the UK mission (Matthews, 2006) to Moscow, Fryazino and Nizhny Novgorod. The UK delegation visited one Ukraine and 13 Russian R&D organisations, nine laboratories, two large microwave and vacuum electronic manufacturing companies, Istok and Toriy:

*“The visits to Istok and Toriy confirmed that they [Russians] make a wider range of devices at different frequencies and power levels than any other country in the world. They also revealed very active exploration of novel industrial applications such as drying Chinese tea, and wood and rope processing. Devices developed include large magnetrons for industrial heating and processing, large klystrons for communications, and accelerator applications and more exotic devices like terahertz radiation sources. “The high-power klystrons are particularly impressive”, says Dr Clunie. “The west is many years behind in this technology, which provides power at lower voltages than conventional klystrons” (Matthews, 2006).*

To summarise, over the past decades, Russian R&D has faced serious challenges created by the transformation of the Russian economy following the collapse of the USSR in 1991, particularly:

*“Science and academic life in the country as a whole has become more open and democratic; international cooperation in the fields of S&T has soared; regulation of academic activity based on ideology has disappeared and administrative regulations have been eased. Russia has begun creating an environment conducive to new types of R&D activities. Gradually, innovative structures, capable of both creating new knowledge and working it into commercially attractive projects, have emerged **but inertia still exists**”<sup>3</sup> [bold emphasis added].*

### 3. Methodology of the study

To address the research question of this study on how Russian science lost its global leadership positions, a two-phase research design was selected. First, the authors carried out a detailed literature review of publications available mostly in Russian on Russian R&D policy for the period of twenty years: 1996-2015. The starting point is taken as 1996 for the reason that in the early 1990s, after the collapse of the Soviet Union, no reforms in R&D policy been accomplished. It was the period of political transition and economic disintegration.

Phase two includes interviews with Russian policy makers and directors of R&D centres located in Moscow and St. Petersburg. We selected those regions being two major cities of the country with concentration of political and economical manpower. We interviewed workers from the RF Ministry of Education & Science who are responsible for Russian R&D policy. We reached six middle and lower level workers. Equally, interviews were conducted with experts in the area, for instance, with the editor-in-chief of the Russian Journal Innovation (Инновации), or the head of business incubators resulting in twelve experts interviewed. In the next sections we present the data collected.

### 4. Finding and results

For phase one of the study an in-depth literature survey was accomplished focusing on such Russian academic journals as Innovation (Инновации), Economic Issues (Вопросы экономики), Foresight (Форсайт), Economist (Экономист), Russian Economic Journal (Российский экономический журнал), Economics & Management (Экономика и управление), etc. The strong economics focus of the journals is explained by the nature of the Russian academic publication system where R&D is a part of economics journals. To address the research question of this study we searched for such keywords in the title of the papers as: innovation policy, R&D policy, science policy and combination of these notions.

---

<sup>2</sup> See ‘UNESCO Science Report’ (2005), page 152.

<sup>3</sup> See ‘UNESCO Science Report’ (2005), page 150.

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK  
 In Table 1 we present papers published in Journal Innovation (ИННОВАЦИИ). Why this source only? The journal was established in 1996 and it is the only Russian academic publisher focusing on issues of innovation policy, technology transfer, R&D, NPD, etc. as its main objective. The other journals listed above publish papers on innovation but as a secondary or tertiary objective. Working with the ‘Innovation’ journal allowed a longitudinal detailed analysis of twenty years coverage of our core topic.

<b>Author</b>	<b>Publication title</b>	<b>Contribution into the knowledge</b>
<b>1996: no papers were published on the theme of innovation policy</b>		
<b>1997</b>		
D. Sergeev & A. Rumyantzev	Regional science and innovation policies in St. Petersburg (Vol 1) <sup>4</sup>	Outlining research problem
A. Swinarenko	Development of the state innovation policy and legislative background to support innovations (Vol 2-3)	Outlining research problem
<b>1998</b>		
T. Nikolaeva	Database for the innovation policy (Vol 2-3)	Communication around innovation policy
<b>1999</b>		
A. Berdashkevitch	Review of the Federal Law on “Federal Budget 2000 and state innovation policy” (Vol 5-6)	Review of the Federal Law
A. Berdashkevitch	Review of the Draft of the Federal Law “Innovation activities and innovation policy” (Vol 5-6)	Review of the Federal Law
P. Zavlin	Review of the Draft of the Federal Law “Innovation activities and innovation policy” (Vol 5-6)	Review of the Federal Law
L. Kulyaniza	Innovation policy in a demonstration zone of St. Petersburg: experience into development and implementation (Vol 5-6)	Review of Regional Law and experience of strategic development in St. Petersburg
O. Strelakov et al.	Application of the factor analysis for the development of regional innovation policy (Vol 7-8)	Outlining research problem on a regional level
A. Berdashkevitch	Analysis of the jurisdictional content of such definitions as “innovation activity”, “state innovation policy” (Vol 7-8)	Review of the definitions in existing laws and legislative regulations
<b>2000</b>		
N. Arzamashev	Increasing competitive advantage of Russian industrial manufacturing as a major objective of the state innovation policy (Vol 7-8)	Towards the development of the Russian Ministry of industry, science and technology in 2000
A. Berdashkevitch	Coordination of Russian science & technology policy (Vol 7-8)	Legislative regulation of science
<b>2001</b>		
V. Veretennikov et al.	Technical universities: industrial focus of science & innovation policy (Vol 1-2)	Review of the “Concept of science, science & technology and innovation policies as part of the Russian education system 2001-2005”

<sup>4</sup> To avoid double-references, in Table 1 along the publication title we also provide Vol where articles have been placed.

V. Golikov	University as a leading institutional centre for science & technical and innovation policy in a region (Vol 1-2)	Experience of Orlov technical university
A. Swinarenko	Targeted Federal programmes as a tool to increase innovation activity and competitive advantages of manufactures (Vol 4-5)	Review of the overall Targeted Federal programmes "Research & development of the priority areas in science and technology", "National technological base" and "Improving the competitiveness of domestic producers"
N. Fedotov et al	Development of regional innovation policy (Vol 4-5)	Grant of the Ministry of Russian education
A. Rumyanzev	Aspects of the development of regional innovation policy (Vol 4-5)	Experience of St. Petersburg
A. Swinarenko et al	Programms of technological development as a tool of the state support for domestic producers of the competitive goods (Vol 9-10)	Experience of the programmes implemented with the support of the Russian Ministry of industry and science
U. Tkachyk et al	The program of innovative reform in the Russian Ministry of Atom as the basis for the development of scientific, technological and industrial potential of the industry (Vol 9-10)	Experience of the Russian Ministry of Atom to increase innovation activity of the enterprises in the atom industry in 1998-2000 and review of the next programm for 2002-2004
V. Plasitchuk	Interaction between informational & cultural aspects of innovation policy (Vol 9-10)	Review of the definitions and notions
I. Boiko	National innovation policy: outlook from overseas experience (Vol 4)	Interactions between innovation economy and innovation policy
N. Egorov	Major objectives of the state innovation policy in the Republic of Sakha (Vol 9-10)	Experience of the major sectors in a given industrial region
<b>2002</b>		
A. Bocharov, U. Shemev	State innovation policy as part of the development of the national innovation system (Vol 2-3)	Outlining research problem
N. Beketov	Challenges in development of the state innovation policy in regard of the IPRs (Vol 8)	Outlining research problem and ways of solving it
G. Sidunova	Regional innovation policy and its management (Vol 9)	Outlining research problem and ways of solving it
<b>2004</b>		
A. Gabitov	State policies to support innovation processes in the regions (Vol 4)	Study of the problem through the lenses of the regional defence & industrial complex
O. Zharikov	The need to develop longitudinal innovation policy in Russian transport (Vol 7)	Study of the problem through the lenses of an industry
<b>2005</b>		
A. Klimenko	Tools to implement state innovation policy (Vol 3)	Review of the tools of implementation of the Targeted Federal programmes "Research & development of the priority areas in science and technology" 2002-2006

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK

V. Gorbach	The role of SSC RF FSUE “CRIST” <sup>5</sup> in the development of innovation, science & technology policies in shipbuilding (Vol 3)	Study of the problem through the lenses of an industry
<b>2006</b>		
L. Mindeli, V. Vasin	Challenges of the interaction between internal and international aspects of the state science and innovation policy (Vol 2)	Study of the problem around the development of the Russian innovation complex; identification of the main methods of state regulation of scientific and innovation spheres
A. Kudinov, E. Lurie	Novel regional policy and its innovation milestones (Vol 4)	Overview of elements and participants in the implementation of innovation policy in the regions
A. Chlunov	Mechanisms of implementation of the state science & technology and innovation policy (Vol 9)	Implementation of the “Strategy of development of science and innovation in the Russian Federation for the period till 2015” at the state level.
<b>2007</b>		
T. Nikolaeva, E. Korostishevskay	State innovation policy in regard to IPRs (Vol 1)	A study into the development stages of the state policy around IPRs
A. Suvorinov	Implementation of the state science & technology and innovation policies (Vol 3)	Presentation at the VII Moscow International Salon of Innovations and Investments
E. Balashov	Major innovation projects of the state impact as an example of the successful tool to implement innovation policy of RF (Vol 3)	Presentation at the VII Moscow International Salon of Innovations and Investments
<b>2008</b>		
N. Korenko	Implementation of innovation policy of St. Petersburg in 2008 (Vol 4)	Regional experience
N. Ivanova et al	Review of innovation policy and assessment of its results (Vol 5)	Collaborative study of the research team from Russia, Ukraine and the United Kingdom in the framework of the international project “Comparative analysis of innovation policy in Russia and Ukraine based on the methodology of the European innovation scoreboard”
A. Kotov	Design and development of regional innovation policy (Vol 9)	A study into the factors influencing the timespan and content of innovation policy
<b>2009</b>		
S. Fiveiski	Innovation policy of St. Petersburg: new aspects (Vol 4)	Regional experience
Interviews of experts about youth innovation policy	The experts discussed the ways of implementing youth innovation policy. Based on discussions at the roundtable “Russian Youth Innovation sector. Problems and Prospects”	Suggestions for the development of youth innovation sector for the Russian Federation Prime Minister Vladimir Putin

---

<sup>5</sup> State Scientific Center of the Russian Federation, Federal State Unitary Enterprise “Central Research Institute of Shipbuilding Technology”, one of the largest research institutions in St. Petersburg, Russian leading technology center of shipbuilding.

V. Moskovkin, T. Mishchenko	(Vol 4) Adaptation of the European innovation policy in the area of seed venture funding for the Russian innovative practices (Vol 9)	Review of the European innovation policy based on project PROINNO Europe: INNO Policy Trendchart
<b>2010</b>		
A. Snegirev	Ways of improving the tools of implementation of the Federal Target Program “Research & development of the priority areas in science and technological complex of Russia for 2007-2012” in order to increase the effectiveness of interaction between scientific and industrial organisations (Vol 1)	Opportunities been identified to improve the efficiency of budget allocation between activities of Targeted Federal programmms
E. Popova	Review of the concept of the Federal Law “State support of innovation activities in Russian Federation” (Vol 2)	Review of the problem on the level of an formal document
S. Ivanov	Current government measures around the policies of improving the national innovation system (Vol 5)	Interview with the Russian Government Deputy and the Deputy of the Chairman in the Government Commission on High Technology and Innovation
M. Safiulin	State innovation policy: regional aspects (Vol 5)	Regional experience
<b>2011</b>		
V. Ivanov	Russian innovation policy: variants and perspectives (Vol 2)	Approaches are suggested for the development of the strategy on the national innovation development and the state innovation policy
A. Sudarikov, A. Gribovski	Ways of improving legislation in the sphere of innovation (Vol 5)	Outlining of the research problem
M. Oseevski	Guidelines for the strategic innovation development of Saint-Petersburg: the course on modernization and renewal (Vol 9)	Regional experience
O. Golichenko	Transition of Russia towards innovative path of development and the major directions of state policy (Vol 9)	Grant research
<b>2012</b>		
O. Golichenko, S. Samoilova	Implementation risks of the strategy of innovation development of the Russian Federation till 2020 (Innovative Russia 2020” (Vol 4)	A model is suggested for coordination of different constituent elements of the national innovation system
E. Popova	Innovation strategy of Russia: ways of further development (Vol 6)	Presentation in the Forum of innovative technologies “InfoSpace 27” on 28.03.2012
V. Ivanov	Modernisation and innovation development policy (Vol 9)	Outlining research problem
A. Kotov	Strategic approach as a tool to develop innovation policy (Vol 12)	Regional experience of St. Petersburg

**2013: no papers have been published on the theme of innovation policy**



<b>2014</b>		
A. Rumyantchev	Improving on the efficiency of scientific and innovation programmes (Vol 1)	Outlining research problem
E. Korostishevskay	Priorities of the state innovation policy in the scientific and technological sphere in Russia and the ways to improve competitiveness of the manufacturing sectors (Vol 4)	Overview and dichotomy of the formal documents
A. Degtyarev, A. Todociitschuk	Development and implementation of the state science & technology and innovation policies: challenges and perspectives	A study into legislative background of innovation policy and the review of legal framework
<b>2015</b>		
O. Minaeva et al	Concept of innovation development of Nizhny Novgorod region: monitoring of targeted indicators (Vol 5)	Regional experience

Table 1. Overview of the publications in the Russian journal Innovations (ИННОВАЦИИ): 1996-2015 on Russian innovation & R&D policies

#### 4.1 Overview of the selected publications

This study identified 57 publications around the theme of innovation policy. There are a few interesting facts around the flow of the papers. For instance, in 1996 and 2013 saw no publications around the theme of innovation policy during the whole year (it is a monthly published issue). This can be explained as follows. In 1996 the topic has just started its journey and there was insufficient research and/or analytical data collected for a publication. As for 2013, we believe, it is a simple coincidence. However, in 1999 and 2001 there is an evident increase in publications activity.

The first publication flow (1999, Table 1) can be linked to the development and introduction of a number of legislation documents Russian Government issued in the area of innovation. To illustrate, in 1996 the Russian Federal Law “On Science and State Scientific and Technical Policy” was introduced. In 1997, Russian President issued a Decree “On measures for the development of science-cities as the cities of science and high technologies”. In 1999 another Federal Law “On the Status of City of Science of the Russian Federation” was introduced. It was followed with the Presidential Decree “On conferring the status of Russian science city of Obninsk, Kaluga region”. It should also be stated that at the end of the 1990s in Russia significant efforts were put into the development of the first “Concept of Innovation Policy of RF for 1998-2000”. These explain why the number of publications reached 7 papers in 1999.

The second flow of publications (2001, Table 1) reaching out 8 papers within a year on the topic of innovation policy can be explained by a number of factors. Firstly, by 2000 Russia achieved some initial practical results of the post-Soviet innovation policy launched at the end of 1990s. Equally, Russian regions collected some experience and practical data to share their best (and worst) practices.

It is also worth examining authorship of these papers. If we take the first author (in the co-authored papers) and the occupation, then out of 57 papers, 30 were submitted by the representatives of the governing bodies. (Academics published 27 papers). Involvement of representatives of the governmental manpower in writing articles about innovation policy seems to be logical as they are the main actors involved in developing and implementing this theme. It is worth looking a little more closely at the specific authors.

In 1999 and 2000, A. Berdashkevitch, a consultant of the State Duma (Upper Chamber of the Parliament) Committee on Science and Education, published, for instance, four papers on the legal regulation of science; texts of the federal law, as well as some of the definitions used in legal acts. In 1997 and 2001 First Deputy Minister of the Ministry of Industry, Science and Technologies of Russian Federation A. Swinarenko published three articles on the comprehensive assessment of Targeted Federal programmes “Research & development of the priority areas in science and technology”, “National technological base” and “Improving the competitiveness of domestic producers”. In 2011 and in 2012 the Deputy Chief of the Scientific Secretary of the Presidium of the Russian Academy of Sciences, Professor V. Ivanov published two articles on the subject. He mainly reviews the issues around the strategy on national innovation development and the state innovation policy. Looking at the academic authors publishing in the journal Innovation it is

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK  
 hard to single out a name of an academic who has made a major contribution into the knowledge around Russian innovation policy. As pointed earlier, this tendency is quite understandable as innovation policy is done more at the governmental level. At the same time public-serviced articles serve as valuable secondary data for academics.

#### 4.2 Overview of the publishing topics

It is also important to single out topics that are widely discussed by the authors around innovation policy. These include:

- Outlining the research problem. There is a considerable number of articles where authors are focusing on stating research problems around innovation policy. This is due to the fact, that the topic of innovation policy is new for post-Soviet era.
- Suggesting methodologies. A number of articles are around the issues of methodologies to be applied for understanding of the research problem.
- Reviewing of the official documents issuing by the Government. The journal has become a round-table for discussing legislative and jurisdictional framework around implementation of innovation policy.
- Industrial involvement. Federal innovation policy has been discussed through the lenses of its implementation in different industrial spheres such as transport, shipbuilding, energy, atom, defence, IT, etc.
- Regional experience. A number of regions have been selected for piloting different aspects around implementation of federal innovation policy and those become the cases for upfront practical analysis.

#### 4.3 Overview of the results achieved

Based on the analysis of the publications accomplished in 1996-2015 it is possible to single out three major areas of focus around the development and implementation of innovation policy in Russia. These help explore the issue of why Russia lost its leadership position globally as they highlight the key focal areas over the past 20 years.

##### 4.3.1 A summary of legislative framework produced to support implementation of innovation policy

In Table 2 we provide overall number of different official documents the Russian Government focused on to supply R&D organisations with rules and regulations so that they could accomplish their activities once the Soviet Union had collapsed and the former legislation could no longer be applicable<sup>6</sup>.

Type	Title of the official document
Laws	RF Law “On Science and State Scientific and Technical Policy”, 1996
	RF Law “Science City Status in the Russian Federation”, 1999
	Model Law “On Innovation Activities”, 2006
	RF Law “On National Research Centre Kurchatov institute”, 2010
	RF Law “On Innovation Centre Skolkovo”, 2010
	RF Law Draft “About State Support of Innovation Activities in RF”, 2011
	RF Law “On the Russian Academy of Sciences, the Reorganization of the State Academies of Sciences and Amendments to Certain Legislative Acts of the Russian Federation” 2013
Strategies	“Strategy of Developing Science and Innovation in RF till 2015”, 2006 “Strategy of Innovation Development of RF till 2020”, 2011
Concepts	“Concept of Innovation Policy of RF for 1998-2000”, 1998 “Concept of Innovation Policy of RF for 2000-2005”, draft with no date “Concept of Innovation Policy of RF for 2002-2004”, draft with no date
Other documents	Presidential Decree “On Measures for the Development of Science Cities as the Cities of Science and High Technologies”, 1997
	Programme “Development of Obninsk as a Science City of RF 1999-2004”
	Presidential Order “Fundamentals of Russian Policy in the Field of Science and Technology for the Period up to 2010 and beyond”, 2002
	“Major Directions of the Russia Policy in the Area of Development of the

<sup>6</sup> In Table 2 we provide a brief introduction to all official documents avoiding for the sake of the word limit its formal number, date and other registration details.

Paper submitted to:

	R&D Management Conference 2016 “ <i>From Science to Society: Innovation and Value Creation</i> ” 3-6 July 2016, Cambridge, UK
	National Innovation System for the Period up to 2010”, approved by the Chairman of the RF Government, 2005
	RF Government Decree “ On Approval of the State Program on Creation of Technoparks in the Russian Federation in the Sphere of High Technologies”, 2006
	Presidential Decree “On Measures of State Policy in the Sphere of Education and Science”, 2012
Forecast	“Forecast of the FR Scientific and Technological Development for the Period up to 2030” approved by the Russian President, 2013
Priorities	Presidential Decree “Priority Directions of Development of Science, Technology and Engineering in the Russian Federation and the List of Critical Technologies of the Russian Federation”, 2006
	Presidential Decree “Priority Directions of Development of Science, Technology and Engineering in the Russian Federation and the List of Critical Technologies of the Russian Federation”, 2011

Table 2. An overview of legal documents, reflecting the evolution of jurisdictional framework for innovation policy in post-Soviet Russia

#### 4.3.2 A summary of institutional management bodies around innovation policy

Here we provide a brief overview of governmental bodies responsible for development and implementation of Russian R&D and innovation policy. We try to indicate how administrative tasks have evolved and when different bodies were involved. Since 1993, state policies are linked to the Ministries, in regard to innovation & R&D these responsibilities been shifted along reorganisation of the Government structure and were with:

- Ministry of Science, Higher Education and Technical Policy of RF (29.01.91 - 25.02.93);
- Ministry of Science and Technology Policy of the Russian Federation (26.02.93 – 14.08.96);
- Committee on Science of Technologies of RF (15.08.1996 – 17. 03. 1997);
- Ministry of Science and Technology of RF (18.03.1997 – 20.05.2000);
- Ministry of Industry, Science and Technology (21.05.2000 – 11.03.2004);
- Ministry of Science and education (12.03.2004 – onwards).

There are also the so-called Presidential Councils to advise on innovation and R&D policies, they are:

- Council for Science and Technology Policy by the President of RF (03.03.1995 – 23.05.1997);
- Council for Science and High Technologies by the President of RF (09.11.2001 – 30.08.2004);
- Council for Science, Technologies and Education by the President of RF (31.08.2004 – 28.07.2012);
- Council for Science and Education by the President of RF (29.07.2012 – onwards);
- Council for Economic Modernisation and Innovation Development by the President of RF (19.06.12 – onwards).

#### 4.3.3 A summary of critical technologies for innovation policy

Another result of the development of Russian R&D sector has been the so-called priorities of the state innovation policy in the field of science and technology (also known as the list of critical technologies). The list has been developed (reviewed) over the years and now been mainly shortened to<sup>7</sup>:

- Security and counter-terrorism;
- Nanotechnology;

---

<sup>7</sup> Presidential Decree NO 899, dated 07.07.2011 [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_116178/](http://www.consultant.ru/document/cons_doc_LAW_116178/)

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK

- IT and telecommunication systems;
- Life sciences;
- Weapon, military and other equipment;
- Rational use of natural resources;
- Transport and space systems;
- Energy efficiency, energy saving, nuclear power.

#### 4.3.4 A summary of introduced infrastructure to support implementation of innovation policy

Another result of the development of Russian R&D sector in the past twenty years is a number of new organisation which been recently introduced to support implementation of innovation policy; they are:

- JSC “Russian Venture Company” (by Governmental Order, 2006);
- Special economic zones of technical-innovative orientation (Federal Law of RF “On Special Economic Zones in RF”, 2007);
- Corporation “Rostech” (Federal Law of RF “On Creation of State Corporation “Rosstechnologii”, 2007);
- Innovation centre “Skolkovo” (Federal Law RF “On Innovation Centre Skolkovo”, 2010);
- Association of Russian innovative regions, 2010;
- JSC “Rosnano”, 2011;
- Agency for Strategic Initiatives to Promote New Projects (by Governmental Order “On Establishment of the Autonomous Non-commercial Organization Agency for Strategic Initiatives to Promote New Projects”, 2011);
- Russian Science Fund (Initiative of Russian President, 2014).

## 5 Discussion and conclusion

According to Bernstein (1999, p. 5) “[t]echnology commercialisation cannot be studied without reference to the political and economic conditions in the country in which it occurs. This is especially true in Russia, where there have been dramatic changes in government policy, laws, and economic conditions”. Most of the reforms started in the 1990s “have been far from smooth and many of which have not been constructive from the standpoint of encouraging foreign investment or building a strong civilian market economy” (*ibidem*).

To understand the nature and focus of the reforms accomplished in Russia at the beginning of the 1990s, referring to Bucknall’s thought-provoking study titled “Why China has done better than Russia since 1989” is most helpful. In this study economics, administrative and process, political science and interdisciplinary explanations are given to the question of why China has done better than Russia. To exemplify, from the interdisciplinary explanations Bucknall (1997, p. 1028-1029) explains that reforms in Russia involved both “*political and economic change, [which] caused major disruptions and sufferings...the central planning system collapsed before the market mechanism was functioning adequately. This inevitably meant the emergence of shortages in industry and a downturn in industrial production*”.

From an administrative perspective Bucknall (1997, p. 1030- 1036) construes “*Russia tackled the political side before the economic one...When Russia abandoned economic control, which encouraged the spread of capitalism and rise of entrepreneurs, it was unfortunately accompanied by a slacking of administrative control*”. Finally, Bucknall (1997, p. 1036) concludes that “*gradualism rather than the big bang approach is generally preferable, as it allows time for adjustment, reduced chaos, and probably strengthens the belief that the reform will not subsequently be reversed*”. As a result of ‘big bang’ approach, “*since 1991 scientific research in Russia has suffered from a major funding crisis in which state-funded science research has reduced from 1 percent to 0.32 of GNP... [when] up to 30,000 scientists have moved to west*” (Roy and Taratoukhine, 2002). To be precise, in the period “*between 1990 and 2002, the number of*

Paper submitted to:

R&D Management Conference 2016 *“From Science to Society: Innovation and Value Creation”* 3-6 July 2016, Cambridge, UK  
*people involved in research and other academic activities decreased by 55.2%. In absolute figures, this means that Russian science lost 1 072 500 skilled people”*<sup>8</sup>.

One of the major findings of the literature review is that Russia has been developing new R&D system using ‘learning-by-doing’ approach. Starting from 1996, Russia was busy with introducing new Laws for Science and R&D policy (Table 2) resulting in eight different revisions. Two major strategies for science development were introduced in 2006 and in 2011. In 1998, 2002, and 2005 three revision of the so-called Concepts of the Russian Innovation Policy been issued. There was also a document on Foresight (2013) and Priorities (2006 & 2011) in science and technology. Lastly, the study identified other six documents covering different aspects of R&D mainly issued as Orders (Указ) of Russian President. In this regard, referring to Bucknall (1997, p. 1027) again can be supportive:

*“There are many socialist books that explain how a country can best make the transition from capitalism to communism. In 1989 there was little theory or experience of reversing the process. As has been remarked, there is no known recipe for unmaking an omelette (the Economist, 1990, p. 18)...Many of the western experts who give expensive advice seem to examine the experience of one country in Eastern Europe and recommended to another country anything that appears to work”.*

The experts in the interviews we carried out for this study pointed that since 1993 *“responsibilities of R&D policy been shifted from one ministry to the other six times”*. To illustrate, in the period of 1997-1996 there was the so-called Committee on Science of Technologies of the Russian Federation (RF). In 2000-1997 there was already a Ministry of Science and Technology of RF. Then, in 2004-2000 R&D was shifted to the Ministry of Industry, Science and Technology, etc. As one interviewee underlined about Ministries’ responsibilities with *“Imagine, those were different people, different departments, different organisations involved and naturally there was no time for R&D policy itself as all the efforts were on shifting the responsibilities from one body of governmental institution to the other”*.

Interestingly, a few experts in fact said that in their opinion there is still no innovation policy in Russia. There have been multiple ‘discussions’ about innovation policy but *“those discussions cannot be called a ‘policy’”*. Innovation policy is a part of a number of strategic documents but so far the role of innovation policy as part of other policies, has not been identified. As explained by the experts, in today’s Russia strategic documents are introduced in a chain of *“Strategy-Programme-Projects-Actions”* and *“‘policy’ is not a part of it”*. In other words, *“innovation policy in Russia has no ‘institutional framework’”. The term “policy”, for instance, is missing in the recently introduced Law on strategic planning in RF. As long as this notion will be lacking at that level, “policy’ as such won’t have much of jurisdictional or managerial base”*.

Experts also pointed that today for Russian R&D it is *“important to develop tools and institutions. There is, for instance, the law for venture capital, but the venture activities are very weak cause they are not developed to a level of a working tool”*. Among other ways to foster innovation and improve Russian R&D, the experts name *“support of innovative SMEs, including stimulation of internal industrial demand and venture investment; development of innovation culture and involvement of ordinary people into innovation activities, known abroad as crowdsourcing; increasing interest in IPRs; foresighting and foreseeing”*.

Another comment was about *“a very low “natural” and educational level of entrepreneurial activity”*. Interestingly, one experts pointed that *“over the past 15 years the possibility of involving of children and young people in technical creativity been decreased dramatically. Along a reduction in the level of training for scientific subjects at schools, the tendency to knowledge-intensive and technology entrepreneurship is currently minimal. To improve the situation, a long-term state program to stimulate engineering and technical creativity is required”*.

In terms of the implications of our research for both Russian organisations and those international partners doing business with them, we have described a number of dilemmas. Our major conclusion is that the Russian R&D sector has only just completed its transition to the open market in terms of regulations and infrastructure in place. It took the country almost twenty years through ‘learning-by-doing’ understand the realities of open market R&D and it still has some way to go in terms of inserting itself as a player in a wider ‘open innovation’ system.

### **Limitation & further research in the area**

The literature review for phase one of the study has mainly focused on internal sources in the Russian language. On one hand, this fact is valuable for the contribution to the knowledge in English as Russian language sources are not

---

<sup>8</sup> ‘UNESCO Science Report’ (2005), page 5.

Paper submitted to:

R&D Management Conference 2016 "From Science to Society: Innovation and Value Creation" 3-6 July 2016, Cambridge, UK easily accessible for wider audience. On the other hand, we understand that this might give a biased view of what is actually happening. As the next step of this study we should wider literature search and add Web of Science publications reviewing for the papers on Russian innovation policy in such journals as Research Policy; R&D Management, Technovation; Technological Forecasting & Social Change; Technology in Science, etc.

## References:

Bernstein, D. (1999) *Commercialization of Russian technology in cooperation with American companies*, Stanford University's Center for International Security and Cooperation, CISAC.

Bucknall, K. (1997) 'Why China has done better than Russia since 1989', *International Journal of Social Economics*, 24 (7/8/9): 1023 – 1037.

DTI (2006). *The Global Partnership: Fourth Annual report*. DTI: Ministry of Defence.

Ettlie, J. (2006) *Managing innovation*. Elsevier, USA.

Global Watch Mission Report (2005) 'The design, manufacture and application of high-power microwave systems – a mission to Russia', *DTI*.

Gokhberg, L., Kovaleva, N., Kouznetsova, I. (2001) 'Innovation management in Russia: a review of training needs and opportunities for growth', *British Council, Russia*.

Gokhberg, L. (2004) 'Russia's National Innovation System and the "New Economy"', *Problems of Economic Transition*, 46 (9), 8–34.

Gokhberg, L., Shulanova, O. (2004) 'Russian public opinion of the knowledge economy: science, innovation, information technology and education as drivers of economic growth and quality of life', *British Council, Russia*.

Lachinov, M (2005) Russia: science and technology framework, accessed from <http://www.alwatchservice.com>. (14 April 2005).

Matthews, J. (2006) Microwave power: Russia's strength. *Global Watch Magazine*, Vol. 6, pp.10–11.

OECD (2004) Science, technology and industry outlook. Country response to policy questionnaire. Russia.

Radovilsky, Z. (1994) 'Managing Operations in the Former Soviet Union: Current Situation and Future Development', *International Journal of Operations and Production Management*, 14 (2): 43–50.

Roy, R., Taratoukhine, V. (2002) Decision Engineering: informed operational and business decision making within industry, *Granfield University*.

S&T Overview accessed from <http://www.globalwatchservice.com/Pages/Russia/S&T> (5 January 2006).

Trifilova, A., Bartlett, D., Altman, Y. (2007) 'Innovation and technological collaboration: a Russian perspective', In *Proc. 21<sup>st</sup> Int. BAM Conf. Managing Research, Education and Business Success: is the future as clear as the past?* Coventry: UK.

Watkins, A. (2003) *From knowledge to wealth: transforming Russian science and technology for a modern knowledge economy*, World Bank.

Yegorov, I. (2009) 'Post-Soviet science: Difficulties in the transformation of the R&D systems in Russia and Ukraine', *Research Policy*, 38, 600–609.

Yukhnov, P.M. (2003) 'Investment Potential of Foreign and Russian Oil & Gas Companies', *Neftyanoye Khozyaystvo*, no. 11, pages 14-16 (in Russian).