INNO-Policy TrendChart - Policy Trends and Appraisal Report

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Innovation is a priority of all Member States and of the European Commission. Throughout Europe, hundreds of policy measures and support schemes aimed at innovation have been implemented or are under preparation. The diversity of these measures and schemes reflects the diversity of the framework conditions, cultural preferences and political priorities in the Member States.

PRO INNO Europe is a new initiative of Directorate General Enterprise and Industry which aims to become the focal point for innovation policy analysis, learning and development in Europe, with the view to learning from the best and contributing to the development of new and better innovation policies in Europe. Run by the Innovation Policy Directorate of DG Enterprise and Industry, it pursues the collection, regular updating and analysis of information on innovation policies at national and European level.

The **INNO-Policy TrendChart** serves the "open policy coordination approach" laid down by the Lisbon Council in March 2000. It supports organisation and scheme managers in Europe with summarised and concise information and statistics on innovation policies, performances and trends in the European Union (EU). It is also a European forum for benchmarking and the exchange of good practices in the area of innovation policy.

The INNO-Policy TrendChart products

The INNO-Policy TrendChart, previously TrendChart on Innovation, has been running since January 2000. It now tracks innovation policy developments in all 27 EU Member States, plus Iceland, Norway, Switzerland, Croatia, Turkey, Israel, Brazil, Canada, China, Japan, USA and India. The INNO-Policy TrendChartwebsite[1] provides access to the following services and publications, as they become available:

- a database of innovation policy measures across 39 countries;
- a news service and related innovation policy information database;
- a "who's who" of agencies and government departments involved in innovation;
- annual policy monitoring reports for all countries covered;
- an annual synthesis report bringing together key points in the INNO-Policy TrendChart.

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[1] See http://www.proinno-europe.eu/index.cfm?fuseaction=page.display&topicID=52&parentID=52

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1. Introduction: innovation performance and policy objectives

Recent economic indicators for Russia, particularly GDP growth, employment trends, general government debt as a % of GDP look rather impressive and are better than corresponding comparable indicators of economic performance for the EU-27. The oil and gas sector has provided a solid contribution to this economic success, but also other sectors, such as construction, trade and services sectors perform pretty well too. But the overall Russian economic performance is lower than the European average. Labour productivity per person employed in Russian economy stands at only 37% of the EU and is slightly decreasing. Foreign direct investment intensity as well as general business investment intensity also remain low and are not sufficient for industrial modernization. Generally, the low level of international competitiveness and innovation activity are considered for debate within political circles, government organizations, expert communities and the media.

The level of gross domestic expenditure on R&D in the government and business enterprise sectors in the 1990s has dramatically decreased in comparison with Soviet times. At the start of the 21st century, despite steady economic growth and improvement in the macroeconomic indices for the Russian economy, R&D and innovation expenditures have increased so slowly that there has been no real growth in the national R&D/GDP ratio (although 2006 is expected to be the first year of progress).

Russia's economic structure is distinctly different from that of most European countries with its predominance of large companies, concentration on mining and heavy industry, and an almost complete lack of high-tech, consumer goods industries. The large Russian corporations in the natural resource sectors have enough resources to support in-house and contract research and get access to foreign resources that they lack, especially in technology, and rapidly learn to strategically use networking and alliances. Companies in traditional Russian high-tech industries (aerospace, defence, machine building) have inherited technologies that were at the world frontier and are capable of maintaining their superiority with strong political support from the government. They have became less competitive and sometimes obsolete in the new economic and political system, but Federal support for R&D in these industries, as well as the volume of public procurements has rapidly grown during the past two years.

Most Russian businesses have no clear innovation strategy and are not used to investing in their own R&D capacity. The R&D system is still pretty much isolated from market and society demands and badly needs to improve its performance and level of integration with business and civil society. This situation represents one of the reasons why there have been low levels of innovation activity and technological progress.

The Russian research and innovation system experienced a sharp decline in funding during the 1990s and only in recent years has it seen some recovery. More resources, in particular from the private sector are needed. At the same time, however, a greater element of competitiveness is needed in the allocation of public resources.

The necessity to shift to an innovation-based economy was declared at a high political level several years ago. Government innovation policy objectives and targets were formulated in several official conceptual and program documents issued during 2002-2006: "The Annual Message of the President to the Federal Meeting", "Conceptions", National and Industrial Strategies, and Programs and Plans. "The 2006 Annual Message of the President to the Federal Meeting" stressed that under conditions of international competition, the country's economic development mainly depends on scientific and technical achievements.

The aim of the midterm strategy was formulated as follows: "the formation of a balanced sector of R&D and effective innovation system providing for technology modernization of economy and

competitiveness on the basis of modern technologies and the transformation of science potential into one of the main resources of sustainable economic growth".

2. Major innovation challenges and policy responses

Challenge 1: Increase R&D expenditure up to 2,5% GDP and increase non budget expenditure up to 70% of national R&D by 2015

In order to bring the level of R&D investments in Russia on a par with the European Union, a substantial boost of investment is needed – from 1.4% of GDP in 2004 to 2% of GDP in 2010. While some of this boost will come from additional government investment, the larger part has to come from the business sector. In order to stimulate the business sector to invest more in R&D, the government is considering the introduction of several incentive schemes.

The greatest challenge here is to induce a stronger participation by the Russian business sector in the whole innovation process, including that of conducting research. A healthy business environment may be considered a precondition for boosting innovative activities.

Challenge 2: Increase the number of innovation enterprises

Competition is what drives companies to be innovative. Therefore governments should suppress unfair competition in the market and scrutinize its own innovation interventions for impact on competition.

One of the critical bottlenecks for Russian start-up companies is getting access to capital. In addition to expanding state-owned venture capital funds, the government should also look at how private venture capital funds and "business angels" (i.e., private individuals investing their own money in start-up companies as well as providing knowledge and experience) can be stimulated through tax incentives, simplification of rules and regulations, and solving other specific bottlenecks.

R&D investments by the business sector in the Russian Federation are very low in comparison with comparable industries in advanced economies. This lack of commitment by the business sector is one of the major weaknesses of the Russian innovation system. In order to make it more attractive for companies to invest in R&D, it would make sense to introduce (as many other countries have done) a tax deduction scheme for R&D expenditures that is simple and transparent.

Another way of indirectly subsidizing research activities is by exempting it from taxes such as VAT, import duties, property tax, etc. This instrument already exists for techno-parks, science cities, etc. The government has elaborated a set of measures to apply this instrument to public and private research activities.

Challenge 3: Reform and streamline the research sector so that it becomes more dynamic and responsive to innovation needs

The government has already begun realizing its declared aim of reforming the R&D sector (as was stated in "The Strategy of Science and Innovations Development in the Russian Federation till 2015"). The first steps have created a big shake up in the public research sector, in particular for the Russian Academy of Sciences. The number of institutes is slowly decreasing, staff has been laid off, and salaries have risen. The next step is to clarify the mandates and responsibilities of the remaining research institutes as well as their position in the overall innovation system. In promising to support new science areas, the government established a new agency for priority S&T development - the State Nanotechnology Corporation with the declared budget $6 billion over the next five years.

Summary table: innovation challenges, policy responses and impact

Challenge	Relevance of policy response	Evidence of impact
Increase R&D expenditure up to 2,5% GDP and increase of non budget expenditure up to 70% of national R&D by 2015	3	1
Increase the number of innovation enterprises	3	2
Reform and streamline the research sector so that it becomes more dynamic and responsive to innovation needs	3	3

Policy response ranking scored from 1 to 5 : 1 No specific measures addressing the challenge (possibly a debate but no evidence of any real policy development); 2 Policy development under way to respond to challenge (policy debate or design launched, e.g. announced in National Lisbon Reform Plan, etc.); 3 Specific measures existing for some time but insufficient to respond fully to challenge; 4 Existing measure plus one or more newly launched measures (during last 18 months) 5 A comprehensive set of measures which potentially responds fully to the challenge.
Evidence of impact scored from 1 to 5: 1 trend for indicators has worsened since measure(s) introduced, 2 no observable change in trend since measure(s) introduced, 3 too early to appraise (measures introduced in last 24 months), 4) trend for indicators has improved since measure(s) introduced, 5 Evaluation or study indicates measure(s) has clearly contributed to improving performance of country.

3. Innovation governance and policy trends

3.1 Innovation governance: key changes and issues

The Russian Federation has made a lot of progress in the formulation of innovation policy and in the creation of an innovation governance system (e.g. legal base development, growing number of Ministries engaged in innovation policy, learning from abroad in priority setting and monitoring of innovations). A major challenge for the Russian innovation policy is to redefine the responsibilities of the various actors within the system in the light of a more dynamic and open market economy and develop new ways of interaction between them.

There are several positive trends in innovation governance:

- Formulation of several strategic policy documents (Basics, Strategy, Critical Technologies, Federal Goal oriented programs)
- Coordination bodies established on higher federal level
- Growing number of federal and regional ministries and agencies engaged in the formulation of innovation
- Legal base improvement in the area of intellectual property rights according to international standards
- Growing attention to monitoring and evaluation of innovation policy, including international benchmarking, to distribution policy discussion information through Internet resources

3.2 Trends in innovation policies

Budgetary expenditures on R&D have been growing since 2003, and the annual rate of growth is about 15% in real terms. At the same time the structure of allocations on R&D continues to be conservative especially if one looks at the allocation of funds amongst government agencies. There is a significant growth in financing through Federal goal-oriented programs in which universities, R&D organizations and private companies may participate on a competitive basis.

In Federal goal-oriented programs, government has finally started to pay more attention to measures aimed at involving business in the selection and financing of R&D projects and to develop public private partnership instruments in particular. The most visible change is in the fact that, in 2006, the government started to develop indirect measures to stimulate innovation activity. The following changes to the Tax Code were suggested and are currently under discussion in the State Duma:

- Tax exemptions on VAT for income related to selling patents or licenses on innovative technologies;
- Tax exemptions on profit tax for income received by R&D organizations and foundations supporting science and education;
- Inclusion of expenditures on R&D in the prime cost of products;
- Widening the list of expenditures for which the reductive scheme for paying taxes may be used;
- Increased share of allocations to the Russian Fund for Technological Development and to other inter-branch funds that finance R&D in science organizations and industrial enterprises.

Government has also tried to introduce measures in the area of technical regulations, ecological control, and temporary cancellation of import custom duties for those types of equipment that are not produced in Russia. These measures are targeted at stimulating demand for innovation at industrial enterprises, mostly through the renovation of their capital equipment, as well as to ease access to global knowledge.

The three main policy priority directions initiated by the government can be identified as: 1) growing attention to forecasts and foresights; 2) support of innovation infrastructure; and 3) further development of indirect measures to stimulate innovation.

At the present time, despite the popularity of the foresight methodology amongst policy makers, only a narrow circle of experts is aware of the approach, and understand how at national and other levels the results of such work may be used. The problem is also in the lack of interaction between various expert groups. However, the forecast exercise represents one of the first attempts made by the government to involve business circles in the decision making process concerning future technological development of the country.

Further support of innovation infrastructure in the form of venture funds and technology parks may be envisioned. In 2007 several government-supported venture funds will be created. It is planned that the share of federal resources in venture funds will be at the level of 25-49% of the total venture funds' budgets. In order to encourage the interest of private investors, government will only demand a 3% annual interest rate, and the rest of the income generated by the fund will be owned by the private companies. During 2007-2008, it is also planned to further develop technology park infrastructure, including the organization of their management.

4. Conclusion: future actions and opportunities for policy learning

Russian innovation policy is still based on a more linear, research-centred ideology. The most important problem is to bring about a successful innovation climate throughout society, to supplement state support for R&D, industrial enterprises and infrastructure through soft stimulating measures. In order to improve the overall functioning of the Russian innovation system, the Russian government should adopt a more pro-active innovation policy. A healthy business environment may be considered a precondition for boosting innovation activities.

Monitoring and evaluation is another bottleneck of Russian innovation policy. While innovation policy should give the innovation system a sense of direction, it should, once translated into a concrete and detailed action plan, be complemented by a monitoring and evaluation system in order to check whether the system is evolving in the right direction and introduce corrective action where necessary.

1. The Innovation System and its Governance

1.1 The National Innovation System

1.1.1 Tracing the evolution in the governance system

The State Bodies responsible for formulating fundamental innovation policy comprise legal bodies (Federal Assembly and State Duma) and executive authorities – Federal Ministries and Agencies and corresponding Regional Bodies. In addition, the Presidential Council on Science and High Technologies (an advisory body to the President of the Russian Federation) and several departments of the Presidential Administration coordinate and direct the activity of the legal and executive power bodies.

The Federal Assembly participates in innovation policy formulation through the Committee on Science, Education, Health and Ecology and by organizing discussions with expert panels for monitoring of current policy and generating federal initiatives. The State Duma (Parliament) has several committees that discuss innovation policy: Committees on Education and Science; on Industry, Civil Engineering and High Technologies; on Energy, Transport and Communication; and on Information Policies.

Government activity in the field of science, education and innovation comprises the following organizations:

(a) *policy-making and coordinating agencies:* Ministry of Education and Science (MES), Ministry of Economic Development and Trade, Ministry of Information Technologies and Communication, Ministry of Industry and Energy, the Federal Agency for Science and Innovation, Russian Academy of Sciences and Russian Space Agency (the last two agencies receive the largest share of the civil R&D budget);

(b*) financing agencies*: financial support from the State budget is the principal source of funding for R&D. Most funds are distributed through R&D implementing agencies in the form of direct grants, although some competitive allocation of R&D resources takes place as well. There are three State budget funds: Russian Foundation for Basic Research (RFBR), Russian Foundation for Humanities (RFH) and The Foundation for Assistance to Small Innovative Enterprises (FASIE);

(c) *regulatory agencies*: The most important regulatory bodies are the Federal Service for Intellectual Property, Patents and Trade Marks (Rospatent), the Federal Agency for Technique Regulation and Metrology and the Federal Antimonopoly Service.

Generally the regulatory system corresponds to contemporary requirements of the economy and society.

We can identify at least two levels of policymaking entities on the federal level: (1) lead actors and (2) other actors.

<u>Lead actors</u>

The four agencies that control most of the Civil State R&D budget are the Russian Academy of Sciences (RAS), the Russian Space Agency (Roskosmos), the Federal Agency of Industry, and the Federal Agency of Science and Innovation. The latter two agencies are executive branches of the Ministry of Industry and Energy and the Ministry of Education and Science, respectively. The Federal Agency of Industry supports R&D and innovation activities particularly related to the defence industry. It plays an important role in the procurement of defence orders from industry.

The Federal Agency for Science and Innovation (FASI) implements government policy, provides governmental services, and manages state property in the sphere of scientific, technological, and innovative activities. This includes overseeing the activities of the federal centres of science and high technology, state-run scientific centres, the unique scientific facilities, the leading scientific schools, national IT research networks and supplying information on science, technology and innovation activities.

FASI supports science and innovation across a wide range of industries through a variety of instruments, such as the Federal Programme "R&D by Priority Fields," science parks, technology transfer and commercialization centres, and business incubators. It also manages the support for the State Research Centres and the mega-projects programme.

A small part of the state R&D budget is allocated on a competitive basis through the following three funds:

- The Russian Foundation for Basic Research (RFBR)
- The Russian Foundation for Humanities (RFH)
- The Foundation for Assistance to Small Innovative Enterprises (FASIE)

All three foundations are fully state funded and linked to the former Ministry of Science and Technologies. After the 2004 administrative reforms, however, their status has been changed. RFBR and RFH are now more closely associated to the Russian Academy of Sciences.

Other Ministries and Federal Agencies

- Defence Ministry: controls a large defence-related budget and the part of defence R&D obligations

- Ministry of Industry and Energy: controls through the Federal Agency on Industry a substantial sum of defence-related R&D as well as R&D budget for other industries

- Ministry of Economic Development and Trade: supports applied research programs in economics and initiated several innovation related measures, such as SME support, R&D tax deduction for industrial enterprise, the program for technology oriented free economic zones and established the Venture Company.

- Ministry of Information Technologies and Communication: controls through the Federal Agency for Information Technologies a modest R&D budget for information technologies and initiated the program supporting technoparks creation in different regions of the country.

The following regulatory agencies play important roles within the Russian innovation system:

- The Federal Service for Intellectual Property, Patents and Trade Marks (Rospatent), which operates under the supervision of the Ministry of Education and Science. Rospatent is responsible for the implementation of all IPR-related legislation, for the registration of patents, license, license agreement and other IPR documents. It also functions as the controlling body for the use of IPR.

- The Federal Agency for Technique Regulation and Metrology, which operates under the supervision of the Ministry of Industry and Energy, is responsible for the implementation of the Federal Law "Technical Regulation" and for monitoring the technical standards, the respective documents of registration, and for the establishment of new standards. Several projects for standards in new technologies were proposed in 2005, for example, security requirements for food produced from genetically modified plants and livestock.

- The Federal Antimonopoly Service plays an important role in controlling monopolistic market behaviour. Such behaviour is generally seen as undermining innovation, as there is no pressure from competitors to improve production or products.

We have to emphasize that Russia's economic structure is distinctly different from that of most European countries – there is a predominance of large companies, concentration on mining and heavy industry, and an almost complete lack of high-tech, consumer goods industries. Therefore, Russia's innovation system also has a quite distinctive outlook. Historically, Russia, as part of the former Soviet Union, has been characterised by a well developed system of public R&D institutes.

In 2005, Russia's research sector comprised 3656 R&D organizations, employing some 813,207 employees (all ranks) of which 48.1% were researchers. During the transitional period, this part of R&D system experienced severe troubles: low level of financial support from the State budget and industry, low salaries for scientists and engineers and de facto stagnation of R&D activity.

Table 1: Total R&D Capacity by Sector of Economic Activity, 2005

	Number of R&D organizations	Number of employees in R&D	Share in total number of employees in R&D
	(#)	*(#)*	*(%)*
Government	1230	258,078	25.3
Industry	1851	537,473	69.1
Higher education	533	43,414	5.4
Private non-profit	42	373	0.2
Total	3656	839,338	100.0

Source: Nauka Rossii v tsifrakh 2006. P. 15, 51, 79

In 1993, some of the best and largest industrial R&D centres with unique equipment and infrastructure were selected from the overall group of industrial R&D institutes. They were granted the status of State Science Centre (SSC), which allowed them to get additional Federal support through the SSC programme. In most instances, they also received support from their supervising Ministry. Up to 2006 there were 58 such centres, but in December 2006, following monitoring procedures, six of them were closed by the MES.

Although small by comparison with the private industrial research capacity in Western economies, some Russian companies do operate their own research facilities. Many of these facilities were inherited by the companies during their privatization in the 90s.

The Russian Academy of Sciences is the largest and most prominent research organization in the country and comprises 451 research institutes. In addition, there are several sectoral academies of sciences, but only two of them are actively engaged in R&D, namely: (a) the Russian Academy of Medical Sciences (66 institutes); and (b) the Russian Academy of Agriculture (297 institutes). The mandate of all these academies is to conduct fundamental research, but they also conduct some applied research.

Russian universities do not play much of a role in R&D. Only some 40% of the higher education institutes in Russia are actually involved in R&D. Funding for R&D at universities comes primarily from competitive funding schemes and research contracts with industry and government. Financial and human resources in the higher education R&D sector comprise no more than 5% of the national total.

Technology transfer centres, business incubators, and technology parks are examples of intermediary organizations or structures that aim to bridge the divide between public research organizations and the business community and to commercialise the knowledge and technology generated by research.

The short history of these organizations in Russia starts with the establishment of technology parks in the late 1980s, followed by the introduction of Innovation and Technology Centres (ITCs) in 1996, and that of Technology Transfer Centres (TTCs) in 2003. Technoparks and ITC have been organized

mainly in close relationship with universities and other higher education institutions. They both focused on the development rather than the commercialization of S&T achievements and hence proved unsuccessful in stimulating entrepreneurial activity.

The number of Civil Society organizations that try to influence innovation in Russia is growing nowadays along with the increasing importance of innovation policy within government circles. The first and most prominent organisations are the Russian Union of Industrialists and Entrepreneurs (RSPP) and the All-Russian public organization of small and medium business "OPORA RUSSIA". The former represents mainly large companies and the latter SMEs. Both are in dialogue with the government on a range of science, technology and innovation issues. The Association of Russia's managers also declares itself a lobbying body for innovation policy issues that can provide expertise in this area. In 2006 the Association, in cooperation with AFK Systema (the biggest information and communication company in Russia) and Citronix (producer of electronic components), edited a major national report on innovation[2].

Russian companies have entered into partnerships with foreign companies in various ways (such as joint ventures, research contracts, and cooperative research projects) in order to get access to the latest technology as well as managerial and marketing experience. At the same time, Russian research organizations have been very active in mobilizing foreign support and research contracts. In addition to dozens of American and European governmental and non-governmental programs that support non-commercial R&D activities in Russia, there is also a growing number of Western companies that contract out research of a commercial nature to Russian research institutes. Foreign funding makes up for nearly 10% of all R&D expenditures in the Russian Federation. Primary sources of foreign funding are: the EU, the USA, and some Asian countries such as China, Japan, and South Korea.

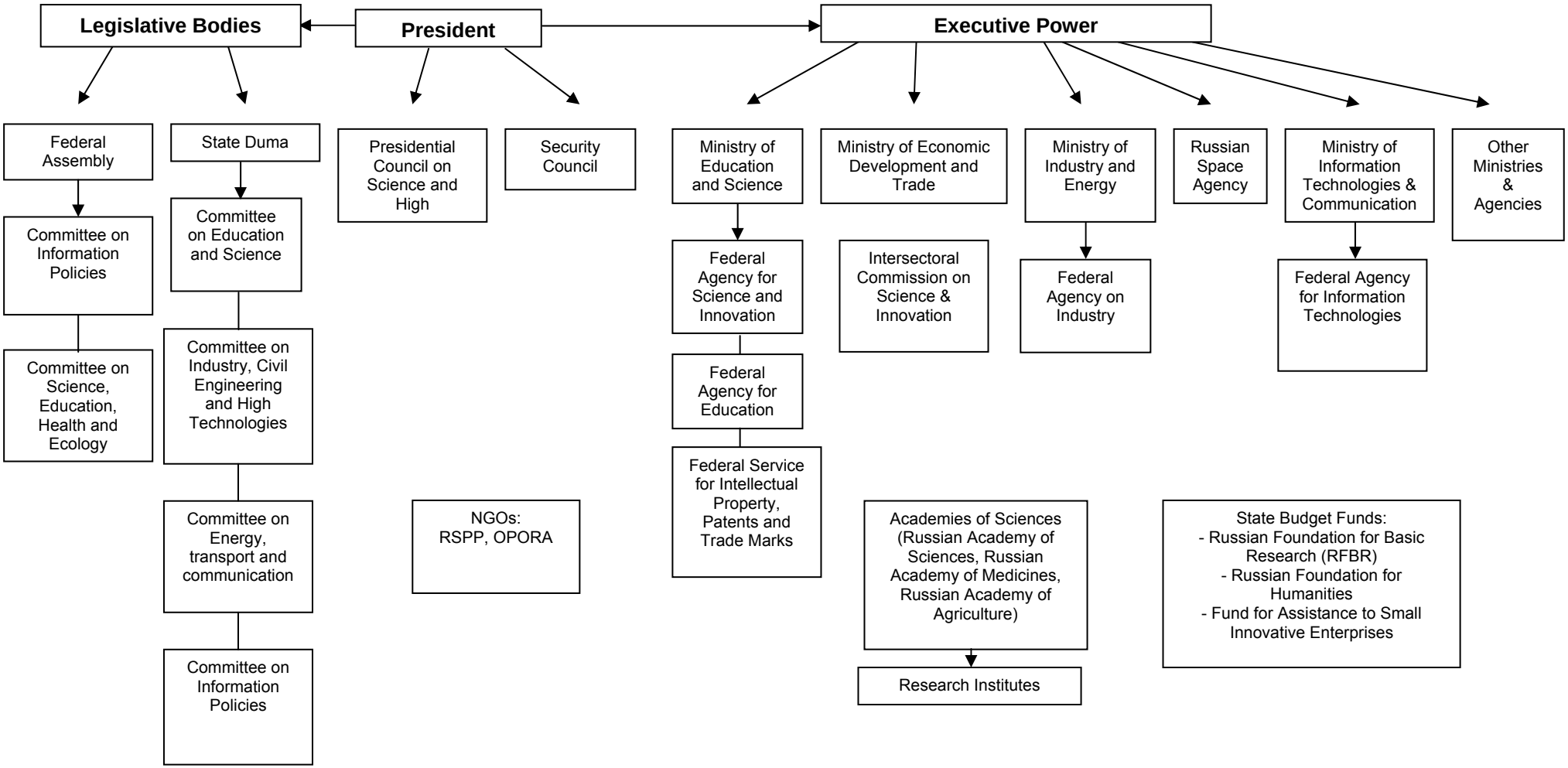
Exhibit 1: Selected key organisations within the National Innovation System

Type of organisation	Name of organisation (in English)	Website (where available)
Government and legislative bodies		
	Presidential Council on Science and High Technologies	http://www.kremlin.ru/state_subj/group39628.shtml
	Federal Assembly' s Committees on Science, education, health and ecology; on Industrial Policy	http://www.council.gov.ru/committee/item1630078.html
	State Duma's Committee on Education and Science	http://www.duma.gov.ru/obr_nauka/index.php
	State Duma's Committee on Industry, civil engineering and high technologies	http://www.psnt.ru
	State Duma's Committee on Energy transport and communication	http://www.duma.gov.ru/energy
	State Duma's Committee on Information policies	http://www.duma.gov.ru/infocom
	Ministry of Education and Science	http://www.mon.gov.ru
	Federal Agency for Science and Innovation	http://fasi.gov.ru
	Ministry of information technologies and communication	http://www.minsvyaz.ru

[2] National report "Innovation – the base for accelerating growth of Russian economy" (in Russian). 2006. Association of Russia's managers. – 76 P.

	Ministry of Economic development and trade	http://www.economy.gov.ru
	Russian space agency	http://www.roscosmos.ru
Private sector organisations and entrepreneurship promotion		
	Russian Union of Industrialists and Entrepreneurs (RSPP)	http://www.rspp.ru
	All-Russian public organization of small and medium business "OPORA RUSSIA"	http://www.opora.ru
Knowledge institutes (R&D and education bodies)		
	Russian Academy of Sciences	http://www.ras.ru
	Moscow State University	http://www.msu.ru
	St.Petersburg State University	http://www.spbu.ru
	Tomsk Polytechnical University	http://www.tpu.ru
Industrial research centres and innovation intermediaries		
	State Science Centres Association	http://www.agnc.ru/ass.php
Financial system		
	Russian Foundation for Basic Research	http://www.rfbr.ru
	Russian Foundation for Humanities	http://rfh.ru
	Fund for Assitance to Small Innovative Enterprises	
	Russian Venture Company	http://www.rusventure.ru

Exhibit 2: Organisational Chart of the Innovation Governance System



1.2 Appraisal of the National Governance System

1.2.1 Policy Making and Evaluation Practices

Russia's current federal innovation policy plan[3] was publicly presented by the Russian Prime Minister in August 2005 and jointly developed by the Ministry of Education and Science, the Ministry of Economic Development and Trade, the Ministry of Industry and Energy, and the Ministry of Finance. The first three Ministries are principally responsible for formulating Russia's innovation policy with the Ministry of Education and Science taking the lead. Over the last ten years, the Ministry of Education and Science[4] has been responsible for most public innovation programs, legislative initiatives regarding innovation, and the restructuring of the S&T system.

The Defence Ministry apparently did not participate in the innovation policy formulation process, which reflects the separate status of the defence R&D and industry within the Russian innovation system and economy. This is somewhat peculiar as there is a lot of talk of dual purpose technology and the military scientific and industrial complex being considered an important source of innovation for the rest of the (civilian) economy. How this is going to be realized is not very clear. Since the start of 2006, the newly appointed Vice-Premier Minister Mr. S.Ivanov has innovation policy formulation and implementation amongst his responsibilities. According to his earliest declarations, he wants to accelerate innovation in several civilian industries with the help of scientific and industrial know-how from the defence sector. This strategy may be realized in aviation and shipbuilding industries where civilian and defence companies are jointly owned in state controlled holdings.

Large research implementing organizations (such as RAS, Roskosmos and Rosatom) participated in policy discussions that led to the new innovation policy plan but were not directly involved in the preparation of the documents themselves.

In particular the Russian Academy of Sciences, due to its size and prestige, holds a strong position in various aspects of science, technology and innovation policy development because of its deep involvement in most politically important national S&T projects, including space exploration, nuclear energy, defence, etc. The President of the Academy is a very influential person when it comes to science policy formulation and implementation.[5] With regard to innovation policy formulation, however, it seems that RAS has only peripheral involvement.

On the Presidential level, the Presidential Council for Science and High Technologies advises the President on science, technology and innovation policies. However, precisely what role the Council has had in the formulation of the present innovation policy plan is unclear.

The Council of the Prime Minister on Competitiveness, which is an multifunctional body with the participation of the most influential business leaders as well as heads of the Ministries and other government and public organizations (including RAS), organizes regular discussions of national issues, including innovation processes and policies. It is again another government platform that plays a role in innovation policy discussions.

The Russian government traditionally gives a lot of attention to identifying R&D and innovation priorities. Following the experience of several developed countries, the Russian government elaborated a list of critical technologies as the basis for selecting S&T priorities. The first list approved by the government in 1996 comprised of 70 critical technologies. A new revised list of 52 critical technologies was approved by the President of the Russian Federation in 2002, giving it substantially higher importance. Nevertheless it was criticised as being too long and too similar to foreign priorities.

[3] Main Directions of the Innovation System Development Policy of the Russian Federation up to 2010. Moscow, August 2005.
[4] Or its predecessors. "Science" has been moved between different Ministries quite frequently over the past 15 years.
[5] Given the special status of the Russian Academy of Sciences (it is a self governing body), government (i.e., the Ministry of Education and Science) has relatively little grip on the activities of the RAS.

In 2006 the list was cut to 35 technologies. The selected priority technologies receive federal support within the Federal Goal-Oriented S&T Programmes.

The Russian Federation has made major progress in putting the principle regulatory functions in place that are of relevance to innovation (such as IPR and antimonopoly), but their implementation still seems to be problematic. For example, despite the fact that piracy and other kinds of IPR violations are widespread the capacity of courts to deal with IPR disputes is minimal. Moreover, there is a lot of discussion and confusion with regard to who owns the IPR when the research on which the invention is based has been funded by the State.

Antimonopoly measures have become increasingly important in a world that is dominated by large corporations. Monopolies tend to become lazy innovators and hence the need to keep monopolistic tendencies under control. Again, the problem is not that there is no anti-monopoly legislation in Russia, but a lack of experience and capacity to execute the law. Rules and regulations (such as IPR, antimonopoly, fair competition, bankruptcy, and technical standards to name a few relevant to innovation) are usually not looked at from the point of view of how they impact innovation processes. However, they do matter, and often very critically, in the sense that they can make or break innovations and innovative businesses. A better awareness as well as a better understanding of these issues is important.

A White Paper on Research and Development Policy has not been produced by the government. However, various actors in the national innovation system - including policy implementing agencies, regional authorities, education and research institutes, and industry organizations - have produced a lot of analytical surveys and papers regarding their involvement in innovation and their visions for a national innovation policy agenda. But it has not yet led to common understanding of policy challenges for federal and regional powers, for industry and universities, for R&D system and small business.

Recently, the Russian government has started to involve the NIS stakeholders for the more open discussions of policy design and implementation. During 2005 - 2006, the Ministry of Education and Science regularly invited key actors in the national innovation system to monthly meetings. The aim was to initiate a dialogue regarding industry oriented policy measures and present a new portfolio of policy measures. Stakeholders were invited to present their opinions and recommendations which were published on the Ministry's sponsored web pages (sciencerf.ru). Similar lines of action were taken by the Ministry of Trade and Industry.

Russian policy makers also rely strongly on studies, indicators and benchmarks in designing policies, although policy practice in this area tends not to be coherent and systematic. Important international sources are the OECD, the European Commission's TACIS and FW projects, which provide financial support and expertise for the implementation of innovation policy related projects.

In conclusion, government ministries increasingly take into consideration the growing number of background discussions, studies and stakeholder's reports. There are several coordination mechanisms on the Presidential and Prime-Ministerial levels, as well as in key ministries, which activate the process of policy formulation and coordination. However, one cannot talk about a well organized and coherent system of policy coordination for the national innovation system. A systematic review process for innovation policy does not exist and hence little assessment has been conducted.

Exhibit 3: Overall appraisal of policy making and evaluation practice

Policy making/evaluation practice	Benchmark	Ranking (1 to 5)
Openness of the process of designing innovation policy (measures)	Policy development is undertaken through a partnership based approach involving consultation of key stakeholders at all stages	3
Quality of inputs to policy making (application of evidence based techniques, use of evaluation results):	Policy design is systematically evidence-based and account is taken of evaluation results	3

Regularity and transparency of policy monitoring and review processes	All major policy documents and instruments are the subject of a regular review involving stakeholder consultation	3
The impact on innovation of developments and regulations in other policy fields is appraised	A well-structured process exists for impact assessment of new regulations on innovation &/or innovation is taken into account as an issue in other policy documents.	2
Existence of coordination mechanisms (high-level councils, inter-ministerial committees, etc.)	Well organised coherent system of policy coordination at government and agency levels	3
Existence of an "evaluation culture" in the field of innovation policy	Innovation policy measures are systematically evaluated at key milestones in their implementation.	2
External versus internal evaluations of innovation policy measures	Evaluations respect good practice criteria (involve systematically external experts, evidence based, quality appraisal of evaluation reports, etc.)	3
Transparency and publication of results of evaluations	All evaluations are published &/or discussed in a public forum.	2

Scoring: compared to the benchmark current practice in the country is judged to be: 1 completely unsatisfactory, 2 unsatisfactory (room for improvement) 3 satisfactory 4 above average compared to other EU countries 5 best practice in the EU
Note: An evaluation culture (or culture of evaluation) is one in which evaluation, and the lessons drawn from it, form an important element of innovation programme management and policy formulation.

1.2.2 Policy Benchmarking and Transnational Learning

During the 1990s a lot of progress has been made in Russia in the area of R&D statistics development and in improving standards according to international rules. International comparison of R&D resources and innovation activity has become the responsibility of several analytical bodies inside the ministries and related institutes and in Russian Academy of Sciences. Russian R&D statistics are presented now in corresponding databases of leading international organizations, including the OECD and World Bank. A growing number of international expert teams are engaged in analytical projects implemented in different Russian regions for studying their innovation systems and innovation policy.

Here we cite just the three most important benchmarking studies (available in English) which were initiated by the Russian government, or in cooperation with it, during 2005-2006.

In 2005, Russian MES experts engaged in preparing the draft "Strategy of the Russian Federation to Develop Science and Innovations until 2010" requested a German TACIS expert team for their assessment. This work was done as part of the project TACIS IBPP Key Institutions project "Innovation and Strategy in the use of Intellectual Property", implemented by the German Federal Ministry of Education and Research (BMBF) and the German Federal Ministry for Economics and Labour (BMWA) together with the Russian Ministry of Education and Science. The assessment of the German experts was intended solely for in-house consideration of the MES. But later it was published as a public deliverable of the project.

The overall assessment of the Russian strategy was positive "altogether, the German group of experts considers the strategy to be the right approach for developing a modern Russian system of innovation." [6] They also elaborated a set of recommendations for improving the Strategy. For example, general innovation policy recommendations underline such points like:

- increase focus on creating a pro-innovation legal framework, increase incentives for innovative business start-ups and the infrastructure for commercializing findings and marketable products;

[6] Draft „ Strategy of the Russian Federation in the field of science and innovation until 2010". Comments of the German TACIS expert team/ TASIC IBPP Key Institutions. Responding to Project Contract: 2005/099-720. INNO HHO. Bonn. November 2005. P.107.

- reappraise the objective of state controls for assessing the success of individual innovation promotion measures provided at several points in the strategic design; tried and tested international evaluation instruments could be applied here;

- ensure that state innovation policy covering the research landscape should provide a clear allocation of tasks for the budgeted types of institute;

- strengthen the innovative capacity of the executing agencies and foundations for promoting research;

- set up national laboratories to profile institute primarily intended to engage in applied research and development.

In the "Economic Survey of the Russian Federation: Sustaining growth in the Russian Federation: key challenges. OECD. 2006", Russian and foreign experts involved in the survey of innovation policy, concluded that Russia can do much to make innovation policies more effective. Russia's innovation potential is considerable but its innovation performance remains disappointing. Realising this potential will require further steps to create a healthy, open business environment, as well as steps to stimulate greater private R&D and strengthen the domestic IPR regime. Reform of the large but inefficient public science sector could make it more responsive to business needs and more dynamic as an engine of knowledge creation. Specific innovation-promotion schemes, like special zones or technoparks, should be limited in scope, carefully targeted and rigorously assessed in order to avoid deadweight losses and market distortions.

The OECD experts believe that the potential of public science sector is enormous but it badly needs to be reorganised towards reducing the number of direct recipients of budgetary R&D funds, shifting to project-based rather than institutional financing and pursuing the commercialization of the results of their research.[7]

In the background paper for that report[8] the authors put special attention to the new targeted innovation initiatives – Special Economic Zones (SEZ) and Russian Venture Corporation (RVC). The government is well aware of the risks related with the SEZ activity and has attempted, in drafting the SEZ legislation, to provide safeguards against the kinds of abuses seen in the 1990s. So the legislative procedure for establishing zones is competitive and requires lower-level governments wishing to create such zones to make significant commitments of their own; they can no longer use special zones simply to extract resources from the federal budget, conclude the authors.

Government support for VC also raises an issue of moral hazard, and the track record of state-owned or -managed VC funds in most countries is not very good. But the authors believe that Russia's approach looks more promising than some, particularly as the new innovation strategy explicitly states that the RVC's resources are to be allocated on a competitive basis and that the state's share in the new VC funds will decline over time.

The 2006 World Bank publication «Russian Economic Report» №13 [9] contains a chapter on innovation entitled «Fostering an innovation economy in Russia". There the experts evaluate positively the current high priority of the Russian government to promote economic diversification, develop competitive industries outside of the resource sectors, and cultivate a knowledge-based or "innovation" economy. But the general assessment of innovation policy measures is rather controversial. The experts consider that the emerging strategy represents a certain shift in emphasis away from the classical liberal economic objectives of creating a level playing field for private initiatives and entrepreneurship, and toward "industrial" or "regional" policy where the objective, on the contrary, is to create special conditions for the priority development of certain sectors, regions, or firms. The logic behind this strategy is the perception that market forces alone are pushing Russia down a path of

[7] Economic Survey of the Russian Federation. Policy Brief. OECD Observer. November 2006.
[8] Gianella, C. and W. Tompson (2007), "Stimulating Innovation in Russia: The Role of Institutions and Policies", OECD Economics Department Working Papers, No. 539, OECD Publishing. doi:10.1787/324526053041
[9] См. www.worldbank.org.ru/ «Russian Economic Report» №13

resource dependence and low international competitiveness, and that government intervention is required to remedy this problem.

The state might play a specific role in stimulating innovation activity through programs such as matching grants or participation in private venture funds, the World Bank experts believe. The experience of other countries in this area strongly suggests that an innovation economy thrives primarily on dynamic decentralized processes in the context of fierce international competition. While Russia has made some progress in creating such an environment during 15 years of economic transition, this agenda remains highly incomplete. Furthermore, recent trends toward greater centralization and expanding government participation in the economy could even hinder future progress in this area. The vision of such a Russian "national economic model" may be consistent with a continued resource-oriented path of development, but it is unlikely to deliver much success in developing a highly competitive or innovation economy in Russia, conclude the authors of the report.

Learning from abroad mainly takes place through rather ad hoc mechanisms, such as

- reading relevant reports published by e.g. the OECD, the European Commission or World Bank;
- short stays abroad aimed at gaining insights into how innovation policies are formulated, organized and implemented in other countries;
- participation at relevant international conferences;
- participation in and cooperation with transnational organizations and networks.

Cooperation in the mutual formulation and implementation of innovation policy is not widespread but has occurred to some extent in some international projects concerning basic science. Generally speaking, learning from foreign experience is growing but it is not yet a standard activity of responsible government's ministries. A new approach was demonstrated recently by the Ministry of Economics and Trade during the creation of the Russian Venture Company. They invited the CEOs of innovation funds in Finland and Israel to become members of its Board of Directors.

Exhibit 4: Overall appraisal of policy benchmarking and learning initiatives

Tool for policy learning	Benchmark	Ranking (1-5)
Formal mechanisms for policy learning (studies, innovation observatories, study visits, joint events with other countries, etc.)	Exists on a permanent basis (e.g. observatory) or at least one occurrence on an annual basis	3
Application of foreign experience in designing measures (e.g. involvement of foreign experts in design phase)	Systematically (all new policy measures take into account foreign experience)	3
Exchange or hiring of innovation policy staff/ experts to/from other countries (e.g. twinning programmes with new member states or candidate countries)	Long-standing and regular policy of exchange of staff	2
Involvement of senior policy makers /executives in trans-national networks (e.g. TAFTIE, OECD committees, etc.)	Key government or agency staff are members in such networks and play an active role (e.g. management committee, organisation of events, etc.)	2
Carrying out quantitative or qualitative benchmarking exercises to assess comparative innovation performance (scoreboards, etc.)	Benchmarking is a systematic process & results are incorporated into policy	3
Implementing policy co-operation with other countries: bilateral or multilateral programmes on innovation, etc.	Many long-term agreements operating (specifically in field of innovation, technology transfer, etc. as distinct from scientific research agreements)	2

Scoring: compared to the benchmark current practice in the country is judged to be: 1 completely unsatisfactory, 2 unsatisfactory (room for improvement) 3 satisfactory 4 above average compared to other EU countries 5 best practice in the EU.

1.2.3 Overall appraisal and SWOT of innovation governance

The Russian Federation has made a lot of progress in the formulation of innovation policy and in the creation of an innovation governance system (legal base development, growing number of ministries engaged in innovation policy, learning from abroad in priority setting and monitoring of innovations). Russia still has tremendous potential in certain leading research and innovation industries. However, the efficient use of vast natural resources on the international market is possibly one of the main challenges posed for Russia's technology intensive industries and its ability to commercialise research findings into marketable products. Russian research remains attractive as attested by different international expert panels and supporting organizations.

In general there is a high level of enthusiasm in the departments and ministries that are responsible for innovation policy development, in particular in the Ministries of Trade and Industry, Education and Research, and several local governments. Still, the governance system faces some serious problems when it comes to bridging the gap between political visions and ambitions on the one hand and the implementation of those visions on the other. A comprehensive innovation policy involving a large number of Ministries requires that these different cultures absorb the common vision of the innovation policy . Russian innovation policy is still based on a more linear, research-centred ideology. Ministries who are not used to this way of thinking may find it hard to contribute to this policy in a meaningful way, especially as these have other overreaching objectives that might collide with the ones presented by the innovation policy.

The detailed problem description of the general innovation policy provides a clear, critical picture of the current situation and the challenges involved in coping with the long-term international competition in knowledge-based and industrialized nations. The most important problem is to bring about a successful innovation climate throughout society, to supplement state support for R&D, industrial enterprises and infrastructure by soft stimulating measures.

In order to improve the overall functioning of the Russian innovation system, the Russian government should adopt a more pro-active innovation policy. A major challenge for the Russian innovation policy is to redefine the responsibilities of the various actors within the system in the light of a more dynamic and open market economy and develop new ways of interaction among them. The greatest challenge here is to induce a stronger participation by the Russian business sector in the whole innovation process, including that of conducting research. A healthy business environment may be considered a precondition for boosting innovation activities. Russian innovation policy should therefore be carefully designed, with a balance between general and targeted measures.

Monitoring and evaluation is another bottleneck of Russian innovation policy. While the innovation policy should give the innovation system a sense of direction, it should, once translated into a concrete and detailed action plan, be complemented by a monitoring and evaluation system in order to check whether the system is evolving in the right direction and introduce corrective action where necessary.

Exhibit 5: Innovation governance SWOT overview

Strengths	Weaknesses
• High current economic growth rates (more than 7% GDP for 2007 as estimated by the Ministry of economic development and trade) creates generally favourable conditions for government actions towards innovation activity stimulating • Formulation of several strategic policy	• Low coordination with business sector in R&D priority setting process and R&D financial support • Poor implementation of policy directed to problems of technological retardation in manufacturing and integration into international knowledge base

documents (Basics, Strategy, Critical Technologies, Federal Goal oriented programs) • Coordination bodies established on higher Federal level • Growing number of Federal and regional ministries and agencies engaged in formulation of innovation • Legal base improvement in the area of intellectual property rights according to international standards • Growing attention to monitoring and evaluation of innovation policy, including international benchmarking, to distribution policy discussion information through Internet resources	• Absence of policy designed for improving intersectoral knowledge and technology diffusion • Comparatively low support for small innovation companies on the early development stages • Small share of competitive funding in the budget support mechanisms • Low level of IPR protection and underdeveloped mechanisms for assignment of IPR • Regular formal monitoring and evaluation of innovation policy measures for corrective actions have not been used
Opportunities	**Threats**
• More active cooperation between regions in innovation policy formulation and implementation • Development strategy and special development institution for depressed regions • Focus on strategic innovation support for economically advanced industries	• Weak reaction of the NIS stakeholders to important innovation policy measures • R&D system structure and mission as a whole does not correspond to the economic and social needs, it has not been reformed according to this needs

1.3 The Regional Innovation System

1.3.1 Tracing the evolution in the main regional governance characteristics

Russia is a very big country with historically wide differences in the level of socio-economic development of its regions. Almost 80% of the population lives in the European part of the country, which represents no more than 25% of Russia's territory. The European regions produce 74 % of gross regional product and 80% of manufacturing products. Siberia and the Far East regions produce two thirds of mineral resources and fuel. The gap in regional production volume per capita (the difference between the biggest and lowest one) was 69,5 times in 2002. There are 80 administrative regions and 32 of them are classified by the Ministry of Economic Development and Trade as economically depressed and almost a dozen as being in crisis. Regional innovation systems exist in many industrially advanced territories of Russia. They are governed by the corresponding regional ministries or departments of regional governments.

Innovation policy has been formulated and implemented only in a number of economically developed regions, so called region-donors (which mean that they pay full taxes to the Federal budget). During the 1990s, the Federal government initiated several programs to stimulate the regional aspects of its S&T development and innovation programs. It resulted in more than 20 agreements for cooperation between the Ministry of Industry, Science and Technology and Russian Federation entities. These agreements stimulated joint selection and shared financing of regional S&T projects as well as Federal informational support and assistance in professional training.

Lately this activity has been slowing down because of new legislation which changed the relationship between Federal and regional authorities in the budget process. Some experts analyzing the differences between Federal and regional legal rules on innovation have concluded that some advanced regions have more sophisticated regulations than the Federal ones[10]. Nowadays we observe an increasing emphasis on regional innovation policy levels and regional governance structures.

By 2005, 11 Russian Federation entities had passed laws and other legislative documents to regulate innovation activity and established special S&T departments in their Administrations. In some regions, first of all in Tomsk Oblast', a basis has been made for the permanent interaction of authorities, universities and other higher education institutes, research institutes, industrial enterprises, in developing cooperation to promote innovation. Tomsk is historically one of the leading scientific centres in Siberia. Tomsk Oblast traditionally has been characterized as one the most educated and scientifically advanced. In 2003, the share of R&D scientists and engineers with higher degrees per 10,000 of total people employed here is higher than the Russia average (151 versus 60) and developed countries (USA – 61, Japan – 102, UK - 55). There are now six universities, 15 higher education institutes, about 100 research organizations of different affiliation including 46 industrial institutes, and dozens of high-tech enterprises active in the atomic, defence and other industrial secotrs.

Twenty years ago, in 1985, the first engineering and technology centre, later technology park, was established in Tomsk by the Siberian department of USSR Academy of Sciences. This centre, firstly in the USSR, was specially designed for implementation (commercialization) of scientific results. Now it has the status of Innovation and Technology Centre and represents a conglomerate of research department and small innovation enterprises. The centre gets financial support from Russian and foreign sources.

In Tomsk Oblast, one of seven Vice-governors is responsible for Science, Technology and Innovation Policy. They manage four executive bodies: Department for Secondary Education, Committee for Science and Innovation Policy, Committee for Higher Professional Education, and Office of Secondary Professional Education. A program of innovation development has been elaborated through an Oblast government initiative in cooperation with analytical centres (Russian and Foreign). It is in the course of implementation. The targets of the program include the number of newly created innovation companies, the number of new high-tech job positions, the annual growth and share of innovation products in relation to the regional gross product. Strategic perspective directions for R&D at Oblast institutes and universities are as follows: advanced materials and nanotechnology, biotechnologies, ICT, medical equipment, and chemical products.

In 2005, Tomsk Oblast won a Russian national competition, organized by the Ministry of Economic Development and Trade, for the right to host a Special Economic Zone. The company "Tomskneftekhim" became its first active resident in 2006.

In Samara Oblast the regional administration also formulates its own innovation policy as a tool for accelerating economic development. This region like the Tomsk one has a strong education and scientific potential but also large industrial enterprises (the biggest Russian carmaker AutoVAZ and several aerospace companies) and Federal R&D centres. The industries of Samara Oblast perform around 95% of the region's R&D which is several times higher than the Russian average. The Oblast's administration has already implemented several innovation programs. One of the first initiatives (1996) was the establishment of a regional Fund for supporting small innovation businesses together with a corresponding federal foundation. In 2003, the administration established an "Innovation-industry-market" program with the goal to create a regional innovation system. Its budget is 39 million roubles (1.1 million euros). The program aimed at science-industry integration for innovation projects, promoting interregional investment market and stimulating small innovation companies.

A specific feature of Russia's regional innovation policy is in nominating some towns to the status of "Naukograd" (Science Town). These are towns whose history, identity and development is closely

[10] Volynkina M.V Innovation's legal regulation in Russia. M.: Aspect Press. 2005 (in Russian)

linked to several large S&T organizations and enterprises. These towns can count on special financial support from the federal budget in the implementation of their innovation programmes and in infrastructure maintenance. The first town that has received this status was Obninsk in the Kaluga region. Now there are ten towns with this status (Korolev, Dubna, Seversk, Kol'tsovo, Reutov, Friazino, Michurinsk, Petergoff, Puchshino and Biysk) and several who are seeking the same status (Troytsk, Jukovskiy and Dimitrovograd have been nominated).

Exhibit 6: Changes in the regional governance of innovation policy the past 6 years

Level of regional/local government	Legislative &/or administrative authorities	Powers related to innovation policy, if any
Tomskaya Oblast	Governor	Vice-governor responsible for Science, Technology and Innovation Policy
	Government: 7 vice-governors, committees, departments, agencies ministers and an Oblast Parliament	4 executive bodies: Department for Secondary Education, Committee for Science and Innovation Policy, Committee for Higher Professional Education, Office of secondary professional education
	Tomsk-Capital Parliament and Government: mayor and vice-mayors, departments and agencies	Prime responsibility in the field of industrial research, technology transfer and innovation. Responsible for regional legal and financial instruments supporting R&D, commercialization and innovation projects, as far as for contacts with Federal Centre

1.4 Appraisal of the Regional Governance System

1.4.1 Regional Policy Making and Evaluation Practices

The effectiveness of the process of designing and delivering innovation policy at the regional level almost completely depends on the current economic situation of the region, its historically accumulated scientific and industrial potential and the region's political leaders' comprehension of the innovation policy agenda. The most advanced regions (a few actually) are implementing a full regional policy making cycle from policy design, through implementation and monitoring to evaluation. The regional authorities base this cycle on national and foreign independent expertise and benchmarking, widely use administrative and organizational power to enforce cooperation between higher education institutes and business organization, and participate in innovation policy discussions on the Federal level.

But when it comes to evaluation of innovation policy, even the best regions' experience is not very impressive. There are several reasons for this: evaluation is given a low priority both on national and regional level, the legal environment for any kind of regional policy has changed several times during recent years and has created a situation of uncertainty for regional powers (the cancellation of regional elections for appointing Governors, and a new Federal law that profoundly changed the relationship between the Federal and regional budget systems). Traditionally, regional governments did not publish special evaluation reports but included some indicators on innovation development in the new program of economic and innovation development. Now, advanced regions not only collect and publish statistical reports on science, technology and innovation resources and results according

to Federal statistics requirements, but also produce their own studies and surveys of innovation activity.

Exhibit 7: Overall appraisal of regional policy making and evaluation practice

Policy making/evaluation practice	Benchmark	Ranking (1 to 5)
Openness of the process of designing innovation policy (measures)	Policy development is undertaken through a partnership based approach involving consultation of key stakeholders at all stages	3
Quality of inputs to policy making (application of evidence based techniques, use of evaluation results):	Policy design is systematically evidence-based and account is taken of evaluation results	3
Regularity and transparency of policy monitoring and review processes	All major policy documents and instruments are the subject of a regular review involving stakeholder consultation	2
The impact on innovation of developments and regulations in other policy fields is appraised	A well-structured process exists for impact assessment of new regulations on innovation &/or innovation is taken into account as an issue in other policy documents.	2
Existence of coordination mechanisms (high-level councils, inter-ministerial committees, etc.)	Well organised coherent system of policy coordination at government and agency levels	2
Existence of an "evaluation culture" in the field of innovation policy	Innovation policy measures are systematically evaluated at key milestones in their implementation.	1
External versus internal evaluations of innovation policy measures	Evaluations respect good practice criteria (involve systematically external experts, evidence based, quality appraisal of evaluation reports, etc.)	2
Transparency and publication of results of evaluations	All evaluations are published &/or discussed in a public forum.	1

Scoring: compared to the benchmark current practice in the country is judged to be: 1 completely unsatisfactory, 2 unsatisfactory (room for improvement) 3 satisfactory 4 above average compared to other EU countries 5 best practice in the EU

1.4.2 Regional Policy Benchmarking and Trans-regional Learning

There are several mechanisms of regional policy benchmarking and transregional learning in Russia but we can not describe them as being a regular, systematic activity integrated into the development of innovation policy. Policymakers at the regional level participate in annual conferences (for example, Tver' Innocenter annually organises the all Russia's conference to discuss the regional problems of innovation development), working panel discussions, and expert group meeting organised by Federal power – State Duma and Federal Assembly, Ministry of Education and Science or Ministry of Economic Development and Trade. Often these meetings are organised ad hoc in order to discuss legislative initiatives or (much often) to discuss options that exist for regional government in the implementation of Federal laws, which did not take into consideration the variety of regional problems in stimulating innovations.

The Ministry for Regional Development is not yet focused on innovation policy as a tool for economic progress and increasing small to medium sized business activity. Consequently, ministries engaged in innovation policy elaboration and implementation only touch upon regional problems in their initiatives as a second priority. Also, they are not very interested in supporting or creating interregional organisations for policy implementation. Initiatives in this area come mainly from abroad.

For example, the Russian Technology Transfer Network (RTTN) is one of the instruments for national and international communications and benchmarking of regional innovation activity. RTTN was established in 2002 within the project TACIS FINRUS 9804 «Innovation Centres and Naukograd in

Russian Federation". RTTN operates mainly as an informational and consultative network to address two issues:

- to facilitate technology transfer from the R&D sector to business and between industrial companies
- to search for partners to cooperate on the development and implementation of new technologies

The network, through its web-portal (www.rttn.ru), provides structured information about available technologies and the market demand for them. The French-Russian segment of this portal (www.rfr-net.org) from 2003 and the British-Russian innovation network – BRIN (www.brin-net.ru) from 2005 provide the possibility for international contacts, cooperation and consultation. Technical, organizational and coordination support for RTTN has been provided by the Obninsk' Centre for Science and technology (www.ocst.ru).

It is not clear how effective the network is and what its impact on regional innovation development has been. However, it is well known to Russian and foreign experts on innovation policy and, during 2005-2006, it was widely used during the implementation of the new TACIS project "Science and technology commercialization" (EuropeAid /115381/C/SV/RU).

Exhibit 8: Regional Innovation governance SWOT overview – dominant regions

Region : Tomsk Oblast'	
Strengths	**Weaknesses**
• Historically strong science and technology potential: universities and professional schools, R&D institutes and technoparks, high proportion of scientists and engineers in population • Relatively strong economic performance due to activity of big oil and gas companies • Active evolvement of the Oblast administration, at the level of the Vice-Governor, in the elaboration and coordination of innovation policy • International cooperation of all regional innovation system actors	• Irregular policy monitoring and review processes • Low level of coordination with other directions of oblast' social and economic development • Small share of competitive funding in the budget support mechanisms • Low level of evaluation culture in R&D institutes, technoparks and small companies • Small number and limited expertise of technology audit companies
Opportunities	**Threats**
• To make policy design more transparent by involving stakeholders from the business sector and incorporating the results of evaluation assessments • Regular assessment of new regulations on innovation • Use of good practice criteria (systematically based on external expert advice, evidence based, and quality appraisal of evaluation reports)	• Aging R&D personnel, low salaries for high technology jobs • Low level of interaction with big industrial companies in the elaboration and implementation of innovation policy

2 Policy Objectives and Trends

2.1 Overview of the Main Trends in the National Innovation System

2.1.1 Recent trends in Macroeconomic and Market Developments

Despite impressive growth in GDP and industrial production, as well as investments in fixed capital (Exhibit 9) the quality of such growth reveals the existence of certain problems in the competitiveness of the country. Relatively low level of GDP per capita and even lower level of labour productivity demonstrate the deep economic problems: technological decline in much of the manufacturing, agriculture and service industries; slow modernization due to relatively low industrial investment and innovation activity (both foreign and domestic). The significant growth of the Russian economy was mainly achieved by raising the rate of production of the oil, gas and mining industries, including their export, and in many respects owing to favourable foreign market conditions for primary goods. The highe rate of growth occurs also in industries that have no direct competition with import products, first of all in the construction, trade and services sectors[11].

According to an evaluation by the World Economic Forum (WEF), the overall level of competitiveness of Russia is low and it has become worse in recent years. In 2005, Russia was ranked 53rd amongst 125 countries ranked in accordance with the Growth Competitiveness Index (GCI) and 62nd in 2006, which means that Russia is close to such countries as El Salvador (61st place) and Egypt (63rd place)[12].

Exhibit 9: Comparable indicators of economic performance

Indicator	Russian Federation		EU 25 average	
	2001	2006*	2001	2006*
GDP per capita in PPS (EU25=100)	40.9	40.5** (e)	100	100*
Real GDP growth rate (% change previous year)	5.1	6.7	3.9	1.6
Labour productivity per person employed (EU25=100)	38.9 (e)	37.1**(e)	100 (e)	100* (e)
Total employment growth (annual % change)	0.6	0.8**	1.5	0.6*
Inflation rate (average annual)	18.6	10.9**	2.4	2.2
Unit labour costs (growth rate)	20.2	9.8**	-0.1	-0.3
Public balance (net borrowing/lending) as a % of GDP	2.9	7.7**	0.8	-2.6*
General government debt as a % of GDP	56.2	31.9**	62.9	63.4*
Unemployment rate (as % of active population)	8.8	7.1**	8.6	8.7
Foreign direct investment intensity	-5.5	-0.7**	2.4	0.9*
Business investment as a percentage of GDP	8.3	7.8	18.3	17.1

Source: Eurostat - Structural Indicators and Long-term Indicators http://epp.eurostat.cec.eu.int
Russian data sources: Russia in Figures. 2006. Annual Data Book
Posstat, data on-line at http://www.gks.ru/wps/portal
Central Bank of Russia, data on-line at http://www.cbr.ru/statistics/credit_statistics/
* or latest available year (for example: 2005); key: (:) not available; (f) forecast, (e) estimated value
** latest available 2005

Innovation performance indexes demonstrate a rather low level of innovation activity amongst Russian

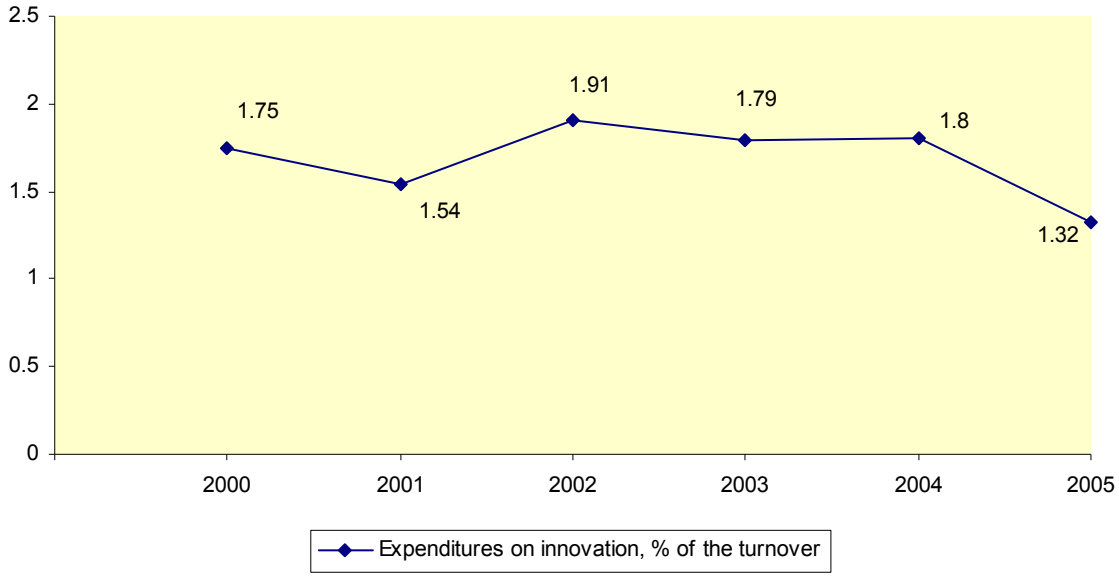
[11] Russian economy outlook: 2006. Russian on-line source at: http://www.dcenter.ru, accessed 19.02.2007.
[12] Global Competitiveness Index rankings and 2005 comparisons. On-line source at: http://www.weforum.org/en/index.htm, accessed 26.02.2007.

enterprises. For a long time it did not exceed 10% of the total number of enterprises statistically surveyed by Rosstat[13]. In 2005, the number of innovative enterprises represented only 9.7% (in 2004 - 9.6%).

Aside from regular official statistics, alternative estimations show much higher innovation performance amongst Russian enterprises. For example, according to a survey recently accomplished by Interdepartmental Analytical Centre, 82% of 570 examined industrial enterprises have different forms of innovation activity[14]. However, a significant part of them (45%) innovates in a form of imitation. Only 10% of the surveyed enterprises spend more than 5% of their turnover on R&D. The share of stable innovative enterprises is rather low as well (10-20%). In metallurgy, machinery, and chemical industry, the share of innovation enterprises tends to be higher than in other industries. No less problematic is the state of small innovation companies in the country as a whole: its share does not exceed even 1% of the total number of small enterprises in Russia.

The level of investment in innovation during 2000-2005 remained low and unstable. Their maximal value within this period was achieved in 2002 – 1.91%, and minimal one in 2005 – 1.32%[15] (Fig. 1).

Fig. 1. Expenditures on innovation in 2000-2005, % of turnover



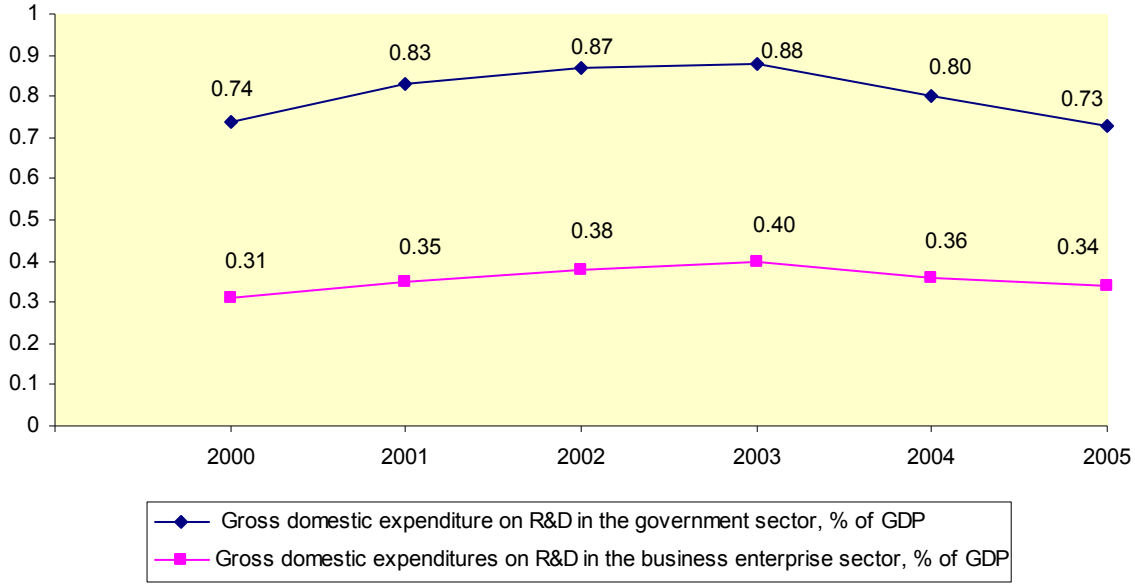
Source: Center for Science Development Studies of the Russian Academy of Science.

The level of gross domestic expenditure on R&D in the government and business enterprise sectors shows the same disturbing picture. Despite steady economic growth and improvement in the macroeconomic indexes for the Russian economy, R&D and innovation expenditures have not increased in recent years, on the contrary they have even decreased (Fig. 2).
The named tendencies show a considerable gap between the R&D performed and the observed innovation outputs in the Russian innovation national system[16]. This gap has been present for a long

[13] It should be outlined that stably low values of the indicator of innovation enterprises against a background of long-term economic growth and rising investment activity in the country possibly might occur due to shortcoming in sampling in the innovation statistics. Although one could be sure in this presumption only after special series of research on this problem. Because of the deficiency of such research we use the available data provided by Rosstat.
[14] Kuztetsov, B., Kuzyk, M., Simachev, Yu., Chulok, A., Tsukhlo, S. Peculiarities of the demand for technological innovations and estimation of the potential reaction of the Russian industrial enterprises for possible mechanisms of the promotion of the innovation activity In: Modernization of Economy and State. Ed. by Yasin E. G. Moscow: Publishing House of HSE, 2007. Vol. 1, pp. 488-503 (in Russian).
[15] When interpreting values of this indicator, one should take into account the comment made to the indicator of the share of innovative enterprises.
[16] This problem is outlined in many national and international documents (see, for example, the OECD Paper No 539 “Stimulating Innovation in Russia: The Role of Institutions and Policies”).

time in the Russian economy. It was a characteristic during the crisis period and economic recession in the 1990s and it still remains in the 2000s. Against a background of absolute growth in R&D and innovation expenditures, the relative levels of these indicators demonstrate their discrepancy with the rates of the economic growth.

Fig. 2. Gross domestic expenditures on R&D in the government and business sector in 2000-2005, % of GDP



Source: Center for Science Development Studies of the Russian Academy of Science.

Another factor of concern for science and innovation of the country is the huge dependence of S&T sector of the economy on government R&D expenditures. Despite a relatively high level of expenditure on R&D in the business sector, in comparison with the government S&T sector, the government is still the main donor to R&D. The share of budgetary funds in the structure of the gross domestic expenditures on R&D in recent years has grown steadily. In 2000, the share of government funds in science financing made 53.7%, whereas in 2005 it increased up to 60.9% in the gross expenditures on R&D[17].

It should be stressed that the Russian business enterprise sector in S&T is in many respects represented by enterprises and organisations that are under direct or indirect government influence (through controlling shareholdings). With this in mind, a very significant share of the state in R&D expenditures is a result of the Federal Programs contribution to the scientific organisations of the business enterprise sector. At the same time the longer period a high share of government participation in the business R&D sector is kept, the more strongly preserved is the gap between the research activity and its results, on the one hand, and innovation activity and a level of technology commercialization, on the other.

Therefore the most important challenge facing the Russian system of innovation is the need to increase innovation activity within the business sector and to develop more favourable conditions for the commercialisations of R&D results, created in both the government and business sectors.

[17] These shares include funds of state universities and government sector institutions. See: Russian science and technology at a Glance: 2003. Data Book. Moscow, CSRS, 2004, p.79. Russian science and technology at a Glance: 2006. Data Book. Moscow, CSRS, 2006, p.85.

2.1.2 Recent Trends in National Innovation Performance

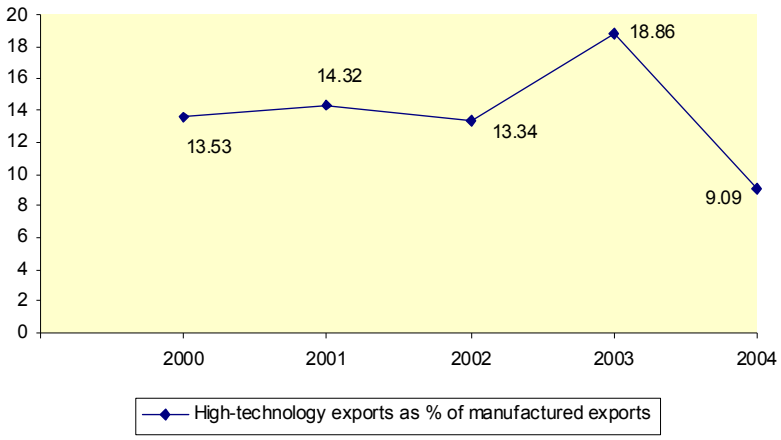
Generally the trends in national innovation performance show the situation of stagnating or growing input and declining output of major NIS segments or widening the innovation gap with the leader countries.

For example, despite the magnitude of physical and human assets and world-class achievements in several scientific disciplines, the output of the Russian science and technology sector is rather modest. Russia ranks seventh in the world for the number of scientific publications it produces in 1990x (now eights). The volume of resident patent applications has continually decreased over the 1990s and is much lower than in developed and even some newly industrialised countries.

The low level of innovation activity in manufacturing has led to a decline in high tech export activity. This long term trend has coincided with the strengthening of Russian rouble in relation to foreign currencies and contributed to a decline in the domestic market. According to the World Bank, the share of Russian hi-tech exports amongst aggregate exports of industrial products in 2000-2003 varied between 13-19%, but in 2004 it went down to 9.1% (Fig. 1).

Our estimation of the share of Russian hi-tech goods, from the country's aggregate volume of exported goods is 8.28% for 2005 (not taking into account a greater part of the export of military goods).

Fig. 3. Share of the Russian hi-tech export in the aggregate volume of industrial export in 2000-2004, %



Source: the World bank, on-line database: http://devdata.worldbank.org/data-query, reference of 18.01.2007

A recent positive development has been the growth in export of Russian services. In 2005, the foreign trade turnover of Russia for science intensive services reached $ 6.1 billion, 28.2% higher compared to 2004, and 2.2 times greater than in 2001. At the same time, the export of high-tech services increased in 2005 by 33.9% in comparison with 2004. Its share of the aggregate volume of exported services increased from 6.3% in 2001 to 9.0% in 2004 and up to 9.9% in 2005. However, a trade export imbalance still exists: in 2005 the import of the high technology services was 1.5 times greater than that exported[18].

In summary, the relatively low share of goods and services exported from the Russian hi-tech sector is due to several reasons: external economic factors and their rather strong interdependence on structural components of the Russian economy as well as internal problems within the Russian national innovation system.

[18] The estimations are done on the base of data from the Report of the Ministry of Economic Development and Trade of the Russian Federation "Perfection of the mechanisms of support of the export of domestic products and services" (December, 2006).

2.2 National Policy Objectives and Trends

2.2.1 Objectives and Targets of National Innovation Policy

Government innovation policy objectives and targets are formulated in several official conceptual and program documents that were issued between 2002-2006: "The Annual Message of the President to the Federal Meeting", "Conceptions", National and Industrial Strategies, Programs and Plans. "The 2006 Annual Message of the President to the Federal Meeting" stressed that under conditions of international competition the country's economic development mainly depends on scientific and technical achievements.[19] The necessity of shifting to innovation-based economy was also stressed in "The Basis of the Russian Federation's Policy in the Sphere of Science and Technology Development by the year 2010 and Further Perspective".[20] The main issues of that document were developed in "The Main Directions of the Russian Federation Policy in the Development of NIS by the year 2010"[21]. This was the first state paper where the definition of NIS corresponding to international practice was given, with the following elements:

- knowledge creating capacities, including basic research in Russian Academy of Science, other public Academies and universities;
- applied research and development in government and industrial research centres;
- production of competitive innovative industrial and agricultural goods;
- the innovation infrastructure;
- training of innovation management personnel.

The aims of Russian innovation policy, its main directions and innovation measures are also given in "The Main Directions". The aim of government innovation policy is "to create economic framework conditions for competitive innovation production in accordance with the realization of the Russian Federation strategic priorities". The main directions are: to create favourable economic and legal framework conditions, the innovation infrastructure, and the system for commercializing R&D results.[22] The main directions are explained in more detail than measures for their realization.[23]

The attempt to work out in more detail government innovation policy has been made in "The Strategy of Science and Innovations Development in the Russian Federation till 2015". [24] In this document, science potential is considered to be one of the resources of economic growth, but R&D and innovation system are considered as separate elements. The strategy's midterm aim is formulated as follows: "the formation of the balanced sector of R&D and effective innovation system providing for technology modernisation of economy and competitiveness on the base of modern technologies and transformation of science potential into one of the main resources of sustainable economic growth".

The following indicators are proposed: the growth of R&D expenditure up to 2,5% of GDP and the growth of non budget expenditure up to 70% by 2015; the growth of researchers younger than 39 years old up to 36% by 2016; the growth of patent activity (coefficient of innovation activity) up to 5,5% by 2016, share of innovative production in industrial production and sales – up to 18%, in exports – up

[19] "The Message of the President of the Russian Federation to the Federal Meeting". 10.05.2006. Mr. V. Putin stressed the need to build innovation framework conditions for new knowledge creation, to import new technologies, to protect IPR, improve tax conditions and encourage investments into innovations.
[20] "The Basis for the Russian Federation Policy in the Sphere of Science and Technology Development by the year 2010 and Further Perspective". The concept approved by the President of the Russian Federation on 30.03.2002
[21] "The Main Directions of the Russian Federation Policy in the Development of NIS by the year 2010". The paper was approved by the Prime Minister on 05.08.2005
[22] The innovation policy measures include development of forecasts and foresights, public-private partnership (PPPs), public procurement for innovation production and stimulating of exports, the development of stock market, the leasing of scientific equipment.
[23] The main innovation indicators are gross domestic expenditures on R&D as a percentage of GDP, the share of innovation goods in domestic production and exports, technological balance of payments.
[24] "The Strategy of Science and Innovations Development in the Russian Federation till 2015". The paper was approved by Interdepartmental Committee on Science and Innovation Policy under Minister of Education and Science on 15.02.2006

to 15%, the growth of innovative enterprises - up to 20%, annual growth of innovation SMEs up to 120 by 2016.[25]

But in the list of main goals and aims, the R&D sector and IPR regime are considered separately from the national innovation system. [26] It must be stressed that indicators and aims are not always accompanied with concrete measures for their realization.

"The Mid Term Program of Socio-economic Development of Russia Federation" [27] also emphasizes that stimulating innovation is the way to reach the country's strategic goals. But, again, the R&D sector is considered separately from the national innovation system, and the sector of education is absent from the list of innovations resources.

Exhibit 10 National innovation policy objectives

Objective	Quantitative target	To be achieved by (year)
Growth of gross domestic R&D expenditure as a % of GDP	GERD/GDP ratio of 2,5%	2015
Growth of non budget expenditure as a % of gross domestic R&D expenditure	BERD/GERD ratio of 70%	2015
Growth of share of young researchers (younger than 39 years old) in total R&D personnel	researchers younger than 39 years old/R&D personnel ratio of 36%	2015
Growth of patent activity – number of patent applications from Russian residents per 10 000 of population (coefficient of innovation activity-)	coefficient of innovation activity up to 5,5%	2015
Increasing the participation of SMEs in innovation	annual growth of number of innovation SMEs up to 120	2015
Growth of innovation activity in business sector economy	Innovative firms/total industrial firms ratio of 20%	2015
Growth of innovation activity in economy (the growth of share of innovative production in export) (4,7% in 2004)	innovative production/export of industrial production ratio of 15%	2015

The government's overall objective is to create a successful innovation climate across society and support innovations by specific measures. The government aims to achieve this by implementing innovation policy measures to supplement/complement state support for R&D, industrial enterprises and industry.

[25] The main character of the "Strategy" is that it proposes two scenarios: the inertia one and the active one. Much attention is also put to the role of SMB, innovation infrastructure and PPPS.
[26] "The Strategy" states the following aims of the active scenario: to create competitive R&D sector and conditions for its development, to create NIS, to develop an effective IPR regime, to modernize the economy with the help of high technology. "The Strategy" provides for three periods (2006-2007, 2008-2010, 2011-1015) with overall budget of 2688.3 billion roubles.
[27] "The Mid Term Program of Socio-economic Development of the Russia Federation (in 2006-2008) " is approved by the government Decree on 19.01.2006

Although the government has declared a need to create favourable climate for innovation, the actual innovation policy measures implemented are mainly aimed at specific support actions and are largely based on direct support of R&D and innovation activity.

When a comparison is made of the most important policy documents, the same list of priorities for innovation policy tends to be seen. They represent mostly a combination of innovation climate measures and sector specific measures: stimulating industry's demand for R&D results and high technology, providing a more effective IPR regime; creation of stimuli for innovations at SMEs, support of innovative infrastructure, and promotion of cooperation networks.

The necessity to stimulate innovations is also stressed in several Federal goal oriented and industrial strategies. The most important are "The Energy Strategy of Russia up to 2020", "Federal Space program", "Development of Civil Aviation Technology", and "The Strategies for Development of the Russian Chemical and Petrochemical Industry up to 2015".

For example, the main goal of the Space Program in the innovation area is to consolidate positions in the development of space technology and strengthen Russian space technology potential, play an active role in international cooperation, and increase the Russian share of R&D in development of space apparatus.

The Civil Aviation Program is also very supportive of innovation. The main goal of the program is a significant improvement in the strategic competitive position of the civilian aviation industry in Russia by obtaining at least 5% of world market sales in civilian aviation technology (including internal and foreign market). The goal is planned to be achieved through the realization of the following tasks: ensuring the competitiveness of civilian aviation technology; overcoming the lag in technological development of civilian aviation between Russia and developed countries; and creation of modern R&D infrastructure in aviation industry. The specific tasks include: 1) creation of effective system of sales that will ensure continuous growth of income from sales of serial aviation technologies; 2) increase in export of domestic aviation technologies; 3) realization of the potential of the Russian aviation industry as a competitive producer of domestic and world market aviation technologies; 4) overcoming technology gaps in the Russian aviation industry by ensuring its effective participation in international technology integration projects; 5) creation of a science and technology basis in the areas of aircrafts, engines, avionics and aviation systems to ensure the competitiveness of the aviation industry after the year 2015; and 6) creation of modern research infrastructure within organizations of the aviation industry in order to achieve world class R&D and technologies.

2.2.2 Overview of National Innovation Policy Mix

Russian government innovation policy is developing into a more comprehensive policy mix. Up to the end of 2005, the main focus of government policy was on direct support of innovation in the form of financing of innovation infrastructure, grants to small high tech companies, financing of training and retraining of personnel (mainly managers for innovation companies). On the other hand, administrative regulations (including the legal framework) were not being developed and they were tending to block rather than stimulate innovation. An example is the legal regulations concerning spin-off companies created by university professors or academic researchers. Current legislation does not allow universities or research institutes to be founders of a spin-off company and there are no regulations concerning the double employment of professors wishing to develop their inventions within small companies. Under these regulations, universities have often lost their intellectual property when researchers left the organization since there were no clear regulations concerning IP ownership, especially of those created as a result of government financing.

Similarly, indirect measures (tax and customs benefits or exemptions) were practically nonexistent. On balance, legal regimes also discouraged innovation activity. For example, industrial enterprises were not allowed to write off their R&D expenditures on primary cost of product in full, in case the conducted R&D did not yield clear practical applications (in the form of patents or other intellectual property or

direct application in new technology). In another words, companies were not allowed to deduct their R&D expenditures from their company tax declarations.

Starting from 2006, the policy mix has become much more complete. Direct support has started to be combined with indirect measures and administrative (legal) regulations. The impetus for this change was ongoing government failure in its attempts to support innovation activity. It was realized by government officials, especially in the Ministry of Education and Science and the Ministry of Economic Development and Trade, that providing financial support without changing the overall environment had not been an effective use of state finances. The limit of specific measures has been recognized but innovation climate measures are at the stage of discussion and negotiations among government agencies (section 2.2.3).

At the present time the policy mix is evident only in some government initiatives. Its application is rather fragmented. However, it may be said that the overall trend is positive. The areas where policy mix is developing include: large innovation projects important to the government - where government and business jointly support R&D - and later stages of the innovation process; creation of a Venture Fund; and creation of special economic zones. All these measures may be considered sector specific.

In large innovation projects important to the government, direct budgetary financing in the form of public procurement (usually given to government research organizations, academic institutes or universities) on R&D is co-financed by industry that usually invests in prototype development, serial production, and manufacturing. The direct financing is complemented by special administrative arrangements concerning ownership, allocation and transfer of intellectual property created under budgetary expense. These IP arrangements are made on a case-by-case basis but still this is an important development. For such agreements, the ownership of IP created in R&D organizations may often be transferred to industrial enterprises that are project collaborators.

The creation of a Venture Fund is a new government initiative in which direct financial support (government provides financing to the Fund which is organized in the form of a “Fund of Funds”) is complemented by the development of legislation to enable venture funds and a venture industry to flourish. The legislation is currently under development.

Special economic zones also enjoy a policy mix of direct support provided from the government funds to create technical infrastructure of the zones (including roads, airports, buildings, etc.), tax remissions (privileged tax rates for unitary social tax) and customs duties exemptions.

The development of mixed policy measures is strongly encouraged by several Russian government agencies. On the other hand, indirect measures as an instrument for support of innovation activity are not yet appreciated by the Ministry of Finance, and this is one of the factors hampering dissemination of the policy mix.

In general, however, it may be said that the current policy mix, where it is used, is the result of retargeting of policy strategies. At the same time, in general, the government continues to favour specific measures. It is only at initial stage of discussion on the possibility to introduce more general innovation climate measures. Before 2006 there was no serious discussion about introduction of innovation climate measures.

2.2.3 Recent National Policy Trends

The INNO-Policy TrendChart policy monitoring exercise tracks developments in innovation policy not only at the level of policy definition and the setting of overall objectives as discussed in the previous sections, but also through the compilation of information in an analytical structure on specific innovation policy measures (IPM). At the present time, the INNO-Policy TrendChart database contains over 2000 IPM fiches detailing measures implemented in 39 countries. An innovation policy measure is defined broadly to include any public policy initiative that directly or indirectly impacts on the innovation process in the enterprise sector. In practice, the TrendChart Innovation Policy Measures (IPM) fiches tend to fall into one of the follow categories of measures:

- Intervention in the form of financial support State Aid to enterprises through programmes of grants, loans, etc. (e.g. grants for product development);
- Funding of innovation programmes or projects aimed at groups of innovation stakeholders with the objective of improving cooperation and collaboration and thereby the functioning of the innovation system (e.g. cluster;
- Measures taken to improve, disseminate or develop knowledge about specific aspects of national innovation systems (e.g. sectoral or regional strategies, foresight exercises, the innovative performance of firms through spread of best practice, etc.);
- Action to improve the functioning of institutions (legal acts, regulations) which affect innovation processes and performance (e.g. intellectual property rights, financial markets, creation of firms);
- Funding of innovation infrastructure and intermediaries such as innovation centres, incubators, etc.

This section of the report describes in more detail the current policy mix adopted in (name of country) in terms of the political priorities and human and financial resources allocated to each of these broad types of measures. Further details on the specific innovation policy measures can be found in annex 5 and via the INNO-Policy TrendChart website.

Changes in overall levels of funding allocated to innovation measures

In 2006 budgetary expenditures on R&D have continued to grow. The rate of growth in 2006 in comparison with previous year was 17,9% (in real terms). The growth has been stable since 2002 following the publication of the government document “Basics of policy of Russian Federation in the area science and technology till 2010 and future trends”. This document determines the level of annual growth (in absolute figures and in percentage to total government expenditures) of budgetary expenditures on R&D.

The noticeable characteristics of budgetary support of R&D is a significant growth in financing through Federal goal-oriented programs in which universities, R&D organizations and private companies may participate on a competitive basis. 87% of total expenditures on R&D are distributed through four programmes, which are also the most scientifically intensive:

1. Federal Space Program;
2. Development of Civil Aviation Technology;
3. R&D in Priority Directions of Development of Science-Technological Complex of Russia;
4. National Technological Basis.

For these programs the latest annual rates of growth were the following: 100% - for Development of Civil Aviation, 60% - for Technological Basis, 17% - for Space Program, and about 10% - for R&D on Priority Directions.

Unfortunately, with these Federal goal-oriented programs, responsibility for the R&D work is allocated according to a “soviet-style” scheme in which the funded R&D is implemented in mainly government-owned R&D organizations and universities. Federal demand for the private sector to conduct R&D is low and the stimulus for business to invest in its own R&D, or to outsource it, is very low. It is often the case that the results of projects supported by such programs are not required by the private sector.

Shifts in the allocation of funding among innovation measures

The structure of budgetary expenditures on R&D continues to be conservative, especially if one looks at allocation of funds among government agencies. Government allocations on R&D are mainly distributed among the following organizations (in descending order by volume of financing): Russian Academy of Sciences, Russian Agency on Science and Innovations, Russian Academy of Medical Sciences, Siberian Branch of the Russian Academy of Sciences, Russian Foundation for Basic Research (RFBR), Far East Branch of the Russian Academy of Sciences, Russian Agency for

Education and Urals Branch of the Russian Academy of Sciences. As can be seen from the list, the main bulk of the funding is directed at supporting the Academies. Government science foundations receive a stable share of allocations from the Federal budget (determined by law): 6% of the government R&D expenditures on civilian science goes to RFBR, 1,5% goes to the Fund for Assistance to Small Innovative Enterprises (FASIE), and 1% goes to the Russian Foundation for Humanities. The current structure of allocations involves only a modest support of small companies, and low financing of R&D in universities.

In Federal goal-oriented programs, the government has eventually started to pay more attention to measures aimed at involving business in the selection and financing of R&D projects. In the Federal goal-oriented program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012", which started in 2007, there are several components aimed at increasing the involvement of private companies. Now almost all types of R&D projects in this program require co-financing from business. If a project is aimed at developing new technology, co-financing from the private sector must represent around 20-30% of the total project cost. If projects are aimed at the commercialization of a technology, then the required level of co-financing is 50-70%. There are also plans to conduct a separate competition in this program in which the subject areas will be determined by business. Such projects will be supported on an equal financial basis by government and business.

Changes in the use of different sorts of instruments

The most visible change in 2006 is that the government has started to develop indirect measures to stimulate innovation activity. The following changes to the Tax Code were suggested and are currently under discussion in the State Duma:

- Tax exemptions on VAT for income related to selling patents or licenses on innovative technologies;
- Tax exemptions on profit from income received by R&D organizations and foundations supporting science and education;
- Inclusion of expenditures on R&D in the prime cost of products;
- Widening the list of expenditures for which a administratively simplified scheme for paying taxes may be used;
- Increasing financial contributions to the Russian Fund for Technological Development and to other inter-branch funds that finance R&D in science organizations and industrial enterprises.

As can be seen from the list, the measures are not critical for the private sector but they may create a more favourable environment for innovation. Additionally, more powerful sector-specific measures will be applied in the special economic zones that are currently under creation and special favourable regulations will be implemented for export-oriented companies working in ICT.

The government has also tried to introduce innovation climate measures in the area of technical regulations, ecological control, and temporary cancellation of import custom duties for certain types of equipment not produced domestically. These measures are aimed at stimulating demand for innovative technology within industrial enterprises, mostly through the replacement of old equipment, as well as easier access to global knowledge.

Future policy priorities as stated by the Government

Three main policy priority directions initiated by the government can be identified: 1) growing attention towards forecasts and Foresight procedures; 2) further development of indirect measures to stimulate innovation; and 3) support for innovation infrastructure.

1. Three ministries are working simultaneously on the development of Foresight procedures: the Ministry of Education and Science, the Ministry of Industry and Power Engineering, and the Ministry of Information Technology and Communications. Each of the ministries is developing its own approach, without consultation or coordination with the other ministries and agencies. At the present time, despite the popularity of Foresight among policy makers, only a small circle of experts is aware of the Foresight methodology, and understand how at national and other levels the results of such work may be used. The problem also stems from the lack of interaction among various expert groups.

2. Tax exemptions for innovation enterprises are currently under development. There are several tax initiatives that are under considerations, but very few details are finalised yet. The government is considering the possibility of applying the following tax initiatives:

- Reduced social security contributions for R&D organizations and innovation enterprises;
- Tax exemptions on VAT for all R&D and certain types of patenting and licensing activities;
- Tax exemptions on profit derived from financial and material support for R&D and educational purposes;
- Tax exemptions on profit for newly created R&D organizations and innovation enterprises during the first 5 years of business activity;
- Accelerated amortization of equipment utilized by R&D organizations and innovation enterprises.

3. Further support of innovation infrastructure in the form of venture funds and technology parks may be envisioned. Three ministries are working in this area and their initiatives somewhat overlap each other: the Ministry of Economic Development and Trade, the Ministry of Education and Science, and the Ministry of Information Technology and Communications. In 2007, government-supported venture funds will be created. It is planned that the share of federal resources invested in the venture funds will be around 25-49% of the total amount. In order to encourage the interest of private investors, the government will only demand an annual interest of 3%, the rest of the income generated by the fund will be owned by private companies.

The new and substantially modified policy measures are summarized in Exhibit 11.

Exhibit 11: New Innovation Policy Measures over last 12 months

IPM N°	Title	Innovation policy framework category	Organisation responsible
RU_1	Draft Plan of Measures of Light Industries Development for the period 2006-2008 yeas	II.4. Increase rates of expenditure on research and technological innovation in enterprises II.5. Encourage the uptake of strategic technologies, notably ICT IV.1. Increase the number of new innovation intensive enterprises created and their survival	Ministry of Industry and Power Engineering of the RF
RU_2	Federal Goal-Oriented Program “E-Russia”(2002-2010)	I.4. Encourage mutual policy learning and networking between policy-making at regional, national and EU	Ministry of Information Technology and Communications of the RF

		levels II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises II.5. Encourage the uptake of strategic technologies, notably ICT	
RU_3	Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015"	II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises	Ministry of Industry and Power Engineering of the RF
RU_4	Co-financing of R&D at small innovative enterprises	II.4. Increase rates of expenditure on research and technological innovation in enterprises	Federal Fund for Assistance to Small Innovative Enterprises
RU_5	Federal Space Program for 2006-2015 years	II.4. Increase rates of expenditure on research and technological innovation in enterprises	Russian Space Agency (Roscosmos)
RU_6	Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years	IV.3. Favouring the entry of innovative enterprises and business models to sectoral, regional or national markets	Ministry of Industry and Power Engineering of the RF
RU_7	Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012"	II.4. Increase rates of expenditure on research and technological innovation in enterprises II.5. Encourage the uptake of strategic technologies, notably ICT	Ministry of Education and Science of the RF
RU_8	Support of R&D at start-up innovative companies – program START	IV.1. Increase the number of new innovation intensive enterprises created and their survival	Federal Fund for Assistance to Small Innovative Enterprises
RU_9	Reform of Technical Regulations – Technical Regulation Act 2002	II.2. Reducing the administrative and transaction costs for enterprises in fulfilling their legal, administrative, fiscal, etc. obligations	Ministry of Industry and Power Engineering of the RF
RU_10	Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies"	II.5. Encourage the uptake of strategic technologies, notably ICT IV.5. Optimising the legal/regulatory framework for the development of private innovation financing	Ministry of Information Technology and Communications of the RF
RU_11	Tax remissions for organizations working in information technologies	II.5. Encourage the uptake of strategic technologies, notably ICT	Ministry of Finance of the RF
RU_12	Decree on temporary import tariff for certain sorts of technical equipment	II.5. Encourage the uptake of strategic technologies, notably ICT	Ministry of Economic Development and Trade of the RF
RU_13	Federal Goal-Oriented Program	II.4. Increase rates of	Ministry of Natural

	"Ecology and Natural Resources of Russia for 2002-2010 years"	expenditure on research and technological innovation in enterprises	Resources of the RF
RU_14	Control over the legal protection of the results of civilian R&D created under budgetary expense	V.3. Favouring the protection and optimising the exploitation of intellectual property as a driver for innovation	Ministry of Education and Science of the RF
RU_15	Creation of Russian venture company	IV.5. Optimising the legal/regulatory framework for the development of private innovation financing	Ministry of Economic Development and Trade of the RF
RU_16	Creation of technical-promotional special economic zones	II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises III.4. Increase the availability of innovative infrastructures to facilitate knowledge exchange and product/service development by enterprises IV.6. Promote adequate support to enterprises aimed at new and developing markets	Ministry of Economic Development and Trade of the RF
RU_17	Creation of technology park in high tech	IV.2. Provide adequate infrastructure to new technology based firms to facilitate their survival and growth	Ministry of Information Technology and Communications of the RF

Note: The above table documents all known innovation policy measures in Russia – not just new ones introduced over the last 12 months. This is because 2007 is the first time that an INNO Policy TrendChart Country Report has been produced for Russia.

As can be seen from the table, the government currently prefers direct financial support of R&D and innovations (mostly through public procurement), and tries to build into this mechanism public-private partnerships (PPP) schemes. Another important direction of government activity is support for small innovative enterprises. Unfortunately, the latter has a very modest scale.

The PPP instrument has mostly been used in Federal goal-oriented programs but it has not been very successful so far. There are several reasons for this. Firstly, government does not guarantee that all the budgetary sources described in the PPP agreements will actually be paid. This creates burdens for private enterprises and complicates their planning procedures. Secondly, business is barely involved in the process of selecting science and technology activities for which the government plans to use PPP. Thirdly, the legal regulations concerning ownership of intellectual property rights in PPP contain a number of flaws and allow for different interpretations.

Another group of measures are characterized by the fact that they combine direct and indirect measures to support innovation activity. These are mostly measures aimed at the creation of innovation infrastructure (special economic zones, technology parks, venture funds). In 2006 government developed procedures for the creation of two types of venture funds – a so-called "Fund of Funds" and a specialized venture fund dedicated to ICT. Both funds have been developed from foreign experience.

Finally, a third group of measures is aimed at the creation of favourable condition for innovation: decrease of administrative barriers for obtaining new technologies and for absorption of knowledge,

indirect stimulus for innovation through standardization, and improvement of legal regulations concerning intellectual property rights.

At the end of 2005, the government adopted a resolution “Concerning the distribution of rights to the results of R&D.” The new resolution states the conditions under which intellectual property created from State funded R&D is owned by the State or by the researcher. Although there are still important points of the legislation that remain unclear, a big step forward has been taken towards liberalising IPR ownership. Aside from this progress, the fourth part of the Civil Code has been developed which is fully devoted to IPR regulations. It will come into force from 1 January 2008. The new Code overrules all previously existing laws and regulations on this subject and introduces several new definitions, including the definition of “intellectual property” per se and “intellectual results”. At the same time, in many ways, the Code has inherited previously existing norms.

3 Main Policy Challenges in the National Innovation System

3.1 Main Policy Challenges in the National Innovation System

Specific current weakness and the most critical bottlenecks in the Russian innovation system are:

- Most Russian businesses have no clear innovation strategy and are not used to investing in their own R&D capacity;
- The state R&D institutes stagnated during the transitional period and now experience a lot of problems with obsolete scientific equipment, older staff and loss of cooperation with world class research centres;
- The R&D system is still pretty much isolated from market and society demands and badly needs to improve its performance and level of integration with business and civil society; despite significant efforts to create innovation infrastructure, there still remains a major disconnect between researchers and entrepreneurs;
- The innovation gap with leading countries is widening.

National innovation policy challenge number 1 is defined in Russian national documents and is very similar to the Lisbon Agenda's main goal: increase R&D expenditure up to 2,5% GDP and increase non budget expenditure up to 70% of national R&D by 2015. This goal has to be achieved by boosting both Federal and business support. In 2006 the rate of growth of budgetary expenditures on R&D in comparison with previous year was 17.9% (in real terms). Preliminary data for business expenditures are not so impressive.

The noticeable characteristics of budgetary support of R&D is significant growth in financing through Federal goal-oriented programs in which universities, R&D organizations and private companies may participate on a competitive basis. 87% of total expenditures on R&D are distributed through four programmes, which are also the most scientifically intensive: Federal Space Program; Development of Civil Aviation Technology; R&D in Priority Directions of Development of Science-Technological Complex of Russia; and National Technological Basis.

A major qualitative challenge for Russian innovation policy is to redefine the responsibilities of the various actors within the system in the light of a more dynamic and open market economy and develop new ways for them to interact. The greatest challenge here is to induce a stronger participation by the Russian business sector in the whole innovation process, including that of conducting research. At present the Russian business sector invests substantially less in R&D than their counterparts in Western economies. In part, this is due to the structure of the Russian economy with its predominance of relatively low-tech industries such as mining. Hence there is a need to restructure Russia's economy towards more knowledge-intensive industries. But, even when comparing directly with similar industries abroad (e.g., the automobile industry), Russian industries usually invest substantially less in R&D. In order to withstand competition in international as well as (increasingly open) local markets, Russian industries have to substantially increase their investment in R&D and develop and strengthen their own R&D capacity. This does not mean that the government should reduce its research efforts, as it has its own role to play, but there needs to be a shift in the balance of research effort towards the business sector over the medium- to long-term. In order to achieve this, financial incentives should be introduced to promote investment in R&D by the business sector.

Though much attention has been given to the financial support of R&D and indirect measures are under development, there are still some business innovation activities virtually devoid of government regulation. These are:

- Reducing administrative and transaction costs for enterprises when fulfilling their legal, administrative, fiscal, etc. obligations,
- Facilitating access of enterprises to skilled personnel,
- Increasing the availability, range and quality of specialized services to enterprises in order to increase the effectiveness of their in-house innovation activities,
- Ensuring that the future skills base in the region/sector/country will correspond to the innovation needs of enterprises,
- Upgrading innovation related skills and diffusing new technologies in enterprises,
- Increasing rates of non-technological innovation in enterprises.

Another major bottleneck concerns the research sector which has to become more dynamic and responsive to innovation needs. That is challenge number 3. Government plans are already underway to shake up the research sector (and in particular the RAS) considerably. Research institutes that have become obsolete or that are not performing well will be closed down. The next step is to clarify the mandates and responsibilities of the remaining research institutes as well as their position in the overall innovation system. In promising new science areas the government should set up new research institutes. In addition, universities will be given a more active role in research. At the same time the government intends to improve the existing research infrastructure and facilitate the transfer of knowledge and technology developed by public research organizations (PROs) and universities to the industry. Various factors play a role here, such as an unfavourable regulatory framework, lack of incentives, and weak coordination between the government and the business sector in setting research priorities. Hence the government should strengthen the technology transfer activities of PROs and universities as well as improve the participation of the business sector in: (a) the identification and prioritization of public research priorities; and (b) the co-financing of such activities. The latter requires clear rules and regulations regarding public-private partnerships. In addition, the government should assist Russian companies to develop their capacity for adopting new technologies.

Exhibit 12: Main innovation challenges

Description of challenge	Relevant indicators and trends
1. Increase R&D expenditure up to 2,5% GDP and increase non budget expenditure up to 70% of national R&D by 2015	R&D/GDP ratio dramatically contracted in 1990s and stagnated in 2000s Share of business in national R&D support is low and declining
2. Increase the number of innovation's enterprises	All indicators of innovation activity in industry are low Share of high tech products in export is low and declining Patent activity is low Import of high tech industrial products, new technologies and equipment is growing
3. Reform and streamline the research sector so that it becomes more dynamic and responsive to innovation needs	Over the past 10-15 years, Russian researchers have seen their salaries decline sharply The average age of researcher in all type of institutes is growing Researchers in government R&D institutes have no incentives to innovate

The choice of challenges in Exhibit 12 show the most import problems of innovation policy. In order to improve the overall functioning of the Russian innovation system, and induce changes in a desired direction, much more emphasis should be given to these specific challenges in the future.

Generally, it may be said that the current policy mix, used by various government bodies in innovation area, has been mainly based on direct support but is slowly moving towards indirect pro-innovative measures. Discussion on the possibility to introduce more general innovation climate measures is only at the early stage. Given the many actors within the national innovation system and their often conflicting interests, a set of rules and regulations is needed that creates a playing field that is transparent and fair to all.

3.2 Policy responses to Identified Challenges

Exhibit 13: Innovation challenges and policy responses

Key challenge	Measures responding to the challenge
1. Increase R&D expenditure up to 2,5% GDP and increase non budget expenditure up to 70% of national R&D by 2015	• Elaborate and support several big industrial programs in high-tech areas • Pick up and support priority S&T • Establish the State Nanotechnology Corporation heavily supported by federal funds • Establish and support the Russian venture company
2. Increase the number of innovation enterprises	• Support of R&D at start-up innovative companies – program START • Tax remissions for organizations working in information technologies • Creation of technical-promotional special economic zones • Creation of technology park in high tech industries • Co-financing of R&D at small innovative enterprises • The Decree "On Temporary import tariff' for certain sorts of technical equipment
3. Reform and streamline the research sector so that it becomes more dynamic and responsive to innovation needs	• Set of administrative decisions by the Ministry of Education and Science and other responsible ministries according to "The Strategy of Science and Innovations Development in the Russian Federation till 2015"

Challenge 1: Increase R&D expenditure up to 2,5% GDP and increase non budget expenditure up to 70% of national R&D by 2015

There are several specific measures that can be considered as responding to this challenge. Some old and new measures focus support on SMEs. Others have been designed to cover on all sizes of company – small, medium and large – such as tax remissions, creation of technical-promotional special economic zones, technology parks in high-tech industries, and venture companies. The measures adopted in 2006 mainly target certain high technology businesses, such as aerospace and civil aviation, and information technology. However, a slow response so far from business to the new

measures suggests a limit to their appeal. Government policies probably need to be further strengthened to address this difficult challenge.

Challenge 2: Increase the number of innovation enterprises

One of the critical bottlenecks for Russian start-up companies is getting access to capital. In addition to expanding state-owned venture capital funds, the government should also look at how private venture capital funds and "business angels" (i.e., private individuals investing their own money in start-up companies as well as providing knowledge and experience) can be stimulated through tax incentives, simplification of rules and regulations, and solving other specific bottlenecks.

R&D investments by the business sector in the Russian Federation are very low in comparison with comparable industries in advanced economies. This lack of commitment by the business sector is one of the major weaknesses of the Russian innovation system. In order to make it more attractive for companies to invest in R&D, it would make sense to introduce (as many other countries have done) a tax deduction scheme for R&D expenditures that is simple and transparent.

Another way of indirectly subsidizing research activities is by exempting it from taxes such as VAT, import duties, property tax, etc. This instrument already exists for techno-parks, science cities, etc. The government has elaborated a set of measures to apply this instrument to public and private research activities.

Challenge 3: Reform and streamline the research sector so that it becomes more dynamic and responsive to innovation needs

The government has already begun realizing its declared aim of reforming the R&D sector (as was stated in "The Strategy of Science and Innovations Development in the Russian Federation till 2015"). The first steps have created a big shake up in the public research sector, in particular for the Russian Academy of Sciences. The number of institutes is slowly decreasing, staff have been laid off and salaries have risen. The next step is to clarify the mandates and responsibilities of the remaining research institutes as well as their position in the overall innovation system. In promising to support new science areas, the government wants also to set up new research institutes closely linked to business (e.g. the Nanotechnology Corporation is currently being established).

Exhibit 14: Innovation challenges, policy responses and impact

Challenge	Relevance of policy response	Evidence of impact
Increase R&D/GDP ratio to 2,5 %	3	2
Stronger participation by the Russian business sector in the whole innovation process	2	2
Reform the research sector	3	2

Policy response ranking scored from 1 to 5 : 1 No specific measures addressing the challenge (possibly a debate but no evidence of any real policy development); 2 Policy development under way to respond to challenge (policy debate or design launched, e.g. announced in National Lisbon Reform Plan, etc.); 3 Specific measures existing for some time but insufficient to respond fully to challenge; 4 Existing measure plus one or more newly launched measures (during last 18 months) 5 A comprehensive set of measures which potentially responds fully to the challenge.
Evidence of impact scored from 1 to 5: 1 trend for indicators has worsened since measure(s) introduced, 2 no observable change in trend since measure(s) introduced, 3 too early to appraise

(measures introduced in last 24 months), 4) trend for indicators has improved since measure(s) introduced, 5 Evaluation or study indicates measure(s) has clearly contributed to improving performance of country.

3.3 How well does Policy meet the Innovation Challenges?

Critically summarizing details of the current situation and the challenges involved in coping with long-term international competition, the most important objective is to bring about a successful innovation climate throughout society, to supplement state support for R&D, industrial enterprises and infrastructure by soft stimulating measures. Among the most urgent problems to be resolved are the following:

- Create effective mechanisms to encourage high technology production and raise the export potential of high-tech industries and services
- Stimulate small innovative business through the expansion of state support for innovation projects at early stages of implementation and support for the development of innovation infrastructure;
- Strengthen the IPR system, spurring the patent activity of Russian enterprises and organisations inside and outside of the country;
- Repress unfair competition practices, keep monopolistic tendencies in the market under control and repress unfair business practices. To this end, the role of the Federal Antimonopoly Service should be further strengthened and fine-tuned. In addition, the government has to improve the judiciary system so that it can deal more effectively and efficiently with unfair business practices cases.

Coordination of government actions regarding innovation represents a challenge too. There are many different government organisations involved in the innovation process, but they tend to operate in relative isolation without a clear and shared policy vision. In addition to providing such a shared policy vision, better coordination is needed both horizontally (between different ministries and departments) and vertically (between different levels of government ranging from Federal to regional to municipal). With regard to the latter, the government should encourage a more active role of lower levels of government in promoting innovation in local industries, to promote mutual policy learning and networking between policy-making at regional and national levels. Coordination and cooperation between the different branches of government should not be just formal, but real and action-oriented. Coordination is particularly important for large innovation projects involving multiple partners.

Monitoring and evaluation represent one of the weakest elements of current innovation policy in Russia**.** Whilst innovation policy should give the innovation system a sense of direction, it should, once translated into a concrete and detailed action plan, be complemented by a monitoring and evaluation system in order to check whether the system is evolving in the right direction and introduce corrective action where necessary.

Practically, the only well designed and regularly evaluated government program is the one for support of small enterprises organised by the Fund for Assistance to Small Innovative Enterprises (FASIE). The Fund constantly develops new initiatives supporting small innovative businesses, seed and start-up companies (START Program), the linkages between small companies and universities, programs for training of innovation managers, etc. However, with a total budget of only 25 million euros a year the Fund is not able to make a major change in the overall situation. So far the experience of the Fund is poorly used by other government agencies.

4 What lessons can be drawn from Policy Implementation?

4.1 Lessons from the Evaluation of Innovation Policy Measures

The positive changes in Russian innovation policy formulation and implementation are as follows:

- Innovation policy has become a priority area for several government agencies;
- Attempts are being made to integrate into strategies all the elements of innovation system – science and technology, business and government, direct budget support and indirect promotion;
- Attempts are being made to adopt a systematic approach to setting main tasks, trends and measures of innovation policy realization;
- Use of mid-term indicators in research policy setting.

The negative aspects of the process of forming innovation policy are the following ones:

- A lot of innovation policy directions and priorities are not accompanied by concrete measures especially in industrial strategies and plans of development, i.e. these measures are not specific enough;
- Little attention is paid to indirect measures such as tax and depreciation policy, regulation, competitive and antitrust policies;
- Innovation policy does not yet have a system's character – it does not integrate science and technology policy, educational, industrial and regional policies;
- Innovation policy is often formulated based on a lot of basic and conceptual papers issued over a short period of time; and they often duplicate each other – this indicates poor quality of policy design;
- Lack of cross government coordination in the process of innovation policy development.

We can give two examples of combining positive and negative aspects of policy implementation: stimulating venture capital industry and creating special economic zones for innovation companies.

In the first case, on an encouraging note, the venture industry is currently developing in parallel two models of venture funds. Whilst the "Fund of Funds" is important for stimulating venture financing as a whole and also as a learning experience of work with venture money, the ICT fund as a specialized organization may become a success from a market point of view. The specialized funds are usually is more capable to ensure the necessary high level of expert evaluation of projects and thus to decrease the risks. On the negative side, there is a lack of projects suitable for venture financing. Government officials recognize this fact by pointing out that the main problem is to find sufficient innovation projects to make full use of the available funds.

Government initiatives aimed at creating new technoparks and special economic zones have been developed but without a serious evaluation of past successes and failures. There are no reliable statistics about the extent to which technoparks have facilitated successful work, and how they did this. Currently, the government plans to make big investments in the engineering and transportation infrastructure for technoparks and special economic zones, as well as introduce some tax concessions (in the zones).

Four special zones were selected through an open competition. The choice of specializations gives evidence about the attempt to support the strongest territories and most promising S&T directions, guaranteeing in this way "a history of success." However, so far, there are too few residents in the

zones – only one to two companies in each one. The zones are due to become fully operational in 2007 and the first results can be evaluated in two or three years.

4.2 Review of Good Practice

Support of Small Innovative Enterprises at the Seed Stage: the START Program

The START program supports SME at the seed funding stage. Start-up companies in Russia have difficulties in obtaining bank loans because they usually are unable to guarantee the return of the loan (by presenting as a deposit real estate, equipment or commodity circulation). They cannot prove that their business will be profitable. In such conditions the START program has a special importance.

The program was initiated by the Fund for Assistance to Small Innovative Enterprises (FASIE) in 2003. Approximately half of the Fund's budget has been devoted to the START program (in 2006 - approximately 12 million Euros).

The program consists of two steps. The duration of the first step is one year during which the group of researchers or newly created small firm receives "seed" financing (up to about 20 thousand euros per project). The small firm should conduct R&D, develop the prototype, patent their development and work out a business plan. At the end of the first year the firm should demonstrate the commercial potential of its product.

At the second step, the firm should find a co-investor who is interested in manufacturing the firm's product, or the firm should start its own manufacturing of the new product. In such cases, it will receive the next portion of financing from the Fund. After the two steps the manufacturing should be actually started, and the Fund stops financing the project. In comparison with the US' Small Business Innovation Research (SBIR) Program, the step between R&D and a prototype must be taken very rapidly – with in a year – for the Russian program. The risks involved in such a short transition are high. But first results of the program implementation have proved to be encouraging.

The most active participants in this program are university researchers: 36% of the applications for the creation of small firms have originated from there, scientists from the Russian Academy of Sciences have presented 13% of the applications for small firms, applications from government science centres have presented 1.4%, and "others" have presented 18%. The remaining 33% of applications have come from already-existing small enterprises. Statistics on the program for the two years 2004 and 2005 are given in the table below.

Table: Characteristics of the START Program

	2004	**2005**
Number of applications	2764	1674
Number of contracts concluded by the Fund	538	421
Level of competition, applications per grant	5	4
Total financing, million Euros	10,0	9,6
Volume of financing per project at the first step, thousand Euros	19,2	22,8

Source: Fund for Assistance to Small Innovative Enterprises - Annual reports for 2004 and 2005.

In 2005, the first stage of the program was realized, and the second stage, which requires finding non-government financing for the continuation of the work of a small firm, has been entered by 20% of the

start-ups[28], a fully satisfactory statistic considering the difficulty of finding additional sources of financing for small science-intensive firms.

Aside from that, the program has raised interest amongst corporations, and some of them are willing to co-finance the program. At the present time, there are some projects being implemented in the interests of companies such as Intel, LOMO, and AFC "Systema". This shows that demand for high-tech products in Russia does exist, and there is the potential to satisfy it.

Effective infrastructure for innovation: case of Zelenograd (Moscow region)

Zelenograd[29] represents a fine example of an effectively working innovation infrastructure that has been created around a university – the Moscow Institute of Electronic Engineering (MIEE). The creation of the innovation infrastructure started in 1991 when a technology park with an incubator was built on the campus. Then in 1998 an innovation-technology centre was established. The innovation-technology centre is a special Russian type of infrastructure aimed at serving the next stage of development of small firms after technoparks. The idea is that growing firms eventually graduate from the technopark and enrole at the innovation-technology centre. In the innovation-technology centre, small firms get access to scientific and technological equipment, and to the experimental facilities of MIEE (specifically the plant "Proton"). This access has helped companies to increase their productivity and grow further.

In 1999 the innovation-industrial complex was established around MIEE with the main goal of creating conditions for the development of full-scale industrial production for the most promising high tech products. Finally, in 2002 in order to create linkages with regional industry, the so-called "technological village" was opened. The technological village is, in other words, a high tech cluster that unites university, small firms and regional industry. This cluster has not only helped to increase manufacturing of high tech products but also to develop modern education that takes into account the current needs of industry. Thus, in 2004 MIEE created the technology transfer office and later - Centres of Competence that train Master's students to use modern equipment in interdisciplinary areas of interest to local industry. These Centres are based on the Bologna principles of education, i.e. they propose a modular approach to training. Aside of that, the Centres of Competence may be seen as a mechanism for strengthening linkages between university and industry because business men teach courses and conduct practical training courses there. In this way, Master's students obtain those skills necessary to work in modern business, and industry does not need to re-train them before allowing newly hired graduates to work on up-to-date equipment.

Finally, in 2006, the innovation complex MIEE has became part of a newly created special technical development zone, and the innovation-technology centre was registered as the first resident of that zone. The table below presents the overall results of high tech business development that was supported through technological infrastructure. As can be seen, from 1999 till 2006, the number of firms in the technological cluster has grown 16 fold, volume of sales – 33 fold, and attracted investments – 15 fold. This proves that there has been not only an increase in the number of firms but also in their size and production.

Table: Characteristics of high tech business development in Zelenograd cluster

Indicator	1999	2002	2004	2006	Rate of growth, 2006 to 1999, times
Number of small high tech firms	10	40	70	160	16
Volume of sales, mln Euro	2.2	14.6	35.7	72.1	33
Volume of investments attracted, mln Euro	1.5	9.1	14.3	23.1	15
Number of MIEE professors	2	8	30	60	30

[28] Data for 2006.
[29] Moscow satellite city

working at small firms, headcount					
Number of students trained at small firms, headcount	35	150	260	440	13
Number of graduates hired by high tech companies located in the cluster, headcount	30	120	220	470	16

Source: MIEE, 2006.

The table also demonstrates the positive influence a technological cluster can have on education: a growing number of students are trained at small innovative companies. The rate of admission of graduates to regional companies also grows much faster. Among other positive effects, the technological cluster has helped to decrease brain drain which was previously the case amongst electronic engineers (and especially for those working in the area of nanotechnologies).

This "success story" demonstrates that government initiatives aimed at creating technological infrastructure may be successful, especially in the case of different types of infrastructure that co-exist on one territory. Aside from that, important factors for success have been: 1) Zelenograd's narrow specialization on electronics: much of the electronics industry is presented nearby - this has helped with establishing linkages between the university, small companies and large firms and factories. 2) Zelenograd already initially possessed strong potential in education and research.

Exhibit 15: Summary of good practice cases in Russia

Year	Title of good practice case	Justification for selection
2002	MIEE technological village	Create linkages between education, R&D and innovation infrastructure with regional industry
2003	START Program	The first program to support SMEs at the seed funding stage
2004-2005	MIEE Technology transfer office and Centres of Competence	Train Master's students to use modern equipment in interdisciplinary areas of interest to local industry
2006	MIEE innovation-technology centre registered as the first resident of the special technical development zone	Formation of full scale regional cluster

5. The Lisbon National Reform Programme (NRP) and innovation: an appraisal

In the light of our analysis, the proposed measures mostly look appropriate and represent a mix of policy options for each of the innovation challenges. Initial comparison of the Russian measure set with the Lisbon guidelines (exhibit 16) gives the impression that the set is spread along all the directions. However, closer inspection of the content of each measure reveals that most measures involve a large component of direct government support in the form of subsidies or public procurement.

Exhibit 16: Policy Measures relevant to Lisbon guidelines n°8 and 15.3

Lisbon guidelines n°8 – Innovation	Referenced in NRP	IPM Fiche Number*	Title of measure
1. improvements in innovation support services, in particular for dissemination and technology transfer	N/A	RU_16 RU_17 RU_4 RU_12 RU_9	• Creation of technical-promotional special economic zones • Creation of technology park in high tech • Co-financing of R&D at small innovative enterprises • Decree on temporary import tariff for some sorts of technical equipment • Reform of Technical Regulations – Technical Regulation Act, 2002
2. the creation and development of innovation poles, networks and incubators bringing together universities, research institutions and enterprises, including at regional and local level, helping to bridge the technology gap between regions	N/A	RU_16 RU_2 RU_17 RU_8	• Creation of technical-promotional special economic zones • Federal Goal-Oriented Program "E-Russia"(2002-2010) • Creation of technology park in high tech • Support of R&D at start-up innovative companies – program START
3. the encouragement of cross-border knowledge transfer, including from foreign direct investment	N/A	RU_16 RU_17 RU_15 RU_10 RU_6 RU_3	• Creation of technical-promotional special economic zones • Creation of technology park in high tech • Creation of Russian venture company • Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies" • Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years • Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015"
4. encouraging public procurement of innovative products and services	N/A	RU_6 RU_7 RU_5 RU_2 RU_3 RU_13 RU_1	• Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years • Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012" • Federal Space Program for 2006-2015 years • Federal Goal-Oriented Program "E-Russia"(2002-2010) • Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015" • Federal Goal-Oriented Program "Ecology and Natural Resources of Russia for 2002-2010 years • Draft Plan of Measures for Light Industries Development for the period 2006-2008 years
5. better access to domestic and international finance	N/A	RU_15 RU_6 RU_7 RU_10 RU_3 RU_1	• Creation of Russian venture company • Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years • Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012" • Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies" • Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015" • Draft Plan of Measures for Light Industries Development for the period 2006-2008 years
6. efficient and affordable means to enforce intellectual property rights	N/A	RU_14	• Control over the legal protection of the results of civilian R&D created under budgetary expense
Lisbon guidelines n°15 – Entrepreneurship and SMEs	**Referenced in NRP**	**IPM Fiche Number**	**Title of measure**
3. Strengthen the innovative potential of SMEs	N/A	RU_4 RU_8 RU_11	• Co-financing of R&D at small innovative enterprises • Support of R&D at start-up innovative companies – program START • Tax remissions for organizations working in information technologies

Annex 1: Main National Governance Characteristics and Actors

The State Bodies responsible for formulating fundamental innovation policy comprise legal bodies (Federal Assembly and State Duma) and executive authorities – Federal Ministries and Agencies and corresponding Regional Bodies. In addition, the Presidential Council on Science and High Technologies (an advisory body to the President of the Russian Federation) and several departments of the Presidential Administration coordinate and direct the activity of the legal and executive power bodies.

The Federal Assembly participates in innovation policy formulation through the Committee on Science, Education, Health and Ecology and by organizing discussions with expert panels for monitoring of current policy and generating federal initiatives. The State Duma (Parliament) has several committees that discuss innovation policy: Committees on Education and Science; on Industry, Civil Engineering and High Technologies; on Energy, Transport and Communication; and on Information Policies.

Government activity in the field of science, education and innovation comprises the following organizations:

(a) *policy-making and coordinating agencies:* Ministry of Education and Science (MES), Ministry of Economic Development and Trade, Ministry of Information Technologies and Communication, Ministry of Industry and Energy, the Federal Agency for Science and Innovation, Russian Academy of Sciences and Russian Space Agency (the last two agencies receive the largest share of the civil R&D budget);

(b*) financing agencies*: financial support from the State budget is the principal source of funding for R&D. Most funds are distributed through R&D implementing agencies in the form of direct grants, although some competitive allocation of R&D resources takes place as well. There are three State budget funds: Russian Foundation for Basic Research (RFBR), Russian Foundation for Humanities (RFH) and The Foundation for Assistance to Small Innovative Enterprises (FASIE);

(c) *regulatory agencies*: The most important regulatory bodies are the Federal Service for Intellectual Property, Patents and Trade Marks (Rospatent), the Federal Agency for Technique Regulation and Metrology and the Federal Antimonopoly Service.

Generally the regulatory system corresponds to contemporary requirements of the economy and society.

We can identify at least two levels of policymaking entities on the federal level: (1) lead actors and (2) other actors.

<u>Lead actors</u>

The four agencies that control most of the Civil State R&D budget are the Russian Academy of Sciences (RAS), the Russian Space Agency (Roskosmos), the Federal Agency of Industry, and the Federal Agency of Science and Innovation. The latter two agencies are executive branches of the Ministry of Industry and Energy and the Ministry of Education and Science, respectively. The Federal Agency of Industry supports R&D and innovation activities particularly related to the defence industry. It plays an important role in the procurement of defence orders from industry.

The Federal Agency for Science and Innovation (FASI) implements government policy, provides governmental services, and manages state property in the sphere of scientific, technological, and innovative activities. This includes overseeing the activities of the federal centres of science and high technology, state-run scientific centres, the unique scientific facilities, the leading scientific schools, national IT research networks and supplying information on science, technology and innovation activities.

FASI supports science and innovation across a wide range of industries through a variety of instruments, such as the Federal Programme "R&D by Priority Fields," science parks, technology transfer and commercialization centres, and business incubators. It also manages the support for the State Research Centres and the mega-projects programme.

A small part of the state R&D budget is allocated on a competitive basis through the following three funds:

- The Russian Foundation for Basic Research (RFBR)
- The Russian Foundation for Humanities (RFH)
- The Foundation for Assistance to Small Innovative Enterprises (FASIE)

All three foundations are fully state funded and linked to the former Ministry of Science and Technologies. After the 2004 administrative reforms, however, their status has been changed. RFBR and RFH are now more closely associated to the Russian Academy of Sciences.

Other Ministries and Federal Agencies

- Defence Ministry: controls a large defence-related budget and the part of defence R&D obligations

- Ministry of Industry and Energy: controls through the Federal Agency on Industry a substantial sum of defence-related R&D as well as R&D budget for other industries

- Ministry of Economic Development and Trade: supports applied research programs in economics and initiated several innovation related measures, such as SME support, R&D tax deduction for industrial enterprise, the program for technology oriented free economic zones and established the Venture Company.

- Ministry of Information Technologies and Communication: controls through the Federal Agency for Information Technologies a modest R&D budget for information technologies and initiated the program supporting technoparks creation in different regions of the country.

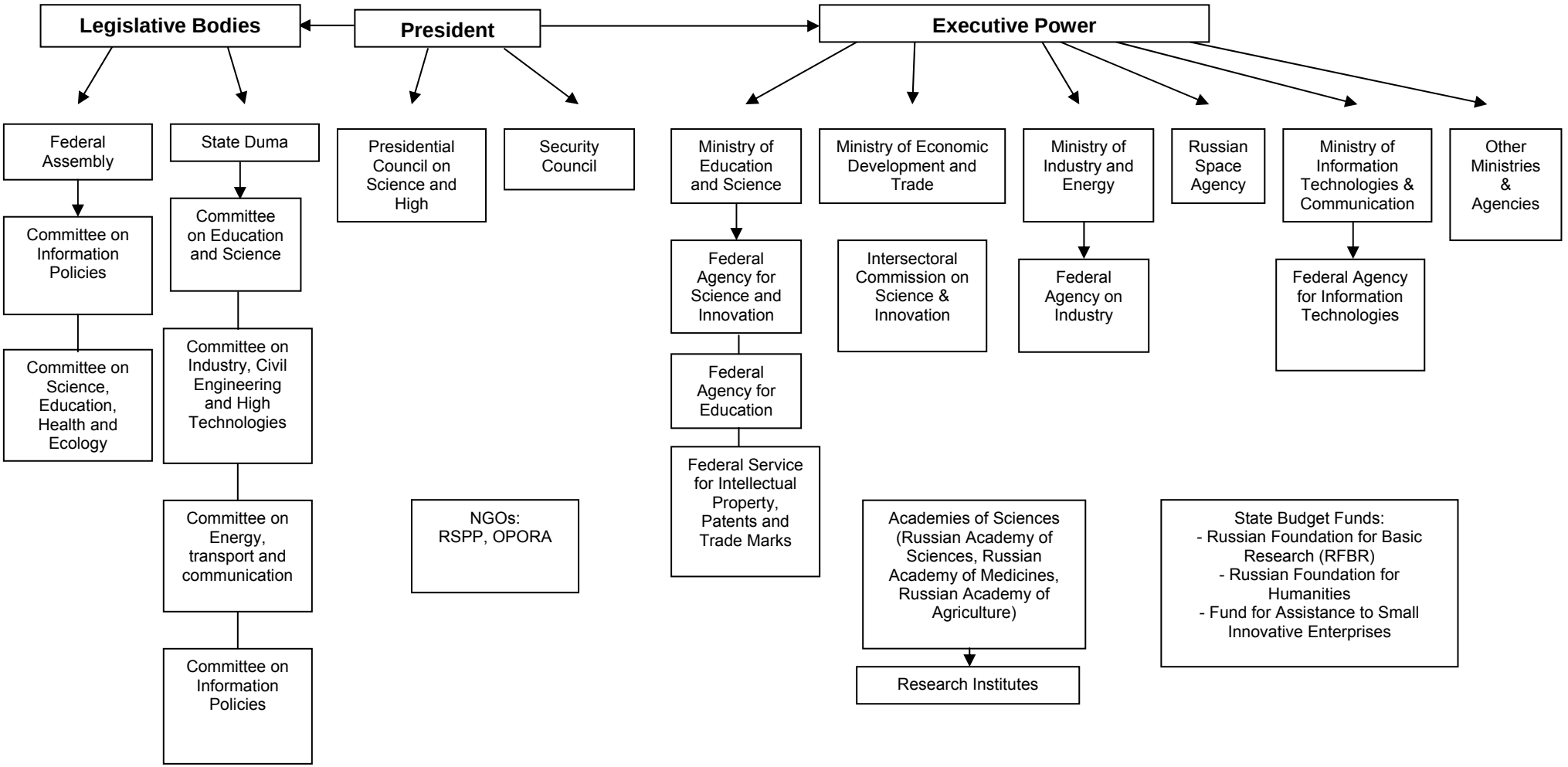
The following regulatory agencies play important roles within the Russian innovation system:

- The Federal Service for Intellectual Property, Patents and Trade Marks (Rospatent), which operates under the supervision of the Ministry of Education and Science. Rospatent is responsible for the implementation of all IPR-related legislation, for the registration of patents, license, license agreement and other IPR documents. It also functions as the controlling body for the use of IPR.

- The Federal Agency for Technique Regulation and Metrology, which operates under the supervision of the Ministry of Industry and Energy, is responsible for the implementation of the Federal Law "Technical Regulation" and for monitoring the technical standards, the respective documents of registration, and for the establishment of new standards. Several projects for standards in new technologies were proposed in 2005, for example, security requirements for food produced from genetically modified plants and livestock.

- T he Federal Antimonopoly Service plays an important role in controlling monopolistic market behaviour. Such behaviour is generally seen as undermining innovation, as there is no pressure from competitors to improve production or products.

Exhibit A1 Organisational Chart of the National Innovation Governance System



Annex 2: Main Regional Governance Characteristics and Actors

and

Annex 3: Dominant Regional Innovation Systems in the Country

Russia is a very big country with historically wide differences in the level of socio-economic development of its regions. Almost 80% of the population lives in the European part of the country, which represents no more than 25% of Russia's territory. The European regions produce 74 % of gross regional product and 80% of manufacturing products. Siberia and the Far East regions produce two thirds of mineral resources and fuel. The gap in regional production volume per capita (the difference between the biggest and lowest one) was 69, 5 times in 2002. There are 80 administrative regions and 32 of them are classified by the Ministry of Economic Development and Trade as economically depressed and almost a dozen as being in crisis. Regional innovation systems exist in many industrially advanced territories of Russia. They are governed by the corresponding regional ministries or departments of regional governments.

Innovation policy has been formulated and implemented only in a number of economically developed regions, so called region-donors (which mean that they pay full taxes to the Federal budget). During the 1990s, the Federal government initiated several programs to stimulate the regional aspects of its S&T development and innovation programs. It resulted in more than 20 agreements for cooperation between the Ministry of Industry, Science and Technology and Russian Federation entities. These agreements stimulated joint selection and shared financing of regional S&T projects as well as Federal informational support and assistance in professional training.

Lately this activity has been slowing down because of new legislation which changed the relationship between Federal and regional authorities in the budget process. Some experts analyzing the differences between Federal and regional legal rules on innovation have concluded that some advanced regions have more sophisticated regulations than the Federal ones[30]. Nowadays we observe an increasing emphasis on regional innovation policy levels and regional governance structures.

By 2005, 11 Russian Federation entities had passed laws and other legislative documents to regulate innovation activity and established special S&T departments in their Administrations. In some regions, first of all in Tomsk Oblast', a basis has been made for the permanent interaction of authorities, universities and other higher education institutes, research institutes, industrial enterprises, in developing cooperation to promote innovation. Tomsk is historically one of the leading scientific centres in Siberia. Tomsk Oblast traditionally has been characterized as one the most educated and scientifically advanced. In 2003, the share of R&D scientists and engineers with higher degrees per 10,000 of total people employed here is higher than the Russia average (151 versus 60) and developed countries (USA – 61, Japan – 102, UK - 55). There are now six universities, 15 higher education institutes, and about 100 research organizations of different affiliation including 46 industrial institutes and dozens of high-tech enterprises in the atomic, defence and other industrial sectors.

Twenty years ago, in 1985, the first engineering and technology centre, later technology park, was established in Tomsk by the Siberian department of USSR Academy of Sciences. This centre, firstly in the USSR, was specially designed for implementation (commercialization) of science results. Now it has the status of Innovation and Technology Centre and represents a conglomerate of research

[30] Volynkina M.V Innovation's legal regulation in Russia. M.: Aspect Press. 2005 (in Russian)

department and small innovation enterprises. The centre gets financial support from Russian and foreign sources.

In Tomsk Oblast, one of seven Vice-governors is responsible for Science, Technology and Innovation Policy. They manage four executive bodies: Department for Secondary Education, Committee for Science and Innovation Policy, Committee for Higher Professional Education, and Office of Secondary Professional Education. A program of innovation development has been elaborated through an Oblast government initiative in cooperation with analytical centres (Russian and Foreign). It is in the course of implementation. The targets of the program include the number of newly created innovation companies, the number of new high-tech job positions, the annual growth and share of innovation products in relation to the regional gross product. Strategic perspective directions for R&D at Oblast institutes and universities are as follows: advanced materials and nanotechnology, biotechnologies, ICT, medical equipment, and chemical products.

In 2005, Tomsk Oblast won a Russian national competition, organized by the Ministry of Economic Development and Trade, for the right to host a Special Economic Zone. The company "Tomskneftekhim" became its first active resident in 2006.

In Samara Oblast the regional administration also formulates its own innovation policy as a tool for accelerating economic development. This region like the Tomsk one has a strong education and scientific potential but also large industrial enterprises (the biggest Russian carmaker AutoVAZ and several aerospace companies) and Federal R&D centres. The industries of Samara Oblast perform around 95% of the region's R&D which is several times higher than the Russian average. The Oblast's administration has already implemented several innovation programs. One of the first initiatives (1996) was the establishment of a regional Fund for supporting small innovation businesses together with a corresponding federal foundation. In 2003, the administration established an "Innovation-industry-market" program with the goal to create a regional innovation system. Its budget is 39 million roubles (1.1 million euros). The program aimed at science-industry integration for innovation projects, promoting interregional investment market and stimulating small innovation companies.

A specific feature of Russia's regional innovation policy is in nominating some towns to the status of "Naukograd" (Science Town). These are towns whose history, identity and development is closely linked to several large S&T organizations and enterprises. These towns can count on special financial support from the federal budget in the implementation of their innovation programmes and in infrastructure maintenance. The first town that has received this status was Obninsk in the Kaluga region. Now there are ten towns with this status (Korolev, Dubna, Seversk, Kol'tsovo, Reutov, Friazino, Michurinsk, Petergoff, Puchshino, Biysk) and several who are seeking the same status (Troytsk, Jukovskiy and Dimitrovograd have been nominated).

Annex 4: Overview of innovation policy documents

Main policy documents concerning innovation policy adopted/published since 2006

Title of document (in English)	**Date** (of approval, publication, etc.)	**Organisation** responsible (Ministry, etc.)	**Legal status** (Law, Government Decision, strategy (white) paper, action plan, etc.)
"The Strategy of Science and Innovations Development in the Russian Federation till 2015"	15.02.2006	Interdepartmental Committee on Science and Innovation Policy under Minister of Education and Science	Strategy paper

Annex 5: Overview of Innovation Policy Measures

List of Innovation Policy Measure Fiche in the INNO-Policy TrendChart database as of 1 June 2007

Table A5.1: Policy Monitoring framework (2005-2007) objective(s)

IPM Fiche Number	Title of measure	Policy Monitoring framework (2005-2007) objective(s)	IAP96 Action line	Start Date	End date	Status during reported period	Evaluated
RU_1	Draft Plan of Measures for Light Industries Development for the period 2006-2008	II.4. Increase rates of expenditure on research and technological innovation in enterprises II.5. Encourage the uptake of strategic technologies, notably ICT IV.1. Increase the number of new innovation intensive enterprises created and their survival		2005	2008		No
RU_2	Federal Goal-Oriented Program "E-Russia"(2002-2010)	I.4. Encourage mutual policy learning and networking between policy-making at regional, national and EU levels II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises II.5. Encourage the uptake of strategic technologies, notably ICT		2002	2010		No
RU_3	Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015"	II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises		2006	2015		Yes – mid-term
RU_4	Co-financing of R&D at small innovative enterprises	II.4. Increase rates of expenditure on research and technological innovation in enterprises		Before 1995	No end date planned		Yes – mid-term

RU_5	Federal Space Program for 2006-2015	II.4. Increase rates of expenditure on research and technological innovation in enterprises		2006	2015		No
RU_6	Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years	IV.3. Favouring the entry of innovative enterprises and business models to sectoral, regional or national markets		2007	2011		Yes
RU_7	Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012"	II.4. Increase rates of expenditure on research and technological innovation in enterprises II.5. Encourage the uptake of strategic technologies, notably ICT		2007	2012		Yes
RU_8	Support of R&D at start-up innovative companies – program START	IV.1. Increase the number of new innovation intensive enterprises created and their survival		2007	No end date planned		Yes – mid-term
RU_9	Reform of Technical Regulations – Technical Regulation Act 2002	II.2. Reducing the administrative and transaction costs for enterprises in fulfilling their legal, administrative, fiscal, etc. obligations		2002	2010		No
RU_10	Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies"	II.5. Encourage the uptake of strategic technologies, notably ICT IV.5. Optimising the legal/regulatory framework for the development of private innovation financing		2006	2010		No
RU_11	Tax remissions for organizations working in information technologies	II.5. Encourage the uptake of strategic technologies, notably ICT		2006	No end date planned		No
RU_12	Decree on temporary import tariff for certain sorts of technical equipment	II.5. Encourage the uptake of strategic technologies, notably ICT		2006	2007		No
RU_13	Federal Goal-Oriented Program "Ecology and Natural Resources of Russia for 2002-2010 years"	II.4. Increase rates of expenditure on research and technological innovation in enterprises		2002	2010		No
RU_14	Control over the legal protection of the results of civilian R&D	V.3. Favouring the protection and optimising the exploitation of		2006	No end date		No

	created under budgetary expense	intellectual property as a driver for innovation			planned		
RU_15	Creation of Russian venture company	IV.5. Optimising the legal/regulatory framework for the development of private innovation financing		2006	2008		No
RU_16	Creation of technical-promotional special economic zones	II.1. Enhancing the role of public procurement and standardisation as drivers of new innovative products services by enterprises III.4. Increase the availability of innovative infrastructures to facilitate knowledge exchange and product/service development by enterprises IV.6. Promote adequate support to enterprises aimed at new and developing markets		2006	After 2015		No
RU_17	Creation of technology park in high tech	IV.2. Provide adequate infrastructure to new technology based firms to facilitate their survival and growth		2006	2010		No

Table A5.2: Policy Measure Fiche: overview

IPM Fiche Number	Title of measure	Overview
RU_1	Draft Plan of Measures for Light Industries Development for the period 2006-2008	The main goal is to raise the competitiveness of light industries in order to meet domestic demand because of strong foreign competition. It is to be achieved by modernization of technology and creation of favourable conditions for investments. The task is to develop four regulations, attract high skilled specialists, and protect consumers and producers from illegal production and import of clothes, boots and other light industry goods.
RU_2	Federal Goal-Oriented Program “E-	The goals are to create more favourable conditions for:

	Russia"(2002-2010)	- the mass adoption of information and communication technology; - the development of e-government; - the support of ICT infrastructure; - the training of ICT specialists; - the establishment of a legal base for ICT development This goals will be achieved by: - creating conditions for democratic development, increasing economic effectiveness, and supporting central and local government administration with the introduction and mass diffusion of ICT; - providing the rights for free search, receipt, production and diffusion of ICT; - improving legislation and government regulation in the sphere of ICT; - providing open public administration activities and general public free access to government information resources; - providing effective central and local government interaction with business; - developing ICT infrastructure and the system of e-trade; - providing general public support of the Program.
RU_3	Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015"	The main goal of the program is a major change in the strategic competitive position of the civilian aviation industry in Russia by obtaining at least 5% of world market sales in civilian aviation technology (including internal and foreign market). The goal is planned to be achieved through the realization of the following tasks: ensuring the competitiveness of civilian aviation technology, overcoming the lag in technological development of civilian aviation between Russia and developed countries, and creation of modern R&D infrastructure in the aviation industry. The specific tasks include: 1) creating an effective system of sales that will ensure constant growth of income from sales of serial aviation technology; 2) increasing the export of domestic aviation technology; 3) realising the potential of the Russian aviation industry as a domestically and globally competitive producer of aviation technology; 4) overcoming the technological gap of the Russian aviation industry by ensuring its effective participation in international technological integration; 5) creating scientific and technological capacity in the area of aircrafts, engines, avionics, aviation systems to ensure the competitiveness of aviation industry beyond 2015; 6) creating modern research infrastructure within aviation industry organisations in order to achieve and maintain world class R&D and technologies.

		The goals will be achieved through implementation of the following program blocks: “current projects” (development and manufacturing serial aviation technologies and its certification); “support of international cooperative collaboration”; “Prospective aviation technologies” (creation of new competitive types of aircraft); and “Upgrading of material capacity and formation of science and technology capacity in the area of aviation technologies” (government investments in technological complexes of Russian R&D organizations specializing in aviation, support of R&D in the area of aviation).
RU_4	Co-financing of R&D at small innovative enterprises	The main goal is to support R&D at small innovative enterprises in order to assist them in development of new products, new technologies, to expand market, etc. The support is provided through a special government fund for assistance to small innovative enterprises whose budget is 1.5% of the total federal budget for civilian science. The fund only finances R&D at small enterprises. This program is a core program of the Fund for Assistance to Small Innovative Enterprises (FASIE), along with START program (described in a separate innovation policy measure fiche). The fund also has other initiatives which are complimentary but on a more modest scale.
RU_5	Federal Space Program for 2006-2015	The main goal of the program is to meet the demand of government organizations and population in space services on the basis of realization of complex space projects, necessary for social-economic development and national security, to consolidate positions in the development of space technology and strengthen Russian space technology potential, to play an active role in international cooperation`. The Program is divided in two stages: up to 2010 and between 2010-2015. The goals of the first stage of the program are given below together with those for the second stage (in brackets): - to create a system of 13 apparatus for fixed space communications and TV broadcasting (26); - to create a system of 6 apparatus for mobile satellite communications (12); - to create a system of 5 apparatus for space meteorological monitoring (5); - to create a system of 4 apparatus for space monitoring of environment (5); - complexes for basic research of 2 observatory for astrophysical research (3); - to create 1 space apparatus for the Mars research; - to create 5 modules of Russian segment of International Space Station (8).
RU_6	Federal Goal-Oriented Program “National Technological Basis” for 2007-2011 years	The main goal of the program is to ensure the technological development of domestic industry through the realisation of complex projects, necessary for social-economic development, national security, and fulfilment of business demands. The targeted areas are hydrogen power engineering, integrated logistics, transport technology, marine technology, technical systems for defence from bioterrorism and toxic

		attacks, and future electronic optical systems based on domestic electronic components. The goal is to support, in this way, several core technological directions: • Technologies for the creation of new materials; • Machinery technologies; • Basic technologies in power engineering; • Technologies for future power engines; • Chemical technologies and catalysis; • Technologies for marine applications, functioning in extreme ecological conditions; • Technologies that ensure security against viral attacks, and diagnostics and protection against dangerous diseases.
RU_7	Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012"	The main goals of the program are the development of the scientific and technological potential of the Russian Federation in order to realise priority directions for scientific and technological development. The achievement of this goal includes realisation of several tasks: • development of scientific potential in S&T priority directions and in critical technologies; • realization of priority scientific directions through large commercialization-oriented projects; • utilization of public-private partnerships instrument; • ensuring of inflow of young specialists in science; • support of small business development; support of innovative infrastructure and of material basis of research organizations. The Program consists of two stages. During the first stage, which should last from 2007-2009, the conditions for innovation development should be created. This includes implementation of the following tasks: • Conducting R&D in priority directions for science and technological development, considering international tendencies in this area; • Adaptation of the science-technological complex of Russia to the conditions of market economy, stimulating linkages between government and private capital in order to support development of science, technology, and engineering; • Forecasting of science and technological development. During the second stage (2010-2012), the government will support creation of a balanced sector of R&D and effective innovation system that will promote technological modernization of the national economy. To

		achieve this goal, the following measures will be implemented: • Creation of a competitive sector of R&D and conditions for its expanding reproduction; • Assistance in the creation of an innovation system; • Ensuring active development of innovation activity at industrial enterprises that work in the area of technology commercialization; • Securing growing effectiveness of public-private partnerships; • Forecasting of development of science and technological spheres. To implement the stated goals, the program has been structured into five major blocks: • "generation of knowledge" (support of R&D); • "development of technologies"; • "commercialization of technologies"; • "institutional basis for R&D" (development of legal basis); • "infrastructure for innovation system".
RU_8	Support of R&D at start-up innovative companies – program START	The main goal is to support R&D at start-up companies. This is the first government initiative providing seed financing to small companies. Financing is provided through a special government fund for assistance to small innovative enterprises whose budget is 1.5% of the total federal budget for civilian science. The fund only finances R&D at small enterprises.
RU_9	Reform of Technical Regulations – Technical Regulation Act 2002	The goal is to remove administrative barriers for enterprises, especially excessive departmental and ministerial control, instructions, norms and regulations, that hold up technological progress and innovations. A new system of standards and regulations is necessary for new high-tech industrial growth. One of the instruments of the process is joint government-business development of standards and regulations.
RU_10	Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies"	The main goal of this measure is the creation of a venture investment fund in ICT with 100% government share ownership. This ICT fund is a fund-of-funds which will be a source of financing for organizations working in ICT and it will also be used to finance ICT projects. The fund should facilitate venture capital financing in ICT. This measure compliments the creation of technology parks in ICT. Taken together, these two types of infrastructures are aimed at boosting ICT in Russia.
RU_11	Tax remissions for organizations working in information technologies	The goal is to create more favourable conditions for science-intensive industries working in information technologies and support export of high tech products. The companies should be export-oriented and at the same time they should not be residents of special economic zones. The measure includes a decreased level of tax base for the unified social tax. The unified social tax is calculated as a percentage of the total employee's income and covers medical insurance, social

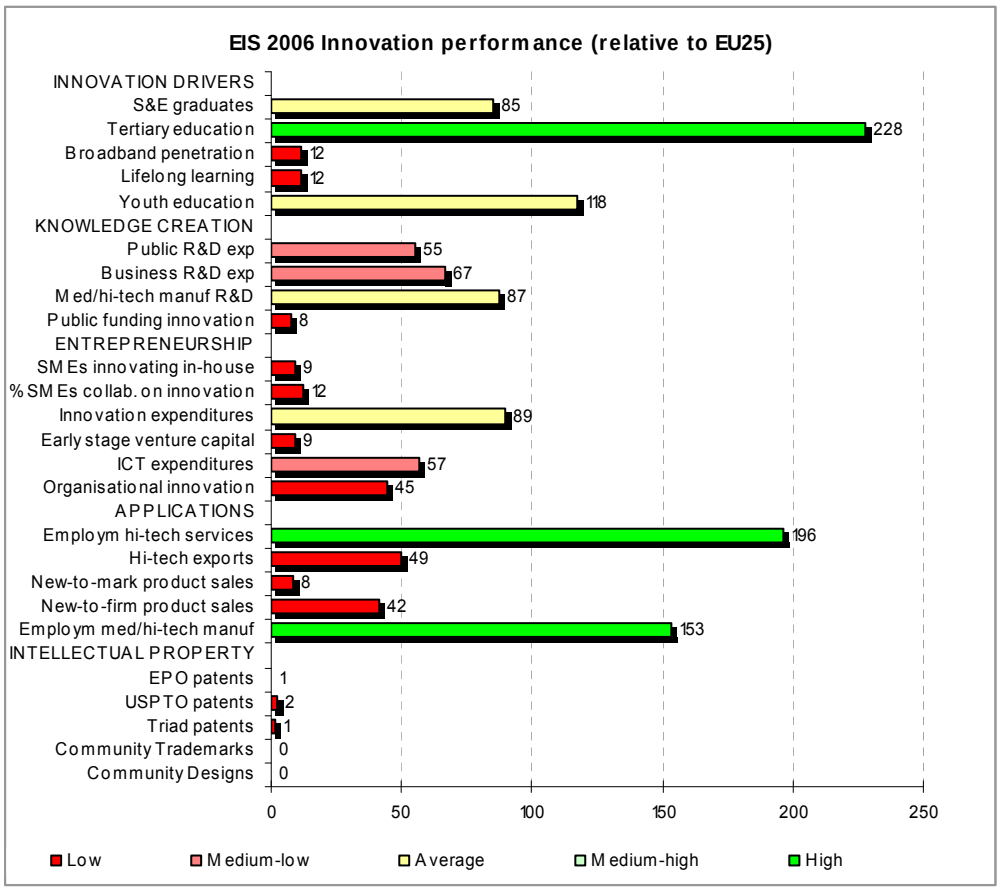
		insurance, and pension insurance.
RU_12	Decree on temporary import tariff for certain sorts of technical equipment	The goal is to create more favourable conditions for high technology industries and to support the import of types of equipment not produced in Russia.
RU_13	Federal Goal-Oriented Program "Ecology and Natural Resources of Russia for 2002-2010 years"	The main goal of the program is the rational and effective utilization of natural resources, environment protection, nature and bio diversity conservation, waste disposal, formation of government monitoring system of natural resources and environment, and R&D and development of economic and legal methods of government regulation of environment protection. The Program states the goals as follows: "to develop environmental and natural resources protection systems on the basis of science and technology; and to create a legal and economic mechanism of government regulations of R&D, reproduction and utilization of natural resources and environmental protection." The Program consist of 12 sub-programs – "Mineral and raw resources", "Forests", "Water resources and objects", "Water bio resources and aqua culture", "Regulation of quality of environment", "Waste", "Support of special safeguarded territories", "Preservation of rare and disappearing forms of flora and fauna", "Safeguarding of Baikal", " Generating of Volga", " Hydro meteorological insurance", "Progressive technologies of cartography and geodesy".
RU_14	Control over the legal protection of the results of civilian R&D created under budgetary expense	The main goal is the implementation of government policy in the area of creation and utilization of R&D results in civilian use, and securing defence of rights of Russian Federation, Russian legal entities and natural persons on R&D results. This measure is designed to reassert control over publicly funded R&D results. The measure applies to organizations of any legal forms who implement government contracts on R&D for federal government needs.
RU_15	Creation of Russian venture company	The main goal of this measure is the creation of a management company (called the Russian Venture Company) for a Fund of Funds that is under creation at the present time. The Fund of Funds will be a source of financing for regional venture capital funds. The Russian Venture Company will hold a competition between the management companies of regional venture capital funds and take shareholdings in the best funds. The Fund of Funds is 100% financed from the federal budget.
RU_16	Creation of technical-promotional special economic zones	The main goal of this measure is development of high tech industries and novel goods. Special economic zones may be of different types, and technical-promotional zones are aimed at the development of certain industries, usually in areas that are defined as priorities at the national level. The boost to high tech development should be assured through special tax and customs regimes in the zones.
RU_17	Creation of technology park in high tech	The main goals of this measure is to stimulate the development of high tech industries, raise investments in such industries, attract FDI, and increase the export of Russian high tech products and services.

Table A5.3: Policy Measure Fiche: Lisbon guidelines n°8

Lisbon guidelines no.8	IPM Fiche Number	Title of measure
1. improvements in innovation support services, in particular for dissemination and technology transfer	RU_16 RU_17 RU_4 RU_12 RU_9	• Creation of technical-promotional special economic zones • Creation of technology park in high tech • Co-financing of R&D at small innovative enterprises • Decree on temporary import tariff for some sorts of technical equipment • Reform of Technical Regulations – Technical Regulation Act, 2002
2. the creation and development of innovation poles, networks and incubators bringing together universities, research institutions and enterprises, including at regional and local level, helping to bridge the technology gap between regions	RU_16 RU_2 RU_17 RU_8	• Creation of technical-promotional special economic zones • Federal Goal-Oriented Program "E-Russia"(2002-2010) • Creation of technology park in high tech • Support of R&D at start-up innovative companies – program START
3. the encouragement of cross-border knowledge transfer, including from foreign direct investment	RU_16 RU_17 RU_15 RU_10 RU_6 RU_3	• Creation of technical-promotional special economic zones • Creation of technology park in high tech • Creation of Russian venture company • Creation of the open joint-stock company "Russian Investment Fund of Information and Communication Technologies" • Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years • Federal Goal-Oriented Program "Development of civil aviation technology in Russia in 2002-2010 and till 2015"
4. encouraging public procurement of innovative products and services	RU_6 RU_7	• Federal Goal-Oriented Program "National Technological Basis" for 2007-2011 years • Federal Goal-Oriented Program "R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012"

	RU_5 RU_2 RU_3 RU_13 RU_1	• Federal Space Program for 2006-2015 years • Federal Goal-Oriented Program “E-Russia”(2002-2010) • Federal Goal-Oriented Program “Development of civil aviation technology in Russia in 2002-2010 and till 2015” • Federal Goal-Oriented Program “Ecology and Natural Resources of Russia for 2002-2010 years • Draft Plan of Measures for Light Industries Development for the period 2006-2008 years
5. better access to domestic and international finance	RU_15 RU_6 RU_7 RU_10 RU_3 RU_1	• Creation of Russian venture company • Federal Goal-Oriented Program “National Technological Basis” for 2007-2011 years • Federal Goal-Oriented Program “R&D in Priority Directions of Development of Science-Technological Complex of Russia in 2007-2012” • Creation of the open joint-stock company “Russian Investment Fund of Information and Communication Technologies” • Federal Goal-Oriented Program “Development of civil aviation technology in Russia in 2002-2010 and till 2015” • Draft Plan of Measures for Light Industries Development for the period 2006-2008 years
6. efficient and affordable means to enforce intellectual property rights	RU_14	• Control over the legal protection of the results of civilian R&D created under budgetary expense

Annex 6: European Innovations Scoreboard: country pages



		1998	1999	2000	2001	2002	2003	2004	2005	2006
1	**INPUT – Innovation drivers**									
1.1	New S&E graduates per 1000 population aged 20-29					10.4	10.9	10.8	11.5	
1.2	Population with tertiary education per 100 population aged 25-64	56.1	60.5	56.1	57.4	55.9	52	51	52	
1.3	Broadband penetration rate (number of broadband lines per 100 population)							0.62	1.24	1.69
1.4	Participation in life-long learning per 100 population aged 25-64	1.4	1.5	1.6	1.9	1.8	1.9	1.2		
1.5	Youth education attainment level (% of population aged 20-24 having completed at least upper secondary education)	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9
2	**INPUT – Knowledge creation**									
2.1	Public R&D expenditures (% of GDP)	0.3	0.3	0.31	0.35	0.38	0.4	0.36	0.34	
2.2	Business R&D expenditures (% of GDP)	0.66	0.7	0.74	0.83	0.87	0.88	0.8	0.73	
2.3	Share of medium-high-tech and high-tech R&D (% of manufacturing R&D expenditures)						77.9	77.1	77.1	
2.4	Share of enterprises receiving public funding for innovation (%)			0.73	0.7	0.67	0.8	0.81	0.93	
3	**INPUT – Innovation & entrepreneurship**									
3.1	SMEs innovating in-house (% of SMEs)			2.12	2.01	2.37	2.6	2.49	2.52	
3.2	Innovative SMEs co-operating with others (% of SMEs)			1.28	1.2	1.41	1.5	1.44	1.65	
3.3	Innovation expenditures (% of turnover)	5.15	3.47	1.75	1.54	1.91	1.79	1.79	1.32	
3.4	Early-stage venture capital (% of GDP)							0.001	0.002	
3.5	ICT expenditures (% of GDP)				3.58	3.79	3.84	3.7	3.63	3.55
3.6	SMEs using non-technological change (% of SMEs)			11.32	11.92	13.68	14.84	16.77	16.91	
4	**OUTPUT – Application**									
4.1	Employment in high-tech services (% of total workforce)							5.63	6.58	
4.2	Exports of high technology products as a share of total exports, %	11.78	14.86	13.53	14.32	13.34	18.86	9.09	8.09	
4.3	Sales of new-to-market products (% of turnover)	1.44	1.15	0.57	0.77	0.53	0.66	0.52	0.49	
4.4	Sales of new-to-firm not new-to-market products (% of turnover)	6.5	5.96	1.66	1.55	1.89	2.25	2.66	1.92	
4.5	Employment in medium-high and high-tech manufacturing (% of total workforce)							10.61	10.19	
5	**OUTPUT – Intellectual property**									
5.1	New EPO patents per million population	1.42	1.48	1.52	1.61	1.25	1.32			
5.2	New USPTO patents per million population	1.63	1.64	1.78	1.72	1.59	1.5	1.18	1.04	
5.3	New Triad patents per million population	0.47	0.42	0.44	0.42	0.4	0.39			
5.4	New community trademarks per million population		0.03	0.03	0.09	0.09	0.08	0.13	0.17	
5.5	New community industrial designs per million population							0.13	0.05	

Annex 7: Regional theme in the 2007 Country Reports: Support to clusters

Not Applicable

Annex 8: Sources of further information

A8.1 Websites of key innovation organisations

Type of organisation	Name of organisation (in English)	Website (where available)
Government and legislative bodies		
	Presidential Council on Science and High Technologies	http://www.kremlin.ru/state_subj/group39628.shtml
	Federal Assembly' s Committees on Science, education, health and ecology; on Industrial Policy	http://www.council.gov.ru/committee/item1630078.html
	State Duma's Committee on Education and Science	http://www.duma.gov.ru/obr_nauka/index.php
	State Duma's Committee on Industry, civil engineering and high technologies	http://www.psnt.ru
	State Duma's Committee on Energy transport and communication	http://www.duma.gov.ru/energy
	State Duma's Committee on Information policies	http://www.duma.gov.ru/infocom
	Ministry of Education and Science	http://www.mon.gov.ru
	Federal Agency for Science and Innovation	http://fasi.gov.ru
	Ministry of information technologies and communication	http://www.minsvyaz.ru
	Ministry of Economic development and trade	http://www.economy.gov.ru
	Russian space agency	http://www.roscosmos.ru
Private sector organisations and entrepreneurship promotion		
	Russian Union of Industrialists and Entrepreneurs (RSPP)	http://www.rspp.ru
	All-Russian public organization of small and medium business "OPORA RUSSIA"	http://www.opora.ru
Knowledge institutes (R&D and education bodies)		
	Russian Academy of Sciences	http://www.ras.ru
	Moscow State University	http://www.msu.ru
	St.Petersburg State University	http://www.spbu.ru
	Tomsk Polytechnical University	http://www.tpu.ru
Industrial research centres and innovation intermediaries		
	State Science Centres Association	http://www.agnc.ru/ass.php
Financial system		
	Russian Foundation for Basic Research	http://www.rfbr.ru
	Russian Foundation for Humanities	http://rfh.ru
	Fund for Assitance to Small Innovative Enterprises	
	Russian Venture Company	http://www.rusventure.ru

A8.2 Bibliography and sources of further information

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