OECD SCIENCE, TECHNOLOGY AND INDUSTRY OUTLOOK 2006

COUNTRY RESPONSE TO POLICY QUESTIONNAIRE

RUSSIAN FEDERATION

A: General framework and trends in science, technology, and innovation policy

Brief overview of the main directions, objectives and elements of national policies for science, technology, and innovation.

Main features of recent science, technology, and innovation policy developments. The government of the Russian Federation passed "Basic Principles of the Russian Federation Policy in the Field of Development of the Innovation System for the Period up to 2010" in August 2005, and the Federal law of the Russian Federation "On Special Economic Zones in the Russian Federation" was enacted in July 2005. The Strategy of Development of the Russian Federation in the Field of Science and Innovation Development until 2010 was worked out and approved at the government meeting on December 15, 2005. It is due to be adopted by the Government in March 2006.

As follows from the documents accepted and also from the fundamental document titled "Basic Principles of the Russian Federation Policy in the Field of Development of Science and Technologies for the Period up to 2010 and Further Perspective", affirmed by the President of the Russian Federation in 2002, the strategic target of Russia's science, technology and innovation policy is to step up and streamline scientific and innovation activities in the country by means of creating a modern national innovation system (NIS), which would provide cooperation between science, industry and society. The basic tasks of the state are the following:

- To maintain and develop the research environment, ensure extended reproduction of knowledge, make sure that Russia plays a prominent role in global science, encourage and provide for cooperation between the scientific and business communities;
- To create a competitive business environment whose participants would have a strategic thinking and the ability to acquire and use new knowledge, to provide technological modernization of the economy;
- To participate in the creation of systems (including the necessary feedback) enabling knowledge to be transferred, distributed and transformed into pre-competitive technologies for the business community and also orienting researchers towards meeting manufacturers' need for innovation.

Major changes in the legislative, administrative, organisational, institutional, or budgetary framework for the formulation and implementation of science, technology, and innovation policies. The year 2004 saw a number of changes in the administrative structure of the government. Thus the Ministry of Education and Science of the Russian Federation was established in March 2004 to focus on issues pertaining to education, science, technology and innovation policies. Before that, those issues were the responsibility of the former Ministry of Industry, Science and Technologies and Ministry of Education.

1. The functions of the Ministry of Education and Science (MES) are the following:

- To develop and introduce to the Government of the Russian Federation drafts of Federal constitutional laws, federal laws and decrees of the President of the Russian Federation and the Government of the Russian Federation on issues within the Ministry's responsibility as well as ensure legal regulation.
- To coordinate and supervise the activities of the federal services and agencies within the jurisdiction of the Ministry.

The MES is not authorized to carry out control checks or inspection or to manage state property with the exception of cases stipulated in the decrees of the President of the Russian Federation or resolutions of the Government of the Russian Federation.

Within the jurisdiction of the Ministry of Education and Science are two agencies: the Federal Agency for Science and Innovation and the Federal Agency for Education, and two services: the Federal Service for Intellectual Property, Patents and Trade Marks and the Federal Service for Supervision of Education and Science.

The Federal Agency for Science and Innovation and the Federal Agency for Education are federal executive bodies. The former implements state policies; renders state services and manages state property related to scientific, scientific and technical and innovation activities. The latter renders state services, manages state property and has law enforcement duties in the field of education, upbringing and youth policies.

The Federal Service for Intellectual Property, Patents and Trade Marks and the Federal Service for Supervision of Education and Science are federal executive bodies as well. The former performs the functions of examination, registration, control and supervision of legal protection and use of intellectual property including patents and trademarks. The latter provides control and supervision in the field of education and science.

The Federal Agency for the Management of Special Economic Zones was established in July 2005 and affiliated with the Ministry of Economic Development and Trade of the Russian Federation. The main functions of the Agency consist in rendering state services and law enforcement activities related to the management of special economic zones and also include supervision of the implementation of agreements on industrial production or technical innovation activities.

The agency performs its functions both directly and through its local bodies and subordinate organisations in cooperation with other federal executive bodies, executive bodies of the constituent entities of the Russian Federation, local authorities, public associations and other organisations.

The Government of the Russian Federation passed *"Concept of reforming of budgetary process in the Russian Federation in 2004-2006"*. It aims at increasing effectiveness of budgetary outlays and optimizing management by budgetary funds at all levels of the budgetary system of the Russian Federation. According this concept it was made the division of federal budgetary appropriations for science on the basic research and applied research expenditures. The items of the applied research appropriations were included in the proper sections of functional budgetary classification. Besides it was normalized the system of R&D funding of federal goal-oriented programs within the framework of the budgetary classification for science.

Major shifts or changes in the priority given to different areas of science, technology, and innovation policy or the policy instruments

In accordance with current federal policies, all organisations, which do not directly perform public functions of the Russian Federation, are gradually losing their state-level status. This approach calls for the following institutional changes:

- Optimising the network of state scientific establishments by converting some of them into organisations with a different legal status.
- Reforming the public sector itself, which includes a gradual withdrawal from use in the R&D public sector of the legal organisational form based on the right to economic jurisdiction.

An approach to the restructuring and reform of academies of sciences has been determined. In October 2005, the Interdepartmental Commission for Science and Innovation Policies approved the Programme of Modernisation of the Structure, Functions and Funding Mechanisms of the Russian Academy of Sciences, Russian Academy of Medical Sciences, Russian Academy of Agricultural Sciences, Russian Academy of Architecture and Construction Sciences and Russian Academy of Fine Arts.

The basic principles of supporting the leading scientific schools on a competitive basis have been determined. A competition was held last year whose outcome is expected to help draw up a list of teams which will carry the status of leading scientific schools of the Russian Federation for the period of 2006-2007.

The Federal Goal-oriented Programme R&D in Priority Areas of S&T Development for 2002-2006 (FGRDP) contains the basic guidelines for implementing science, technology and innovation policies. It was revised substantially in 2004. The ideas underlying the modified Programme are close to those reflected in other documents drawn up by the Ministry of Education and Science of the Russian Federation in 2004-2005. The Programme shows a greater tendency towards putting the results of research and developments obtained within its framework to commercial use. While the previous Programme comprised two parts – Goal-Oriented Fundamental Research and Pilot and Applied Research and Development, – the current version of the Programme comprises the following three parts:

- Generation of Knowledge.
- Technology Development.
- Technology Commercialisation**.**

In 2005, the Programme provided for projects which used to be financed by the federal Goal-oriented programme titled Integration of Science and Higher Education in Russia for the Period of 2002-2006, as well as the following lines of projects, which had been given no funding from the federal budget according to the previous version of the Programme:

- Scientific accompaniment to key innovation projects of national importance.
- Technological development of civil industries.
- Development of human resources for the scientific and technical field.
- Development of the scientific innovation structure and inclusion of intellectual property in economic activities.
- Applied economic research.
- Improvement of research equipment at scientific and higher education organizations.
- Maintenance of unique stands and facilities at scientific organisations.

- State support of shared-use centres providing access to research equipment.
- Support of research carried out by young scientists, postgraduate and undergraduate students.

The Programme provided assistance to 1574 projects mainly selected by means of competitions held within the framework of the Programme. Support was given to 250 scientific schools, 37 shared-use centres, over 250 young scientists' research projects and over 500 training courses.

Pursuing the policy of creating and developing innovation clusters, regulations were passed in November 2004 stipulating the procedure of conferring the status of a "science town" on a municipal unit and discontinuation thereof as well as the procedure of providing subventions from the federal budget for covering additional expenses of science towns of the Russian Federation.

Appropriate amendments to the Russian legislation on rights to intellectual property created with the help of the state have been worked out in order to intensify the process of inclusion of intellectual property created for the state funding in economic activities. In July 2004, the Ministry of Education and Science developed Guidelines for Heads of Enterprises and Organisations on Legal Protection and Use of the Results of Intellectual Activities Sponsored by the Federal Budget in order to raise the level of appropriate legal awareness among economic agents.

The Government of the Russian Federation in November, 2005 passed the order "On ownership on scientific and technological results received for budgetary funding". It determined the ownership of state executor of R&D on the results received for budgetary funding excluding the results concerning national defense and safety, which belong to the state customer. The state customers have the right to use such results for state needs on the basis of royalty free non-exclusive license. The results, received by the state scientific and educational organizations for basic budgetary funding, belong to these organizations and they are declared the legal owners on such results..

The primary challenges that are expected to be addressed in future innovation policy initiatives.

The primary challenges are:

- Insufficient scope of basic knowledge generation, unfavourable age structure of researchers.
- Low business and innovation activity of Russian enterprises.
- Insufficient level of cooperation between the scientific and business communities.

The amount of Russian publications per 1 million people tracked by the US Institute for Scientific Information is only 23% of the average OECD level. The amount of top-class researchers (researchers with an academic degree per 10,000 working people) at the most productive age (up to 34 years old) is only 40% of the average OECD level. The total amount of R&D investment is low as well – just 55% of the average OECD level. As far as the money spent by the government R&D sector, non-profit sector and higher education sector is concerned, the level of their investment (in terms of its share of the country's GDP) is only 60% of the average OECD level.

The insufficient innovation activity is a serious challenge to promotion of stronger relationships between science and innovation systems.

The share of agreements authorising the use of inventions – licence agreements or cession of patent rights – amounts to only 5 to 6% of the total amount of patents registered annually. The level of business financing of the academic sector of R&D (the term "academic sector" encompassing both the traditional

system of the Russian academies of sciences and the higher education sector) is not sufficient. At the same time, financing provided by the business community for the public (in terms of ownership) research and development sector is very significant (expressed as a share of the GDP). This indicator is much higher in Russia than in any of the OECD countries. This can be explained by the fact that Russia's research and development organisations in different fields largely remain state-owned, i.e. operate in an entirely external environment as opposed to businesses. This phenomenon signals the necessity to launch and promote re-structuring of R&D facilities, primarily of those with established patterns of cooperation with business circles. It is also essential to create a thought-out permanent mechanism based on continuous monitoring and designed to encourage, establish and assess the effectiveness of cooperation between public R&D institutes and business.

B: Public sector research and public research organisations

Major policy changes related to the financing of public R&D

Changes in the total level of financing of public organisations over the past few years. *The "Strategy of the Russian Federation in the Field of Development of Science and Innovation for the Period up to 2010" calls for an increase of internal spending on research and development from 1.35% in 2004 (vs. 1.28 in 2003) to 2% of the GDP in 2010.*

More details about the share of the country's GDP spent on R&D on the whole and for the public R&D sector in particular can be found in Table 1.

Table 1

Research and development funding in terms of GDP share

	2003	2004	2005 (estimated)	2006 (forecast)	2007 (forecast)
R&D funding on the whole	1.28	1.35	1.44	1.49	1.54
Public sector funding	0.93	0.99	1.05	1.08	1.08

Financing of social and economic projects (including general development of science, health care, national defence and security, environmental protection, production and expedient use of electricity). Activities of Russia's public (in terms of ownership) R&D sector are clearly targeted at solving practical problems. This can be proved by the fact that out of the total internal R&D spending in 2004 32% was allocated for the country's economic development. The shares of the government sector's spending on health care, environmental protection and general development of science equal 5.4%, 1.7% and 54% respectively (for the whole of the public sector these figures would be 1.7%, 0.7% and 27.9% respectively).

Shifts in different fields of science and technology. Judging by Russian researchers' publications, physics- and chemistry-related areas of knowledge continue to give a "technological push" of science. At the same time, publication activity in the field of medical and biological sciences is significantly lower. However, if we gauge the "market push" by the structure of patent deals and licence agreements and the structure of applications for the Start programme carried out by the Foundation for Assistance to Small Innovative Enterprises, we will discover that demand for research results in the field of medical and biological sciences is second only to demand for R&D in physics. According to the Start programme and the Russian Private Equity and Venture Capital Association, there is a growing need for commercialising R&D results in the fields of information technology and communications as well.

The financing structure of R&D areas given priority by the FGRDP was the following in 2005:

- Ecosystems – 30.5%,
- Industry of nanosystems and materials –20.5%,
- Energy production and saving – 18.3%,
- Information and telecommunications systems – 13.3%,
- Security and prevention of terrorism – 8.9%,
- Rational nature management – 8.5%.
- The total volume of financing was about $441 million[1].

Major shifts or changes in priority among the approaches for strengthening public sector research

The main negative factors which must be overcome for a successful development of research and development are:

[1] Here and further the symbol $ means current PPP$

- Insufficient financing of R&D.
- Declining number of researchers at the most productive age.
- Insufficient coordination between research projects.
- Low level of inventive activity.

The major priority changes in the policy were intended to remove these factors.

Increase levels of funding. Plans call for an increase of the share of funds allocated for fundamental research in the total amount of federal spending on civil science from 41% in 2005 to 58% in 2008. Tasks scheduled for completion by 2008 are:

- To raise the minimum budget allocations for researches employed in the academic sector by 300% (in 2004 prices). At the same time, the total amount of lay-offs in the academic sector is not expected to exceed 10% of the 2005 level.
- To optimise the ratio of basic, special-purpose and competitive financing and improve the competitive procedure for appointments.

The rightsizing of academic staff based on streamlining the structure and composition of scientific organisations and re-certification of their employees should enable scientific organisations to create additional jobs funded largely without budget assistance.

These steps are expected to improve the quality and age structure of researchers, in particular by increasing the share of young specialists.

In 2005, 250 leading scientific schools received support under the FGRDP. Agreements were signed with them stipulating the conditions under which financial support was provided, including obligations assumed by the staff of the scientific school to carry out scientific research according to the submitted plan.

Reform the governance of public research organisations. Reform of the public sector of science has been launched. It pursues the following goals:

- To eliminate bias in choosing the most promising directions of fundamental research which should be given top priority by working out a methodology for prioritising and a system of unbiased evaluation by experts.
- To overcome the lack of coordination between fundamental research projects and to take the necessary steps for a possible future alliance within the Russian Academy of Sciences of public scientific organisations doing fundamental research irrespective of their affiliation.
- To improve the system of management in the academic sector of science by combining state control with self-government in the scientific community.

Emergence of new research structures. *Shared-use centres (SUC)*. Three of these centres were opened in 2004. Known since the mid-1990s, SUCs are mostly structural components of scientific or academic organisations. Yet there are some independent specialised facilities, such as the Special Astrophysical Laboratory of the Russian Academy of Sciences. The number of SUCs in high-priority fields is as follows:

- Information and telecommunications systems - 11
- Industry of nanosystems and materials– 28

- Ecosystems – 10
- Energy production and saving – 4
- Rational nature management – 9
- Security and prevention of terrorism – 2.

Changing guidelines for ownership and management of IPR. The current legislation of the Russian Federation states that rights of patentable results of contractual work are stipulated by the contract. Issues related to new intellectual property may be settled in:

- An R&D contract.
- An additional agreement to an R&D contract.
- An additional agreement to be concluded by the contracting parties at a specified time after the termination of an R&D contract.
- Ownership to R&D results may belong to:
  - The state represented by the state customer;
  - The contractor;
  - Both the customer and the contractor.

The Government of the Russian Federation in November, 2005 passed the order "On ownership on scientific and technological results received for budgetary funding". It determined the ownership of state executor of R&D on the results received for budgetary funding excluding the results concerning national defense and safety, which belong to the state customer. The state customers have the right to use such results for state needs on the basis of royalty free non-exclusive license. The results, received by the state scientific and educational organizations for basic budgetary funding, belong to these organizations and they are declared the legal owners on such results.

The MES is developing now amendments to the legislation setting forth special provisions regulating the relations between the state, the contractor and the business community for the so-called subject inventions. According to this project, the right to subject inventions must be given to the contractor. To this end, a general provision may be added to the Federal law *"On Science and State Scientific and Technical Policy"*. Besides, plans call for appropriate amendments to a number of current laws in order to establish the rights and obligations of state customers and right holders for results obtained with the help of the federal budget.

Implementing new evaluation procedures. In 2005, the Federal Goal-oriented Programme R&D in Priority Areas of S&T Development for 2002-2006 launched a network of national information and analytical centres (NIAC) to monitor priority areas of science and technology in the following fields:

- Ecosystems.
- Nanosystems and materials.
- Information and telecommunications systems.
- Energy production and saving.
- Ecology and rational nature management.
- Life safety.

A NIAC system is emerging to monitor:

- Innovation infrastructure of scientific and technical activities and regional innovation systems;
- Training of staff for science and innovation activities and distribution of human resources;
- International and domestic potential for the development of scientific research facilities including shared-use centres and unique stands.

A system of monitoring and evaluation of the effectiveness of public scientific organisations is developing.

Plans call for a procedure of rating the effectiveness of specialised academic institutes. Institutes invariably displaying a high level of effectiveness in their field of specialisation must receive additional funding. At least 15 to 20% of the total volume of financing of academic institutes is expected to be used for these purposes annually. A similar system is being successfully employed in the Siberian branch of the Russian Academy of Sciences.

C: Government support for private-sector R&D and innovation

Policy changes in programmes to support R&D and innovation in SMEs and new technology-based firms.

Establish and develop venture capital funds and/or second-stage financing for the support of new technology-based firms or spin-offs from public research organizations. Russia had 64 specialised funds and 27 managing companies in early 2005, according to the Russian Private Equity and Venture Capital Association (RPEVCA). The aggregate volume of their funds reached $4.1 billion. Seventy-one companies obtained financing for their projects between 2003 and 2004, the average amount of investment was $6.3 million. Foreign investors account for 89% of all venture investments. The areas which drew most of venture investment in 2004 are computer technology (27%), consumer market (26%), telecommunications (11%), financial services (11%), agriculture (5%) and biotechnology (5%). The total amount of investment in 2004 was $221 million, or up 5.8% on the 2003 figure.

The Foundation for Assistance to Small Innovative Enterprises launched the Start programme in 2004. It provides a two-stage support procedure for its recipients At the first stage (which can last up to one year), a prototype of the product is developed, tested and patented, the enterprise is registered (if it did not exist before) and a business plan for the subsequent two years is drawn up.

The second stage (which lasts two years) witnesses the company start-up. It must employ 5 to 20 people and have at least $54,000 per employee at the end of the two-year period. Financing of projects (about $54,000 during the first stage and up to $163,000 during the second stage) comes in the form of government contracts and is gratuitous and non-repayable. The contractors agree to independent monitoring. The contractor must fulfil its obligation to find an external investor before it can be promoted to the second financing stage.

The Russian Academy of Sciences (RAS) contributes greatly to the development of small innovative enterprises within the framework of the Start programme carried out by the Foundation for Assistance to Small Innovative Enterprises. It helped the RAS create about 100 small innovative companies.

New venture funds are expected to emerge in the Tyumen Region and the Krasnoyarsk Territory. Programmes for the creation of regional venture funds were developed by the Ministry of Economic Development and Trade of the Russian Federation and the Ministry of Information Technologies and

Communications of the Russian Federation. The Ministry of Economic Development and Trade is working on projects to set up six venture funds with the volume of financing at $10 to $50 million. Financing of the funds is expected to be provided by the federal government (25%), regional authorities (25%) and private sector (50%). The Ministry of Information Technologies and Communications has submitted a project for a venture fund focusing on the ICT industry. The amount of financing required is $100 million, 75% of which will be provided by the federal budget and 25% by private investors.

The FGRGP calls for the development of a legal basis and guidelines for the establishment of a venture fund system, a system of funds financing the initial stage of venture and a system of electronic stock exchanges for high-performance technologies. Work on venture funds using the federal and regional budgets started in 2005. The Siberian Federal District will get a venture fund to invest in projects at an early stage of their development. The Investment and Venture Fund of the Republic of Tatarstan will be operational in 2006.

Technology Transfer Centres (TTC) are expected to play an essential role in organising and supporting spin-offs. These are relatively inexpensive elements of infrastructure founded by the RAS institutes, universities, major scientific centres, research organisations and enterprises both as structural components of these organisations or as independent entities. The number of TTCs has been rising considerably. While there were only six Centres established in 2003, there are about 70 of them now.

In 2004-2005, the MES initiated and supported the opening of Technology Transfer Centres in the Institute of Energy Problems of Chemical Physics, RAS, in Chernogolovka, the Institute of Bioorganic Chemistry, RAS, in Pushchino, and the Institute of Metallurgy of the Urals Branch of the RAS. The year 2005 saw the emergence of the first two dual-purpose Technology Transfer Centres.

Twelve science parks were established in 2004-2005, two of them in the regions, and another three, for the first time in Russian history, were set up by institutes or enterprises (two by institutes and one by enterprise). The Ministry of Information Technologies and Communications launched a programme promoting the establishment of ICT parks by existing scientific centres. The Ministry of Economic Development and Trade has worked out a programme to establish regional business incubators.

The Association of Innovation Structures of the RAS was set up in 2005 to coordinate innovation policies. The Association's tasks include exchange of experience, cultivation of uniform guidelines, creation of an academic innovation environment, promotion of the positive image of the RAS's innovation activities, provision of innovation structures with information and promotion of teaching courses on innovation.

Encourage entrepreneurship through training, information services, or other means. Faced with the challenge to provide consulting assistance and teaching materials to venture entrepreneurship and to help it with training, the Russian Private Equity and Venture Capital Association is developing a specialized system of coaching centres for venture businesses including the Basic Coaching Centre of the RPEVCA, district-level coaching centres and agents' networks operating in different regions.

District-level coaching centres were set up in the Central, Southern, Volga, Urals and Siberian Federal Districts in 2005. They are established as subsidiaries of the current elements of the innovation infrastructure. The 2006 agenda calls for the development of a network of coaching centres in the Moscow, Tambov, Tula, Voronezh, Tver, Yaroslavl, Nizhny Novgorod, Novosibirsk, Irkutsk and Tomsk Regions and the Krasnoyarsk Territory.

In 2005, work began on a model of an international training, scientific and consulting centre for innovation entrepreneurship. A centre of this kind is expected to be opened by the Department of Economics of Lomonosov Moscow State University in 2006.

It is imperative at this stage that available sources of information should be combined into a complex system of information provision for innovation activities, which would ensure delivery of information on new developments to consumers, give advice on their applications and provide information on good markets for technology-intensive products.

The FGRDP has created an experimental centre providing assistance to elements of the innovation infrastructure on the transfer of intellectual activity results.

Major shifts or changes in the mix of instruments used to provide public support for private-sector R&D and innovation

Support to entrepreneurship and SME. The law "On Protection of Competition" passed by the Federal Assembly of the Russian Federation in late 2005 can play an important role in activating competition and inciting innovation activity at big enterprises. Russian legislation on competition moved a great deal towards EU standards in regulating the use of market power by Russian companies, mergers and acquisitions.

An analysis of the last years' trends shows that innovation activities cannot grow in number and general effectiveness unless these positive tendencies are supported by large enterprises. Yet judging by changes of their innovation activity indicators, we can say that large enterprises are reluctant to innovate. Immature competition processes and inefficient policies of the owners of large enterprises are serious impediments in the way of innovation processes in this country.

It is small and medium-sized enterprises that currently lead the way in innovative entrepreneurial activities. Enterprises of this size are characterised by the largest proportions of innovative products in their sales, higher production efficiency and greater R&D-intensiveness of the products. Yet the number of enterprises in these size classes is still insufficient.

D: Enhancing collaboration and networking among innovating organisations

Major initiatives to promote collaboration and networking among private firms, e.g. via regional innovative clusters, international co-operation.

In November 2005, the Ministry of Economic Development and Trade of the Russian Federation (MEDT) invited bids for the establishment of special economic zones (SEZ). A total of 73 bids were submitted by 41 constituent units of the federation. The applications were appraised by committees of experts before being considered by two government commissions which included representatives of both chambers of parliament, all the departments concerned and the Russian Academy of Sciences.

The costs of negotiating administrative hurdles should be reduced by 5 to 7% for residents of industrial production zones and by 3 to 5% for residents of technical and innovative zones, the MEDT estimates. Besides, the zones' budget-funded infrastructure will help bring down expenses by 8 to 12% and cut production costs by 5 to 7% for residents of both SEZ types.

The winners of the competition for the right to create technical and innovative SEZs are the following four regions:

- St. Petersburg – analytical instrument-making industry, information technology.

- Moscow (Zelenograd) – micro- and nanoelectronics.
- Dubna (Moscow Region) – technology and nuclear- physical technologies.
- Tomsk (Tomsk Region) – industrial and electronics and biotechnology.

Industrial production SEZs will emerge in:

- Yelabuga (Republic of Tatarstan) – production of buses, car parts and technology-intensive petrochemical industry products,
- Lipetsk (Lipetsk Region) –household appliances.

The Russian Foundation for Technological Development and the Foundation for Assistance to Small Innovative Enterprises are supporting the establishment of two technological clusters – Optoelectronics (in St. Petersburg) and Electronics and Microelectronics (in Zelenograd).

A procedure of conferring the status of a "science town" on a municipal unit and discontinuation thereof has been developed. Under this regulation, the Ministry of Education and Science has the following functions:

- To assess the scientific and technical (innovation) potential of the municipal unit's research and production facilities and their ability to fulfil the declared task of developing the municipal unit into a science town of the Russian Federation;
- To monitor achievements of Russia's science towns' research and production facilities.

A procedure has been determined under which municipal units with the status of science towns of the Russian Federation can obtain subventions to finance their social, engineering and innovation infrastructures.

At the end of 2005, 10 municipal units had the status of science towns, three of which obtained the status in 2005: Peterhof (Leningrad Region), Pushchino (Moscow Region) and Biysk (Altai Territory).

An example of successful cooperation between private firms is the Russian Technology Transfer Network (RTTN). It was founded on the initiative of the Regional Innovative and Technological Centre (RITC) of the science town of Obninsk and the Innovation Centre of the science town of Koltsovo (ICK) within the framework of the project TACIS FINRUS 9804 "Innovation Centres and Science Towns of the Russian Federation".

The RTTN's architecture was adapted from the patterns used by the European IRC network, which enables easy sharing of technological information with European innovation relay centres. The network currently encompasses over 30 Russian innovation centres specialising in technology transfer. In 2004, RTTN members supported 800 clients, formed 468 technology offers/requests, held about 270 preliminary negotiations and concluded 11 technology transfer agreements.

The RTTN was represented at the IRC Annual Meeting titled *"From Regional Innovation to International Competitiveness"* held in Brussels on June 27-29, 2005. The RTTN's presentation signifies its successful partnership with European colleagues in the fields of aircraft building, aerospace technologies and new materials.

F: Human resources

Recent efforts to improve supplies of university graduates with science and engineering degrees (both quantity and quality).

The country's institutional form for training professionals of the highest rank are the postgraduate school and institution of doctoral candidacy hosted by higher education establishments, leading scientific organisations and developing, manufacturing organisations, clinic, medico-prophylactic, pharmaceutical, cultural and educational organisations and enterprises doing scientific research.

There are postgraduate and doctoral studies at 621 higher education establishments and 831 scientific organisations. They are currently training over 142,700 postgraduate students and about 4,500 doctoral candidates.

The past few years have witnessed a number of negative trends in this sphere, such as the rising percentage of postgraduate students who drop out without submitting a thesis (up to 30% of all students).

Considerable shares (from 5 to 25% depending on the specialisation) of trained specialists with degrees go to work abroad or choose a different area of activity (management, business, etc.). The professional status of a university degree is changing, as it is gradually losing its role of a narrowly specialised ranking criterion for professional researchers.

These tendencies show that the current system of postgraduate and doctoral studies and thesis defence committees must be optimised to concentrate education of researchers at the country's leading higher education establishments and scientific organisations.

A considerable part of budget funds allocated for the training of researchers must be distributed among leading research universities, scientific organisations and integrated education and research facilities based on the results of monitoring their scientific potential and education quality. Stricter certification procedures putting more emphasis on universities' participation in scientific research must be introduced for educational establishments providing postgraduate courses in order to tighten up control over the quality of postgraduate training of researchers and teachers.

Plans call for the promotion of the educational component in the academic sector of science, introduction of optimal integration schemes with Russia's leading universities and corresponding amendments to Russian legislation. Among other things, the RAS proposes:

- To turn state higher education establishments characterised by traditional links with the academic sector of science and educating high-quality researchers into academic universities;
- To assign a number of scientific organisations within the academies of sciences to the country's leading universities ;
- To establish a system of master's studies.