Annual Report 2009

STATE ATOMIC ENERGY CORPORATION ROSATOM

ROSATOM

ROSATOM

We would like to extend our sincere appreciation to the members of the Public Council of the State Atomic Energy Corporation ROSATOM and other representatives of Stakeholders for their participation in dialogues and public consultations contributed to this Annual Report.

Annual Report 2009

STATE ATOMIC ENERGY CORPORATION ROSATOM

ROSATOM

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About The Annual Report

This Annual Report has been produced in line with the Public Reporting Policy of the State Atomic Energy Corporation ROSATOM. The Policy takes account of the Russian and international reporting requirements, i.e. the G3 Guidelines of the GRI Sustainability Reporting Framework (Global Reporting Initiative), the AA1000 standards of the Institute of Social and Ethical Accountability and the RSPP Recommendations (RSPP Recommendations for the use in management and corporate non-financial reporting practices). The Policy establishes a yearly reporting cycle. This Annual Report is the first public annual report of the Corporation and lays the foundation of regular reporting in future.

The Annual Report is an integrated document which reflects main financial, economic and production results of the Corporation activities in 2009 and describes its economic, social and ecological effects on the environment. In addition, the Annual Report provides an outline of managerial approaches which allow achieving success and higher effectiveness as set in the strategic goals of the Corporation.

The reporting period is 2009, though there is some information on preceding years, since this Annual Report is the first report of the Corporation. Besides, the Annual Report contains mid- and long-term plans and intentions. These are projections, i.e. their feasibility depends, among other things, on economic, political and legal factors beyond the Corporation control (global financial, economic and political situation, market trends, changes in the taxation, customs and environmental legislation etc.). Therefore, actual data may differ from announced projections of 2009.

The Annual Report focuses on the corporate strategy, operating efficiency, innovative activities, nuclear, radiation and environmental safety. To improve transparency and openness, the Annual Report generation process included dialogues with the stakeholders regarding disclosure of information on a number of activities of public significance and discussion of the draft report with representatives of the interested parties (Section 5 “Stakeholders Engagement in Drafting the Report”). The Annual Report accounts for interests of major stakeholders who are potential users of the Annual Report, i.e. federal and regional authorities, regulatory and supervisory bodies, local administrations, business partners, personnel, local communities and non-governmental organizations, including environmentalists.

The Annual Report scope extends to activities of the Corporation and its organizations in the Russian Federation and other countries. Information on current activities of the nuclear weapons complex is not disclosed due to features of activity of the Corporation and national security interests. The Annual Report employs two consolidation perimeters. Key performance indicators are within the perimeter of the consolidated financial reporting of the Corporation which covers all organizations of the State Atomic Energy Corporation ROSATOM. Indicators recommended by the GRI management are given within the consolidation perimeter used for open financial reporting, while some of them, specifically, those in the “HR Management”, were calculated basing on the budget perimeter of the Corporation adopted for 2010. Appendix 7 lists organizations within the said perimeters.

While drafting “Nuclear and Radiation Safety” and “Environmental Safety” sections, consideration was given to the fact that the Corporation issues “Safety Reports” and its enterprises have published environmental reports on a large scale since 2009. These reports provide much specialized information and features of operations in the host regions (as regards nuclear and radiation safety and environmental impacts). This Annual Report contains references to the said information.

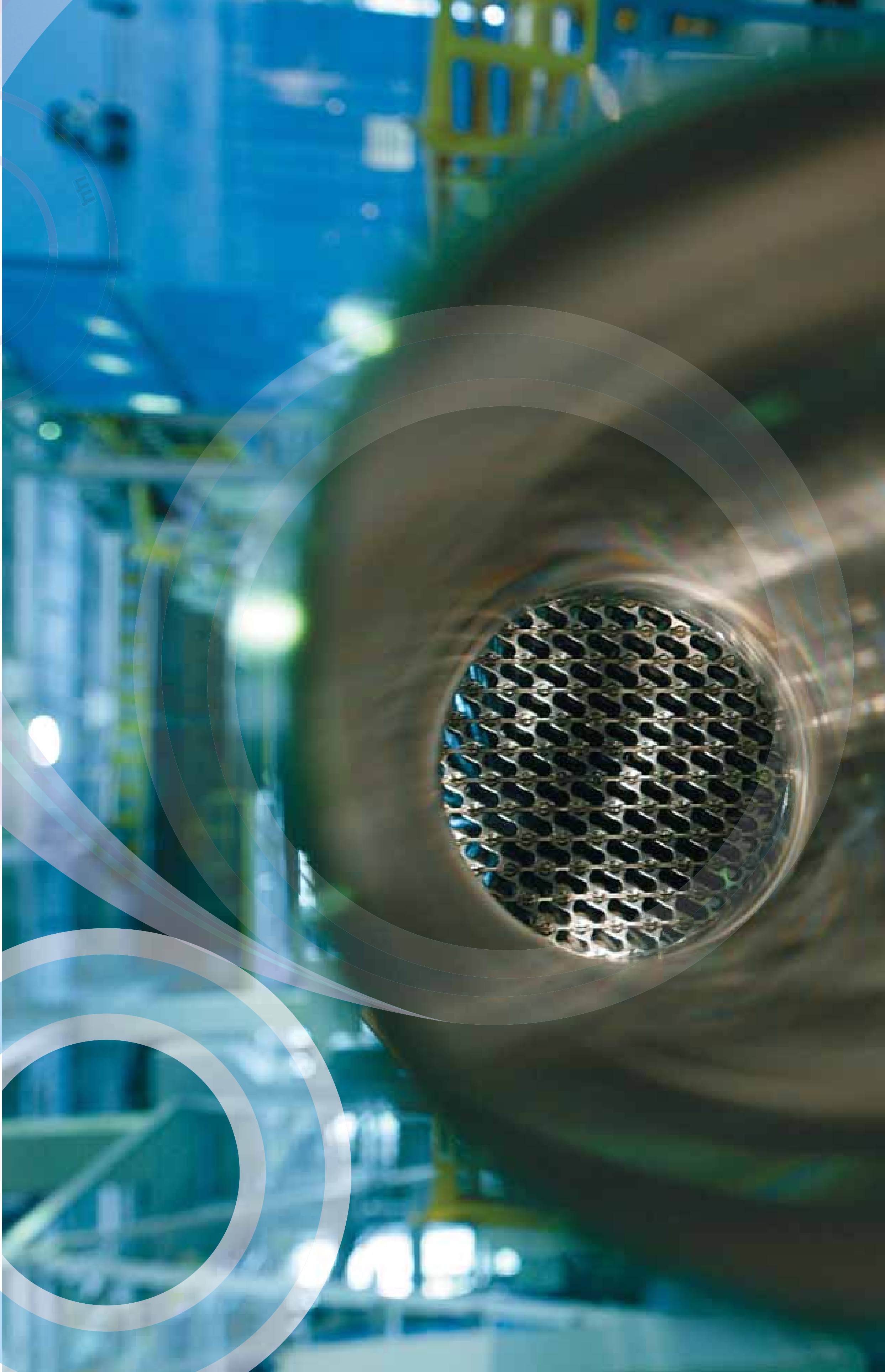
The Table of GRI (G3) standard disclosures and performance indicators is given in Appendix 3. The internationally adopted public reporting indicators do not allow comprehensively reflecting features of the State Atomic Energy Corporation ROSATOM operations. Therefore, the Corporation is faced by the task of developing a system of indicators for the nuclear sector companies. A list of indicators used in this Annual Report is given in Appendix 8.

The Annual Report passed an external audit (as regards non-financial information) by ZAO PricewaterhouseCoopers Audit as per AA1000AS and ISAE 3000 standards and passed the public assurance procedure as per AA1000SES standard. The report drafting was supported by consultancy rendered by LLC DaS-Project.

The Corporation considers this Annual Report being the C+ level of the GRI Guidelines.

Annual Report information

		C	C+	B	B+	A	A+
Mandatory	Self-declared		√		Report externally assured		Report externally assured
Optional	Third party checked		√				
	GRI checked						



Main events of 2009

february

The Industrial Agreement on nuclear power, industry and science for 2009–2011 to establish uniform labor and socioeconomic conditions for nuclear workers was signed.

april

The Russian Federation Government issues a resolution to establish the National Research Nuclear University at the MEPHI.

may

The intergovernmental agreement between the Russian Federation and Japan concerning cooperation in the peaceful uses of atomic energy was signed.

Contracts for rendering uranium enrichment services beyond 2014 were signed with the US and Japanese utilities.

The State Atomic Energy Corporation ROSATOM involved in the work of the Presidential Commission on Modernization and Technological Development of the Russian Economy in all five areas: nuclear technologies, space and telecommunications, strategic computer technologies and software, energy efficiency, medical equipment and pharmaceuticals.

july

The Government of the Russian Federation approves the Concept of the Federal Target Program “Nuclear Power Technologies of the New Generation for 2010–2015 and until 2020.”

The Uniform Industry Procurement Standard of the State Atomic Energy Corporation ROSATOM was adopted; the Central Arbitration Committee for Protection of Vendors’ Rights was set up.

september

The Government of the Russian Federation issues a resolution to build Baltic nuclear power plant with engagement of private capital.

The Environmental Reporting System of the State Atomic Energy Corporation ROSATOM was introduced; a list of environmentally significant organizations of the nuclear industry was approved; in the framework of the Corporation's Environmental Policy they have produced local environmental policies and their environmental reports on a large scale.

october

The Standard & Poor's rating agency rated JSC Atomenergoprom the BBB-/Stable/A-3 (on the international scale) and ruAAA (on the national scale) with the "stable" forecast.

december

The State Atomic Energy Corporation ROSATOM and the Electricity of Vietnam (EVN) signed a Memorandum of Understanding regarding cooperation in construction of a nuclear power plant in Vietnam.

First criticality achieved at Rostov-2.

The draft Federal Law "On the Radioactive Waste Management" submitted to the State Duma.

throughout the year

Atomic Energy Information Centers inaugurated in Tomsk, Voronezh and Rostov-on-Don; regional community councils on the safe uses of atomic energy set up in Murmansk, Irkutsk and Kostroma.

Key Results of 2009

Indicator*	Unit of measure	2008	2009	%, compared to 2008
Nuclear electricity generation	bln. kWh	162.3	163.3	100.6
Capacity factor of NPPs	%	79.5	80.2	100.9
Uranium output	tons	3,687	4,624	125.4
Raw material base of uranium	thnd. tons	558	632	113.3
Profit of the Corporation, its organizations and subordinate enterprises:	bln. RUB	428.8	528.5	123.3
including export proceeds (exclusive of the HEU Deal)	bln. USD	3.5	3.65	104.2
Net profit of the Corporation, its organizations and subordinate enterprises	bln. RUB	15.5	38.7	250
Net assets of organizations and subordinate enterprises of the Corporation	bln. RUB	797	1,060	133
Share of high-tech production in proceeds	%	–	79.3	–
Reduction of fixed costs (in comparable prices)	%	–	-17	–
Labor efficiency in organizations and subordinate enterprises / growth in comparable prices	thnd. RUB / person, %	1,281	1,636/117.8	127.7/117.8
Personnel as per Staff Schedule	thnd. persons	–	275	–
Specialists under 35 years of age	%	25.2	26.5	105.1
Average salary of nuclear employees	RUB / month	28,216	32,394	114.8
Fulfillment of the Governmental Defense Order by the Nuclear Weapons Complex	%	100	100	100

*_financial indicators are expressed in current prices

It is always a responsibility and honor to be the first! It is my great pleasure, as the Chairman of the Supervisory Board, to present the Annual Report of the State Atomic Energy Corporation ROSATOM, which is the first of the state corporations established in Russia that has progressed down the path of shaping, auditing and gaining independent assurance of the public reporting in accordance with the international standards.

This is a voluntary initiative of the Corporation aimed at enhancement of transparency of its operations and reportability to a broad array of stakeholders. Publication of this report is of special significance also, because for the first time it comprehensively reflects first outcomes of reforming of the Russian nuclear industry. This is the exact place to find the answer to the question: how are the Russian nuclear power and industry organized today, following the large-scale transformations taken place since 2006.

Following the world trends of the industry development, the Corporation has staked on creating a global player in the market of nuclear products, services and technologies, on development of strategic partnerships with transnational industry leaders, as well as on setting up joint ventures in the states of its strategic interests, such as Armenia, India, Kazakhstan, Mongolia, Namibia, and Ukraine.

Another important activity of the Corporation is the coping with the nuclear legacy the modern Russia inherited from nuclear defense and industrial programs of the USSR. To solve the problem, the State Atomic Energy Corporation ROSATOM jointly with the Federal Assembly of the Russian Federation is developing nation-wide systems to manage radioactive waste and spent nuclear fuel. It was in 2009 when baseline draft laws were developed to direct advancement of this activity in Russia.

I am confident that the scientific and production potential of the Corporation and its competitive advantages will support it not only in doing away with the problems but also ensure gaining leadership in the world market of nuclear technologies and services in the longer term.

Sergey Sobyanin,
Deputy Chairman of the Government of the Russian Federation and Head of the Governmental Administration, Chairman of the Supervisory Board of the State Atomic Energy Corporation ROSATOM

Dear Colleagues and Partners,

You are looking through a report covering results of activities of the State Atomic Energy Corporation ROSATOM in 2009. This is our first public report, therefore, it also provides brief information on the Corporation's activities since its foundation and our future plans.

For the State Atomic Energy Corporation ROSATOM, as for any other modern global corporation, clear-cut ambitious goals, effective managerial actions and introduction of innovative technologies are a guarantee of sustainable development. Besides, due to the nuclear industry features, the safety of existing facilities and those under construction is of the outmost importance. These are exactly the topic covered by this Annual Report. Public consciousness holds many myths about the nuclear industry, which disappear when people are provided with confident and comprehensive information. This was one of the reasons that induced us to make a decision on yearly issue of public reports describing different aspects of the Corporation's activities, our achievements, problems and measures taken to solve them.

In the year of the crisis, 2009, we managed to achieve substantial results. A nuclear electricity output approached 163.3 bln. kWh that is one billion kilowatt-hours more than in the preceded year. Over the year we raised uranium mining output by 24.3%. The Corporation's profit increased by 23.3% to reach RUB528.5bn. Our outstanding portfolio of the enriched uranium product exports grew by US$8bn. It will not be an exaggeration to say that the State Atomic Energy Corporation ROSATOM has become Russia's leader in labor efficiency; as compared to 2008 at the Corporation's enterprises it grew by 27.7% owing to cost reduction and optimization of the corporate structure (throughout the country this indicator did not exceed 6%, on average, and the Ministry of Economic Development and Trade projects it will grow by 3.5% in 2010).

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The first criticality of the second power unit at Rostov NPP reached on December 18, 2009, became a key event of the last year. Over the entire modern history of Russia, the Corporation started constructing nuclear power plants (NPPs) in series. When we undertook this, there were a lot of skeptics who doubted the endeavor's feasibility. However, subsequent work during several years demonstrated viability of our plans. We are already the world's leader in a number of nuclear power units being simultaneously built and we plan to commission annually one-two new nuclear power units in Russia and abroad in future. This is of principle importance not only for meeting the growing electricity demand of national economies, including the Russian economy. We are faced by the task of raising the share of nuclear generation in the country's energy mix up to 25–30% from the current 16% by 2030. The series nuclear build is a "locomotive" of the entire nuclear fuel cycle development; therefore, it is of principle importance for the nuclear industry development as a whole.

In spite of the financial and economic crisis, the nuclear technology development scale does not shrink. Neither of the countries elected to nuclear power, including nuclear newcomers, have rejected this decision that is evidence of the global "nuclear renaissance." Certainly, the crisis led to a reduction in consumption and lower forecasts of the electricity demand dynamics; therefore, key subjects of the world market were forced to adjust their pace accordingly to the situation. We moved our schedules of new capacities commissioning by one-two years, but the plans of building new nuclear power units in series have not crucially changed.

In conditions of the "nuclear renaissance", the world nuclear community, including us, is faced by the task of determining a future image of the world nuclear power. The Federal Target Program "Nuclear Power Technologies of the New Generation" adopted in 2009 is aimed at solving this task. The near-term step during the coming decade is development of fast neutron reactors with the closed nuclear fuel cycle, which will allow us building more efficient and environmentally friendly NPPs. A 30–35-year-long step is targeting to nuclear fusion development. We are conducting the controlled nuclear fusion research together with our foreign partners.

The State Atomic Energy Corporation ROSATOM possesses a substantial potential for innovations that creates conditions not only for accelerated development of the nuclear industry, but also gives a powerful impetus to other industries of the Russian economy. This is confirmed by the active work of the Corporation on all five activity areas determined by the Presidential Commission on Modernization and Technological Development of the Russian Economy, namely, nuclear technologies, space and telecommunications, energy efficiency, strategic computer technologies and software, medical equipment and pharmaceuticals. In the framework of these activity areas the Corporation is implementing seven projects of strategic importance for the country's economy, which range from one-megawatt space nuclear propulsion and power installation through supercomputers.

The 2009 was an important period in terms of the corporate management reforming. We started shaping a division-based structure of the Corporation to correspond to the world nuclear market segments. The divisions' scopes have already been determined. In 2009, the Fuel Company TVEL was established within the JSC TVEL to ensure consolidated control over assets expanding to fabrication of nuclear fuel, uranium enrichment and conversion, and manufacture of gas centrifuge and auxiliary equipment.

Serious measures were taken to reform the financial and economic management. In parallel, the system of key performance indicators and corporate standards was introduced. The deployment of the procurement standard helped us to reduce by 25–30% the costs of the long-lead equipment purchased through bidding.

Efforts to improve management and production effectiveness bring their outcomes; all targets set through the key performance indicators were met by 12% on average in the reporting year. I cannot but note that people – tens and hundred thousands of engineers, designers, builders, managers – hugely contribute to implementation of the plans. It is through their effort we have succeeded in achieving such sizable results. Dear Colleagues, you have really deserved special gratitude for your devoted and committed labor.

Sergey Kirienko,

Director General,

State Atomic Energy Corporation ROSATOM

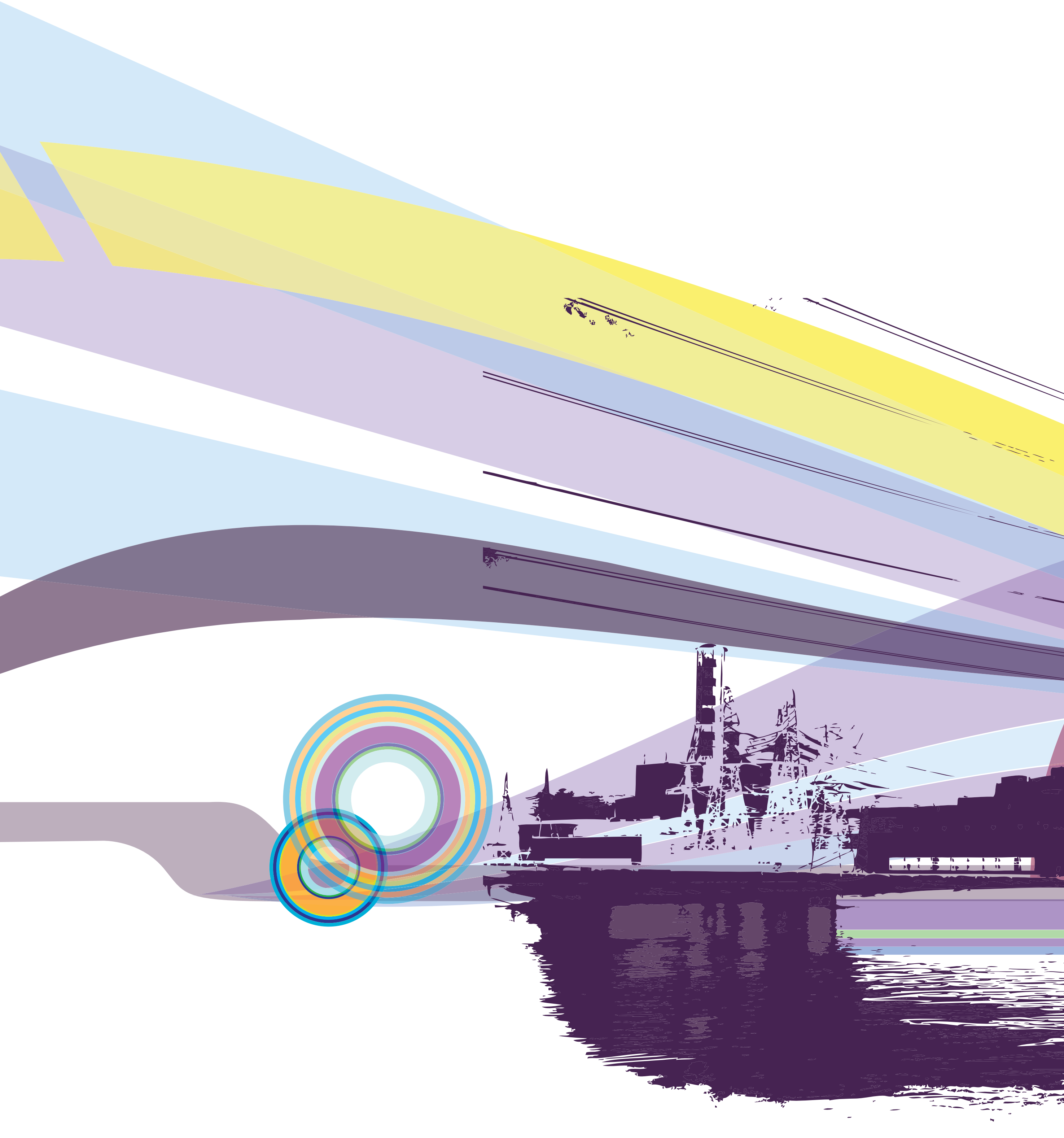
Dear Friends,

It is my pleasure to welcome you on behalf of the Interregional Non-Governmental Movement of Nuclear Power and Industry Veterans, which unites 265,000 veterans. This is a large team of people whose committed labor allowed our country making a breakthrough in the field of nuclear technologies. Hundred thousand scientists, engineers, workers were working in scientific institutions and enterprises of the famous Minsredmash whose contribution to the nuclear industry development is hard to overestimate. We were set large-scale tasks of supporting the nuclear deterrence policy and, later, of developing the civil nuclear power. We properly coped with them having strengthened our country's authority internationally and given a powerful impetus to development of the Russian economy.

A continuity of generations is important in any area of activity; it is of double importance in an intellectually and technologically complex area such as our industry. Veterans, who have huge work experience behind, are sharing their unique knowledge with young specialists who have just joined the Corporation's enterprises. We participate in publishing books, in particular "The Heroes of the Atomic Project." We support expansion of nuclear industry museums system.

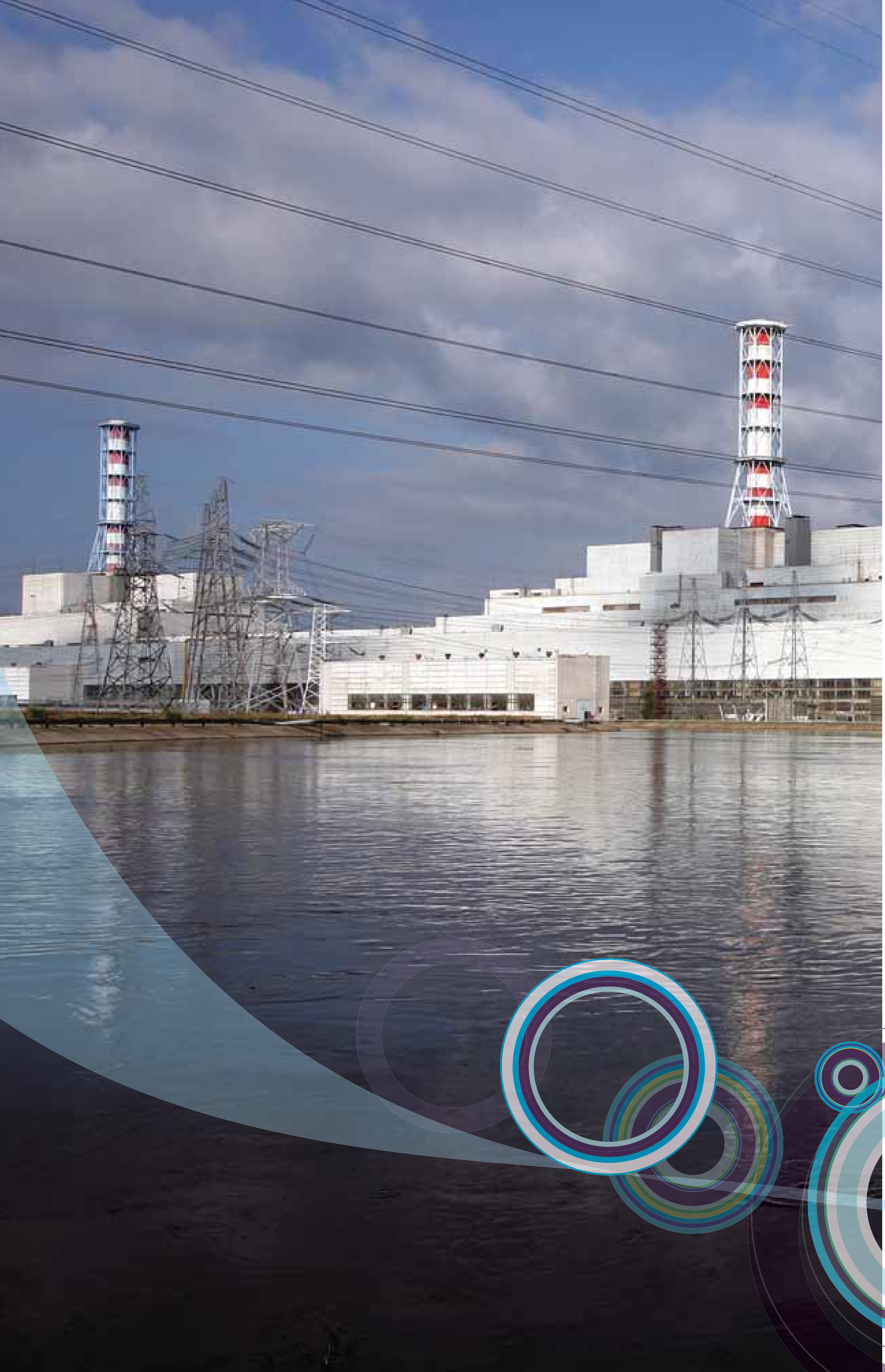
The current scale of tasks of the Russian nuclear industry development is commensurate with the tasks we solved in the Soviet period and even overrides it. The leadership in the world markets and successful economic activity are the plans that have come into view not long ago. It is not possible to pursue them without keeping and developing traditions of Minsredmash. It is remarkable that our colleagues today have an opportunity of presenting their activity results to the general public each year through reports of the State Atomic Energy Corporation ROSATOM. And it is ever more pleasant that the nuclear industry undergoes serious positive changes and we, veterans, are proud of successes of those who have succeeded us.

Vladimir Kukharchuk,
Chairman,
Interregional Non-Governmental Movement of
Nuclear Power and Industry Veterans



ROSATOM

1 General information



1.1 General information about the State Atomic Energy Corporation ROSATOM

The State Atomic Energy Corporation ROSATOM was established by the Russian Federation as a publicly owned corporation on 18.12.2007. The status, goals of establishing and activities, as well as functions and authorities, of the State Atomic Energy Corporation ROSATOM are stipulated in the Federal Law "On the State Atomic Energy Corporation ROSATOM" No. 317-FZ of 01.12.2007. The Corporation was established to support implementation of long-term strategic programs of the nuclear industry development through consolidation of assets and resources of organizations of the industry within a unified structure with the common governance center and to ensure safe operation of nuclear facilities. The Corporation has consolidated assets which had been earlier managed by the Federal Atomic Energy Agency of the Russian Federation.

The State Atomic Energy Corporation ROSATOM is authorized, on behalf of the Russian Federation, to fulfill Russia's international commitments in the field of the peaceful uses of atomic energy and observance of the nuclear nonproliferation regime.

Table 1.1. Structure and main activity areas of the Corporation

State Atomic Energy Corporation ROSATOM*				
Nuclear weapons complex	Nuclear power complex**	Science and technology complex	Nuclear and radiation safety complex	Nuclear icebreaker and support complex
Key activities				
■ Support of the nuclear deterrence policy ■ Fulfillment of the Government Defense Order	■ Uranium mining and processing ■ Fabrication of nuclear fuel ■ Design and construction of nuclear power plants ■ Electricity generation at NPPs ■ Production of equipment for construction of NPPs and other facilities ■ Decommissioning of facilities and installations	■ Basic and applied research ■ Scientific and engineering support of the nuclear power and industry development program ■ Innovative developments, including those in related industries	■ Accident-free operations of nuclear and radiation hazardous nuclear power and other facilities ■ Management of spent nuclear fuel and radioactive waste ■ Solutions to the problem of "nuclear legacy" from previous economic and defense activities of the nuclear industry (reprocessing and storage of spent nuclear fuel and radioactive waste, rehabilitation of contaminated territories etc.)	■ Arctic navigation along the Northern Sea Route ■ Emergency rescue operations in ice fields
Composition				
■ 20 federal state unitary enterprises ■ 4 open joint-stock companies ■ 2 limited liability companies ■ 1 closed joint-stock company	■ 4 federal state unitary enterprises ■ 92 open joint-stock companies ■ 67 limited liability companies ■ 48 closed joint-stock companies ■ 3 non-governmental educational institutions ■ 1 limited liability partnership	■ 10 federal state unitary enterprises ■ 4 open joint-stock companies ■ 2 joint ventures	■ 9 federal state unitary enterprises ■ 2 open joint-stock companies	■ 1 federal state unitary enterprise

*_a complete list of organizations is given in Appendix 7
**_the NPC also includes 17 foreign companies of different forms of legal incorporation

In preceding decades, the Russian nuclear industry formed and developed as a military industrial complex with, primarily, defense targets. Later, a task of the “peaceful atom” – nuclear power development – was set up. At present, the Corporation unites organizations of a diversified, science-intensive and high-technology nature. The State Atomic Energy Corporation ROSATOM includes nuclear weapons complex, nuclear power complex, science and technology complex, nuclear and radiation safety complex, and nuclear icebreaker and support complex.

The Corporation includes 48 federal state unitary enterprises and 13 companies, which stock (interests in the equity capital) is owned by the Corporation, in particular, 12 open joint stock companies and one limited liability company. The Corporation manages a total of 293 organizations, including those of support infrastructure (companies which shares are owned by the Corporation; affiliated and subsidiary companies; institutions set up by the Corporation or transferred to it and which property is owned by the Corporation; as well as joint stock companies where the Corporation is a shareholder on behalf of the Russian Federation).

The State Atomic Energy Corporation ROSATOM implements the federal policy in the field of the use of atomic energy.

The State Atomic Energy Corporation ROSATOM is responsible for implementation of the federal policy in the field of the use of atomic energy, and represents a universal company which owns assets in all links of the nuclear power and industry chain from uranium exploration and mining, design and construction of nuclear power plants, machine engineering, generation of heat and electricity, uranium product enrichment and conversion, nuclear fuel fabrication through decommissioning of nuclear facilities and management of spent nuclear fuel and radioactive waste.

The Corporation operations geography expands to all key regional segments of the world market. In the reporting year the Uranium Holding ARMZ's portfolio included projects in eight world countries (Russia, Kazakhstan, Armenia, Namibia, Mongolia, the USA, South Africa, and Australia). Nuclear fuel fabricated by JSC TVEL is used in 16 countries worldwide. In 2009, JSC Atomstroyexport was fulfilling its contractual obligations in Iran, India and Bulgaria. Uranium products by JSC Techsnabexport are supplied to 16 countries in the world. On the whole, legal bases for nuclear cooperation are available in regard of 53 countries.

The State Atomic Energy Corporation ROSATOM's successes of 2009 were distinguished at the highest level with the Corporation's 125 employees appraised with the state and governmental awards.

The Corporation's full name in Russian: Государственная корпорация по атомной энергии «Росатом»; the short name in Russian: Госкорпорация «Росатом».

The Corporation's full name in English: State Atomic Energy Corporation "Rosatom"; the short name in English: ROSATOM.

The Corporation is located at:
24 Bolshaya Ordynka st., Moscow, Russian Federation.

The Corporation's Auditor:
LLC Nexia Pacioli located at 2 Malaya Polyanka, st., Moscow, Russian Federation.

1.2 Governing bodies

The Governing Bodies of ROSATOM were established in accordance with the Federal Law «On the State Atomic Energy Corporation ROSATOM» No. 317-FZ of 01.12.2007.

The ROSATOM Governing Bodies are

- Supervisory Board
- Director General
- Governing Board

1.2.1 Supervisory Board

The ROSATOM Supervisory Board is the supreme management body. It includes representatives of the President and Government of the Russian Federation, as well as the Director General of ROSATOM who is a member of the Supervisory Board by the position. The Chairman of the Supervisory Board is appointed by the President of the Russian Federation. All members of the Supervisory Board, excluding the Director General, are not on the executive management of the Corporation.

Over the period reported, the Supervisory Board held 9 meetings (5 meetings in praesentia).

The Chairman of the Supervisory Board is appointed by the President of the Russian Federation.

Members of the Supervisory Board

Sergey Sobyanin,
Deputy Chairman of the Russian Government, Head of Administration of the Russian Federation Government, Chairman of the Supervisory Board of ROSATOM

Andrey Belousov,
Head of Department of Economics and Finance of the Government of the Russian Federation

Igor Borovkov,
Chief of Staff of the Military Industrial Commission under the Government of the Russian Federation and Deputy Chief of the Government Staff

Larissa Brychyova,
Aide to the President of the Russian Federation and Head of the State Legal Directorate in the Presidential Executive Office

Vladimir Verkhovtsev,
Head of the 12th Main Directorate of the Ministry of Defense of the Russian Federation

Arkady Dvorkovitch,
Aide to the President of the Russian Federation

Sergey Kirienko,
Director General of the State Atomic Energy Corporation ROSATOM

Sergey Prikhodko,
Aide to the President of the Russian Federation

Sergey Shmatko,
Minister of Energy of the Russian Federation

Yuri Yakovlev,
Head of the Economic Security Service in the Federal Security Service of the Russian Federation

1.2.1 Director General of ROSATOM

The Director General is the sole executive body of the State Atomic Energy Corporation ROSATOM and administers its current activities. The Director General is appointed to / dismissed from the position by the President of the Russian Federation as advised by the Chairman of the Government of the Russian Federation.

Sergey Kirienko was appointed the Director General of the State Atomic Energy Corporation ROSATOM by decree of the President of the Russian Federation No. 1663 of 12.12.2007.

1.2.2 Audit Committee

The Audit Committee of ROSATOM controls financial and economic activities of the Corporation. The Audit Committee members were approved by the Supervisory Board on 22.04.2008.

The Audit Committee members:

- **Anton Siluanov,** Deputy Minister of Finance of the Russian Federation, Chairman of the Audit Committee
- **Roman Artyukhin,** Head of the Federal Treasury of the Ministry of Finance of the Russian Federation
- **Victor Belyakov,** Chief Engineer of the 12th Main Directorate of the Ministry of Defense of the Russian Federation
- **Victor Zobov,** Head of Division in the Defense Industry and High Technologies Department within the Government of the Russian Federation
- **Vera Chistova,** Deputy Defense Minister of the Russian Federation for Finances and Economics

1.2.3 Governing Board

Over the reporting period the Governing Board held 36 meetings (19 meetings in praesentia)

The Governing Board is a collegial executive body of the State Atomic Energy Corporation ROSATOM. The Governing Board members are appointed to / dismissed from the positions by the Supervisory Board as advised by the Director General and work in the Corporation full time.

Governing Board of ROSATOM

Sergey Kirienko,
Director General, Chairman of the Governing Board

Evgeny Evstratov,
Deputy Director General, Nuclear and Radiation Safety

Tatiana Elfimova,
Deputy Director General, Public Authority Execution and Budgeting, States Secretary

Ivan Kamenskikh,
Deputy Director General – Director of Directorate for Nuclear Weapons Complex

Tatiana Kozhevniekova,
Deputy Director General,
HR Management

Aleksander Lokshin,
Deputy Director General –
Director of Directorate for
Nuclear Power Complex

Viktor Ratnikov,
Deputy Director General,
Property Management

Nikolay Solomon,
Deputy Director General,
Finance and Economics

Evgeny Sofyin,
Deputy Director General,
Security

Nikolay Spasskiy,
Deputy Director General,
International Cooperation

Petr Shchedrovitskiy,
Deputy Director General,
Director of Directorate
for Scientific and Technical
Complex

1.2.4 Commissions, committees, panels within the executive bodies

Commissions and committees

Specialized commissions and committees are established subordinate to the Governing Board and Director General to enhance work efficiency.

To include:

- Strategic Committee: strategic planning in mid- and long-term,
- Investment Committee: planning and development of promising investment policy areas,
- Budget Committee: planning and budgeting at different levels, spending issues,
- Control Commission: inspection of performance of the Corporation's enterprises,
- Commission for Law Making Activities: issues related to drafting of legislation affecting activities of the Corporation and its organizations,
- Commission for Prevention and Elimination of Emergencies and for Fire Safety: prevention and elimination of emergencies associated with operations of the Corporation's enterprises, as well as with fire safety at the Corporation's enterprises,
- Awards Commission: awarding the Corporation's employees who demonstrate prominent work and scientific results.

Scientific and Technical Board

The Scientific and Technical Board of the State Atomic Energy Corporation ROSATOM is a standing consultative and advisory body that was set up to render scientific, methodological, information, analytical and expert support to activities of the Corporation. Nikolai Obysov, Adviser to ROSATOM Director General, is the Scientific Secretary.

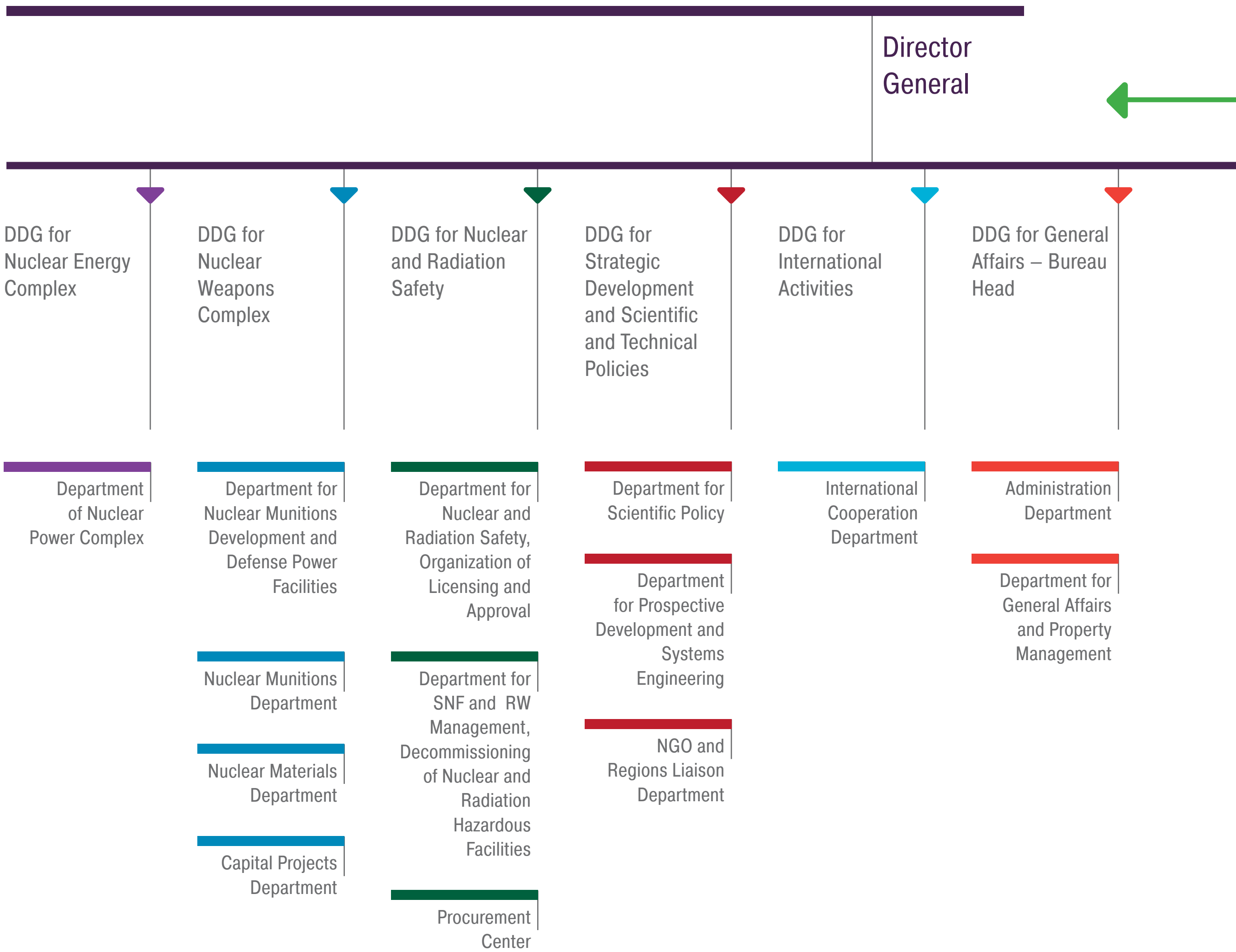
Public Council

The Public Council of ROSATOM was set up with the aim of involving non-governmental organizations in the policy-making process in nuclear power, environmental protection, nuclear and radiation safety. The Public Council members are representatives of ROSATOM, scientific community, non-governmental and environmental organizations. The Executive Secretary of the Public Council is Igor Konyshev, Director of Regional Liaison Office of ROSATOM.

Council of Nuclear Industry's Company Managers

Council of Nuclear Industry's Company Managers is a standing consultative body established to improve quality and ensure unity of management of organizations within the nuclear power and industry and nuclear weapons complexes, organizations dealing with nuclear and radiation safety, nuclear science and technology, and personnel training. The Council members are the Corporation's employees and heads of enterprises in various activity areas of the Corporation. The Council's annual members' turnover is less than one third of the schedule. The Responsible Secretary is Marina Liborakina, the Advisor to the Director General.

Fig. 1.1. ROSATOM organizational structure



Advisers to the Director General

- DDG for Finance
  - Department for Economics and Investments
  - Department for Finance and Accounting
  - Project Management Center
  - Board of Treasure
  - Information Technologies Department
- DDG of HR Management
  - HR Department
- DDG for Security
  - State Secret and Information Protection Department
- DDG for Finance and Economics – States Secretary
  - Department for Long-Term Programs Monitoring and Federal Budget Planning

- Department of Legal and Corporate Activities
- Department for Internal Control and Audit
- General Inspection Office
- Communications Department
- Center for Corporate Development and Management of Non-Financial Risks
- Development Center
- Secretariat of the Director General

1.3 Strategy

Strategic goals of the nuclear industry of the Russian Federation in long term are defined in the key documents.

The first goal is effective supply of nuclear electricity to the national economy. It is conditioned by the growing demand for electricity required for development of the national energy-intensive economy. The Corporation is responsible for timely construction and commissioning of new nuclear power units. In 2009, the first criticality program was accomplished at Rostov-2; commissioning of Kalinin-4 is slated for 2011. The potential of improving operating efficiency of existing nuclear power units (raising capacity factor, shortening periods between overhauls, service life extension) should be also utilized. Integrated development of the nuclear industry should lead to a greater share of nuclear generation in the energy mix of the Russian Federation, i.e. from the current 16% up to 25–30% by 2030.

The most objective criterion of effectiveness of the present-day economics is the competitiveness of the Russian products and services; therefore, effectiveness of the Russian companies involved in power generation, design, machine engineering, nuclear fuel cycle is determined by the second strategic goal of the Corporation: securing geopolitical interests of the country and gaining leadership of the Russian companies in the global market of nuclear technologies and services. Given the dynamics of the world markets development and growing pressure from the traditional leaders and new players, the Corporation's strategy is set to form a global-scale international company featuring diversified productions, technology and resource bases and well-established international links, which is capable of competing leading transnational corporations.

The outmost priority has been and remains maintaining of the nuclear arsenal at the level that ensures introducing the effective policy of nuclear deterrence. Over 65 years, the nuclear industry has successfully kept up to this policy and will further fulfill tasks in this area to ensure inviolability of national security bases of Russia.

Another permanent goal is the nuclear and radiation safety of nuclear facilities, personnel, general public and environment. The State Atomic Energy Corporation ROSATOM bears responsibility for meeting safe operation regulations and requirements, high-quality monitoring, prevention of emergencies and violations of various severity degree, timely informing the general public, and disposal of the nuclear complex`s waste. In this area, the key tasks are the solving the problem of legacy remaining from the USSR defense project, development of effective technologies of management of irradiated nuclear fuel and radioactive waste, development of an infrastructure and information systems in the field of nuclear and radiation safety.

These cannot be achieved without innovative nuclear technologies and their broad use in different industries. Advancement of basic research and applied developments is the foundation of competitiveness and sustainable development of the Corporation. Work outcomes of the science and technology complex are widely used in other industries: gas and oil, aerospace, shipbuilding, motor car, thermal power generation, wellness industries, and new communal utility technologies.

A new technological platform of fast neutron reactors and closed nuclear fuel cycle is being built in the traditional nuclear sectors in parallel with modernization of existing technologies. New activity areas provide for commercialization of available developments and entering new markets.

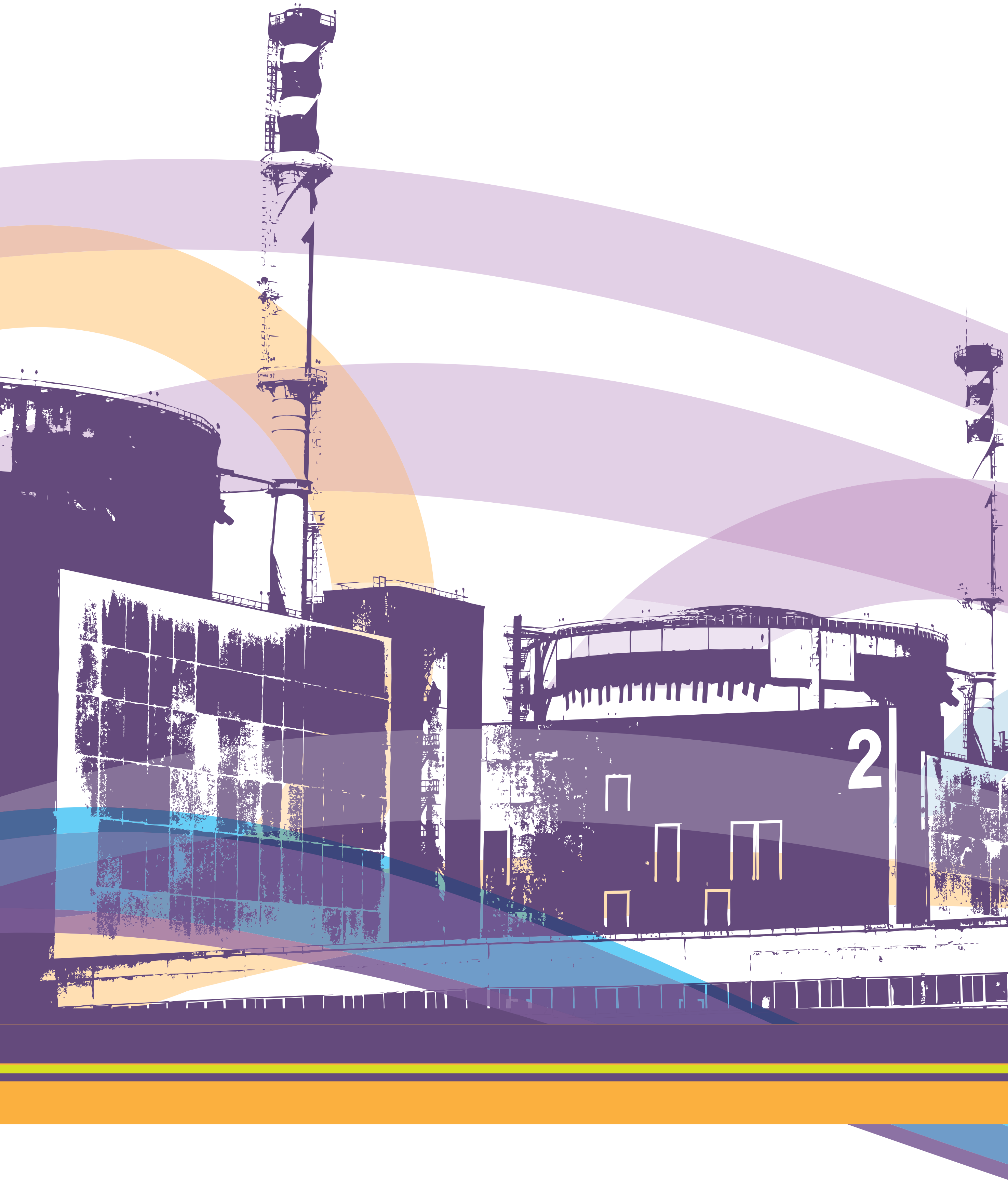
The building up the innovative and technological potential is not limited to corporate interests. In 2009 nuclear technologies were included in the five priority activity areas of the Presidential Commission for Modernization and Technological Development of the Russian Economy. The Corporation is implementing seven projects of strategic importance for the national economy.

Changes in economic conditions of operation of the Corporation and its companies due to transition to the market economy, more severe competition in the global markets of nuclear technology and new tasks being set necessitate the Corporation to become more efficient. To this end, it is necessary to implement a nuclear technology life cycle management system (from design through decommissioning / disposal); to modernize the governance system, including improvement of finance management, reporting and corporate management, as well as building up the succession pool and transition to uniform information technology standards; to improve production efficiency and to do away with nonmanufacturing costs, while enhancing energy consumption efficiency.

Nuclear power development may face ambiguous public attitudes, specifically, in potential host regions of nuclear power facilities. As a rule, this is due to poor public awareness on the environment-friendly nature of nuclear power, safety systems in use etc. The State Atomic Energy Corporation ROSATOM should promote development of nuclear power as a publicly and environmentally acceptable source of energy through maintaining a constructive interaction with stakeholders: federal and regional authorities, local administrations and communities, mass media, non-governmental and environmental organizations, primarily in regions of the Corporation's operations.

Key documents:

- Energy Strategy of Russia until 2030 (approved by directive of the Government of the Russian Federation No. 1715-r of 13.11.2009),
- General Scheme of Deployment of Power Generation Facilities (approved by the Chairman of the Government of the Russian Federation on 22.02.2008),
- ROSATOM Long-Term Activity Program (2009–2015) – LAP (approved by resolution of the Government of the Russian Federation No. 705 of 20.09.2008). The LAP summarizes federal budget commitments undertaken by the Corporation and its responsibility before the State, and measures provided by the related FTPs, including "Development of Nuclear Power and Industry Complex in 2007–2010 and until 2015", "Development of Nuclear Weapons Complex of Russia in 2007–2010 and until 2015", "Nuclear and Radiation Safety in 2008 and until 2015",
- Strategy of the State Atomic Energy Corporation ROSATOM until 2020 (approved in April 2008 by the Supervisory Board of the Corporation).


2

ROSATOM

2 Principal activities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2.1 Pursuing State Policy in the uses of atomic energy

The State Atomic Energy Corporation ROSATOM acts to pursue the State Policy, legal regulation, public services, and management of public property as associated with the uses of atomic energy, development and safe functioning of enterprises of the Russian nuclear power and weapon complexes, ensuring nuclear and radiation safety, nuclear material and technology nonproliferation, development of nuclear science, technology and professional education, and international cooperation in this area.

ROSATOM supported adoption of a total of more than 90 legal acts aimed at the implementing the Corporation authorities and solving tasks of the nuclear industry development.

A necessary condition for the large-scale and innovative development of the nuclear power and industry is the enhancement of its legislative bases.

A necessary condition for the large-scale and innovative development of the nuclear power and industry is the enhancement of its legislative bases. Among most actual issues is the necessity to improve the legal basis in part related to «nuclear legacy.» Over 65 years of existence, the nuclear industry has accumulated a huge amount of waste that should be reprocessed or disposed. We consider it correct to solve the problem ourselves, without burdening the next generation. In 2009, we carried out a serious work to draft the law "On Radioactive Waste Management", which is being reviewed by the State Duma. Our next step will be development and advancement of similar legislative initiatives on issues of spent nuclear fuel management and decommissioning of nuclear facilities.

Tatiana Elfimova,

Deputy Director General, Public Authority Execution and Budgeting, States Secretary

2.1.1 Budget allocations

ROSATOM authorities as a chief controller include the function of the Russian Federation Treasury property budgetary accounting. First of all, the budgetary accounting concerns nuclear materials which are in exceptional federal ownership, special raw materials inclusive. At the same time, the ROSATOM has associate authorities of the chief controller of the budget revenues, including that from the export of highly enriched uranium and natural component of low enriched uranium.

As a part of control over the public property, the Corporation was working to register and formalize ownership rights of the Russian Federation and ROSATOM for estate property and to settle land use issues. Through the Corporation the Russian Federation formalized rights for 17,478 objects, which amount to 92% of a total number of objects subject to formalization of rights.

Works to maintain, service and replenish the government stockpiles were carried out in full scope; these works were performed in accordance with requirements on information security, state secret protection, nuclear material physical protection, nuclear, radiation, industrial, and fire safety. Thirteen nuclear material control and accounting inspections were carried out.

Budget allocations for 2009 initially amounted to RUB127.9bn. After adopting decisions on additional financing of works and the federal budget expenses optimization aimed at upgrading the efficiency of the budget spending, a sum of the budget allocated for 2009 constituted RUB193.2bn.

As a result, additional works were performed:

1. In the framework of the Investment Project "Southern Yakutia Integrated Development", with the aim of design documentation development for Elkonsky Mining and Metallurgical Combine.

2. To raise subsidies as a property contribution of the Russian Federation to ROSATOM for:

- acquisition of JSC Atomredmetzoloto shares for the purposes of increasing uranium resources and assets of uranium mining companies, including foreign ones;
- acquisition of JSC "Technopark-Technology" shares for the purposes of solving the task of increasing the share of science-intensive innovative production, with additional jobs in the civil sector created;
- further development of the nuclear power and industry complex.

In 2009, the Corporation activities were continuously monitored by state regulatory bodies. In 2009, eleven audits of the Corporation were carried out, five of which were conducted by the Audit Chamber of the Russian Federation. The audits showed that there were no unauthorized uses of the budget funds or property.

2.1.2 Legal and regulatory activities

Due to changes in organizational and legal status of organizations, which implement federal target programs, and introduction of the target financing mechanism providing an asset contribution by the Russian Federation, the ROSATOM Long-Term Activity Program was updated.

In 2009, the Corporation developed and submitted to the State Duma a draft Federal Law "On the Radioactive Waste Management". The draft law determines the main provisions of the state policy in the back end of nuclear facilities process cycle, as well as regulates relations and sets responsibilities regarding ultimate disposal of radioactive waste.

Besides, other documents adopted in 2009 include:

- statute on the procedure for organization of and control over nuclear material circulation in the Russian Federation;
- statute on the procedure for organization of keeping the State Register of Nuclear Materials;
- procedure for issuing certificates giving the right to execute works associated with the uses of atomic energy to employees of the Corporation institutions, its share-holding companies and their affiliates as well as their subordinate enterprises.

The Register of Nuclear Materials in federal ownership has been generated. A list of nuclear materials owned by legal entities of the Russian Federation as well as those owned by foreign states and legal entities temporarily present in the territory of the Russian Federation was compiled.

INTERNATIONAL COOPERATION

Today, interest to nuclear power is seen growing all over the world.

Today, interest to nuclear power is seen growing all over the world. New possibilities are opening for promoting Russian nuclear technologies, materials and services to world markets and for obtaining an access to additional sources of raw materials. In this situation, ROSATOM consistently works to create an international legal infrastructure for organizing cooperation with foreign states in the sphere of nuclear power. A key element of this infrastructure is framework intergovernmental agreements on cooperation in the area of the peaceful uses of atomic energy. The availability of such agreements is a prerequisite for the cooperation.

Nikolay Spasskiy,
Deputy Director General,
International Cooperation

2.2 International cooperation

The advancement of Russian initiatives aimed at strengthening the nuclear nonproliferation and implementing multisided approaches to nuclear fuel cycle is a substantial component of ROSATOM's international relations development program. The initiative launched by the President of Russia to create a global nuclear power infrastructure which provides equal access to atomic energy for all interested countries while observing nonproliferation requirements has become the Russian contribution to the advancement of the multisided approaches endeavor. Specifically, it has led to creation jointly with Kazakhstan, of International Uranium Enrichment Center (IUEC) in Angarsk. Based on separate international agreements, Armenia and Ukraine joined the IUEC in 2009.

Positions of the Corporation in the international nuclear markets and limited number of these markets' stakeholders necessitate strategic alliances to appear. In conditions of the crisis, as social and economic indicators deteriorate and markets "shrink", the need in cooperation grows since it allows maintaining the industry development by way of resource pooling and minimizing "personal" risks of separate stakeholders.

Providing access to other countries' markets requires solutions to issues associated with overcoming trade limitations and interactions with governmental and political communities of foreign countries. In legal terms, the global circulation of nuclear materials and technologies is regulated on the bilateral basis through intergovernmental agreements on the peaceful uses of atomic energy.

In 2009, the international activities of ROSATOM focused on:

- creation of an international legal infrastructure for promotion of Russian companies in the world markets of nuclear technologies and services;
- support of long-term international projects;
- work in the field on nuclear nonproliferation to strengthen and broaden the international influence.

2.2.1 Creation of an international legal infrastructure for promotion of Russian companies in the world markets of nuclear technologies and services and for support of international projects

With the aim of creating an international legal infrastructure that provides for adequate conditions for the Corporation companies' operation in the world market, a number of intergovernmental framework agreements and interdepartmental arrangements were inked in 2009. The intergovernmental framework agreements on the peaceful use of atomic energy were signed with Jordan, Belarus, Nigeria, Turkey, and Ecuador.

The Government of the Russian Federation signed intergovernmental framework agreements on the peaceful use of atomic energy with:

- Government of Hashemite Kingdom of Jordan – 22.05.2009;
- Government of the Republic of Belarus – 28.05.2009;
- Government of the Federative Republic of Nigeria – 24.06.2009;
- Government of the Turkish Republic – 06.08.2009;
- Government of the Republic of Ecuador – 29.10.2009.

The Agreement between the Government of the Russian Federation and the Government of Japan on cooperation in the peaceful use of the atomic energy of 12.05.2009 is of special significance. The agreement opens up prospects for cooperation with one of the world leading players in the market of nuclear technologies. The Agreement provides for cooperation in specific areas, such as uranium exploration and mining, NPP design and construction, recycled uranium processing, nuclear and radiation safety; it also contains provisions concerning transfer of nuclear materials, equipment and technologies.

In addition, in 2009 the framework agreements in the area of the peaceful use of atomic energy were concluded with Oman, Brazil, and Bangladesh. ROSATOM signed agreements with Mongolia on cooperation in the area of uranium exploration and mining and on establishing a Russian-Mongolian joint venture Dornod Uran, as well as on the beginning of staff training for Mongolian national nuclear industry. The Corporation signed a similar agreement on cooperation in the field of staff training for national nuclear industries with the Ministry of Science and Technology of Vietnam and an agreement on the cooperation in construction of the first nuclear power plant in that country was reached with the Vietnamese electricity corporation EVN. Also, ROSATOM and the Chinese National Nuclear Corporation signed a memorandum on the 2009 cooperation timeline of construction of two nuclear power units within the Tianwan expansion project and construction of a demonstration fast neutron reactor intended for further commercialization. An arrangement of principal regarding cooperation in uranium exploration and mining was reached in 2009 with Tajikistan. With the aim of strengthening the international law regime under conventions in effect, the Government of the Russian Federation and the Government of the Turkish Republic August 06, 2009, signed an agreement on early notification on a nuclear accident and on the exchange of information on nuclear installations.

2.2.2 Nuclear nonproliferation activities; strengthening and broadening the international influence

An important element of strengthening of the nuclear nonproliferation regime and enhancement of environmental safety is the program for repatriation of fresh and irradiated nuclear fuel of research reactors of Russian (Soviet) design being jointly implemented by Russia, the U.S. Department of Energy and IAEA. Based on the intergovernmental agreement with the USA and with consent of other donors, ROSATOM ships off nuclear fuel from the Russian-design research reactors in other countries to Russia. In 2009, agreements supporting this program were signed with governments of Romania, Serbia, Poland and Libya.

Within the framework of the Global Partnership Program adopted at the G8 Summit in Kananaskis on 27.06.2002, in 2009 were signed:

- Executive agreement of 08.05.2009, between ROSATOM and the Japanese Committee on Cooperation to facilitate elimination of nuclear weapons subject to reduction in the Russian Federation, as relates to the facility for long-term storage of nuclear submarine reactor compartments, disposed of by the Russian Federation in Far East;
- Memorandum of Understanding between ROSATOM and the Ministry of Foreign Affairs of the Kingdom of Norway concerning disposal of radioisotope thermoelectric generators at beacons and navigation signs of the Baltic Fleet in Kaliningrad and Leningrad Regions, as of 19.05.2009.

In 2009, thirty intergovernmental and interdepartmental agreements were signed, as well as other arrangements in the nuclear field, which allowed rising to 53 the number of countries with which Russia has a legal basis for nuclear cooperation.

2.2.3 Involvement in the work of the IAEA and other related international organizations

One of the most important areas of the international cooperation development is the interaction with the International Atomic Energy Agency (IAEA). The Corporation's delegations take part in sessions of the Board of Governors and General Conferences of the IAEA, meetings of Technical Committees on safety standards for transportation of nuclear material, safety of waste, nuclear and radiation safety.

The interaction of ROSATOM and the IAEA has allowed the Russian enterprises to take part in a number of international programs and projects being implemented under the auspices of the Agency.

In 2009, within the framework of the national program for scientific and technical support of the IAEA safeguards, six projects were implemented to include training courses for the IAEA inspectors in nuclear material NDT methods and R&D on analysis of environmental samples taken by the IAEA inspectors during nuclear facility inspections.

In 2009, the Corporation participated in events and initiatives launched by the largest international organizations: IAEA, UNO, CTBT Organization, CERN, Nuclear Energy Agency of the OECD, NSG, Zanger Committee, EurAsEC, SIC, SCO, ASEAN, APEC, ITER, ISTC

ROSATOM organizations and enterprises were engaged in 32 European projects of the IAEA Program for Technical Cooperation. Russian specialists participated in technical activities with the aim of familiarization with foreign experience and technologies. Similar visits were arranged to Russian enterprises for foreign specialists. The Corporation organizations were engaged in technical cooperation projects on Armenian NPP safety enhancement. The Russian contribution of RUB23.6m was provided to the IAEA Technical Cooperation Fund.

Leading organizations of ROSATOM took part in implementation of the International Project for Innovative Nuclear Reactors and Fuel Cycles (INPRO). Russia contributed RUB23m to the IAEA Extrabudgetary Fund for the implementation of the INPRO project.

The Corporation specialists took part in the IAEA activities connected with physical nuclear security. In this framework, the following was organized: IV Russian International Conference on accounting, control and physical protection of nuclear materials; IAEA regional training course "Physical Protection of Research Reactors"; pilot practical course for students from Russia and Ukraine who study the accounting, control and physical protection of nuclear materials"', training course under the auspices of the IAEA "Inspection of Physical Protection Systems.

NUCLEAR WEAPONS COMPLEX

We are faced by a task of creating a new look of the nuclear weapons complex resting on computing, experimental and technological basis...

The program of nuclear industry reforming affected all its activity areas, nuclear weapons complex inclusive. We are faced by a task of creating a new look of the nuclear weapons complex resting on computing, experimental and technological base that is competitive to other leading nuclear states the complex which attracts the best graduates of leading educational institutions of the country. This will allow us not only appropriately maintain the nation's nuclear arsenal at the level ensuring the policy of nuclear deterrent but also be more active in implementing innovative developments and production for the civil sector.

Ivan Kamenskikh,
Deputy Director General and
Director of the Nuclear Weapons Complex Directorate

2.3 Production activities

2.3.1 Nuclear Weapons Complex

The Nuclear Weapons Complex (NWC) of ROSATOM supports the nuclear deterrent policy pursued by the Russian Federation. The NWC enterprises, together with the enterprises of the defense industry complex and military units of the Ministry of Defense, are solving this task providing the required amount and safety of nuclear arsenal. They also work to maintain nuclear installations of military surface ships and submarines of the Russian Navy and build new samples of special-purpose machinery.

History of the Nuclear Weapons Complex

The history of the Nuclear Weapons Complex began on 20.08.1945, when the USSR State Defense Committee adopted a decree on setting up a special body for managing works with uranium – Special Committee under the USSR State Defense Committee and the First Main Department within the Council of People's Commissars of the USSR. The NWC is the "founder" of the national nuclear power, because it was during the experiments on the atomic bomb development when scientists proposed an option of using atomic energy for electricity generation. Today, the nuclear weapons complex is still one of the main sources of innovations for the civil sector of the industry.

The NWC comprises enterprises possessing unique installations and equipment allowing to produce nuclear munitions and ship nuclear installations as well as ensure their maintenance at all stages of their life cycle: from calculations and theoretical justification through dismantling and disposal.

The tasks facing the Nuclear Weapons Complex are solved within the framework of the State Armaments Program for 2007–2015; Federal Target Program (FTP) “Development of the Russian Weapons Complex in 2007–2010 and until 2015”; FTP “Disposition of Armaments and Military Equipment (2005–2010)” and its sub-program “Decommissioning of Nuclear Submarines, Nuclear-Powered Surface Ships and Nuclear Maintenance Vessels and Environmental Rehabilitation of Coastal Maintenance Bases (2005–2010)”; and Project “Image of the State Atomic Energy Corporation ROSATOM’s Nuclear Weapons Complex by 2020”.

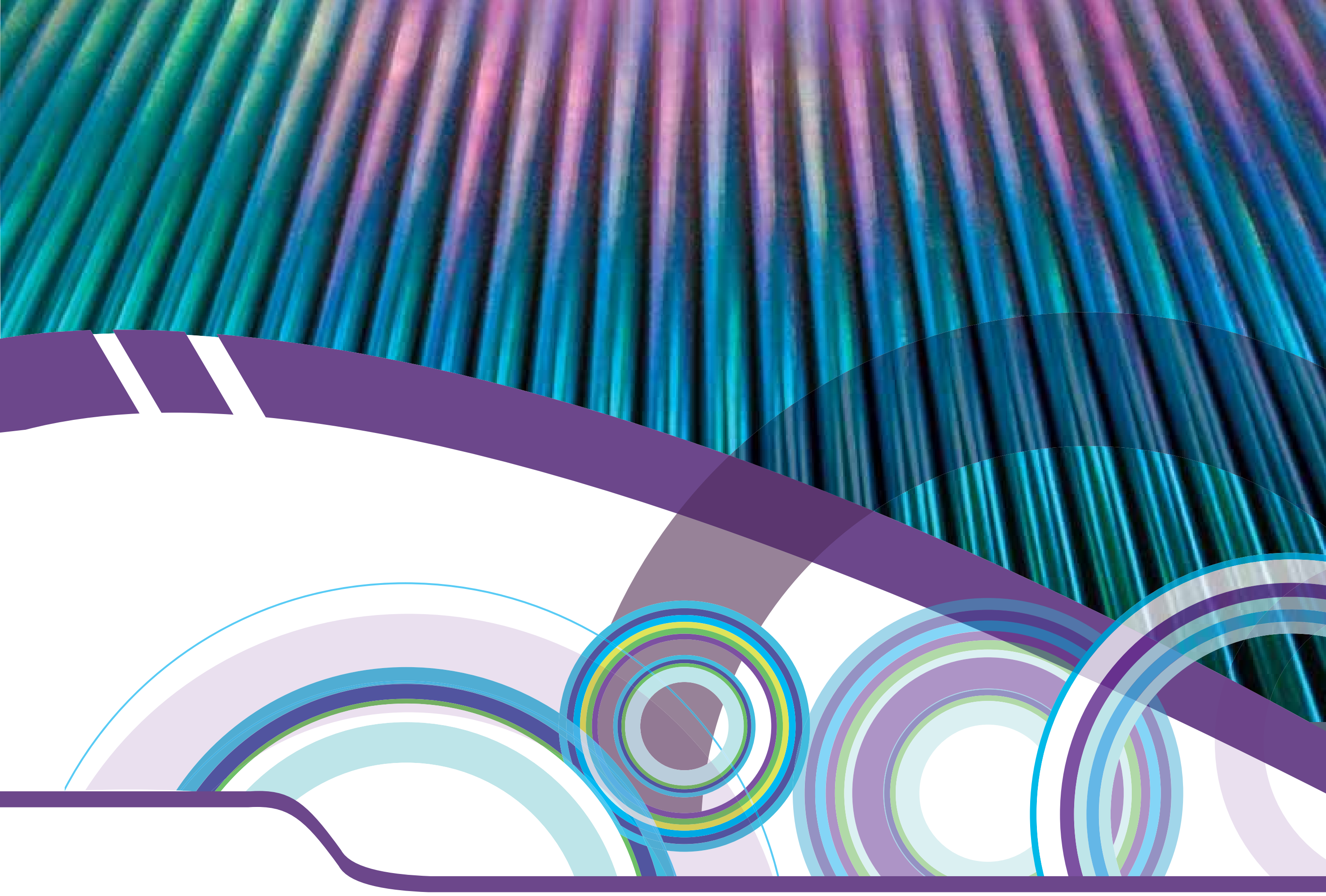
The goal of the FTP “NWC Development in 2007–2010 and until 2015” is the implementation of a number of programmatic activities to diversify the NWC scientific and production activities.

The goal of the FTP “Disposition of Armaments and Military Equipment (2005–2010)”, as relates to the NWC activities, is a 70% reduction of expenditures entailed by keeping excessive military equipment, and reduction of radiation, explosion and fire hazard in storage locations of munitions and military equipment. In 2009, the NWC enterprises fully completed disposal of armaments and military equipment fitted with nuclear power installations, which retired from the Russian Navy.

In the reporting year, the NWC enterprises 100% fulfilled the Governmental Defense Order as regards supplies and production of special-purpose items, and military power installations for the Ministry of Defense.

The project “Image of the State Atomic Energy Corporation ROSATOM’s Nuclear Weapons Complex by 2020” is aimed at reducing costs and raising efficiency of the NWC organizations. The project provides for changing the organizations’ structure and staffing, optimization of industrial areas, creation of competitive experimental, production and technological basis, labor productivity increase, and provision of a competitive wage level.

Within the project framework, to provide jobs to specialists being released from the NWC sector, a scientific-industrial cluster based on the principles of public-private partnership is created at RFNC-VNIIEF (Sarov), which develops competitive high technology products and services for the Russian and foreign markets of products resulted from the conversion of former military entities. By 2015, it is planned to create 5,000 jobs in this sector. The cluster’s areas of activity are computer, medical, and telecommunication technologies.



NUCLEAR POWER COMPLEX

In 2009, first criticality of the second power unit of Rostov NPP was achieved to constitute an example of devoted labor of our nuclear workers.

Meeting the growing demand in electricity of the Russian economy poses a complex task for us: to increase a share of nuclear generation in the country energy mix from 16% up to 25–30% by 2030. To solve this task, we are deploying a large-scale construction of new power units. The first step has already been made: in 2009, the first criticality of the second power unit of Rostov NPP was achieved to constitute an example of devoted labor of our nuclear workers. We understand that the economy needs reliably operating power units built timely and at a fixed and competitive price rather than heroic deeds. Therefore, today the first priority is the necessity to create an effective engineering system able to ensure series construction of nuclear power plants in a properly planned manner.

Aleksander Lokshin,

Deputy Director General and

Director of the Directorate for Nuclear Power Complex

2.3.2 Nuclear Power Complex

The Nuclear Power Complex (NPC) embraces organizations which provide functioning of nuclear power, machine engineering and nuclear fuel cycle, including those engaged in natural uranium exploration, mining and processing, uranium conversion and enrichment, nuclear fuel fabrication, electricity generation, equipment manufacture, scientific and design complex for new nuclear fuels and gas centrifuge technology development.

In accordance with its strategic goals, ROSATOM strengthens positions in all segments of the market, which is confirmed by performance indicators achieved in the reporting period.

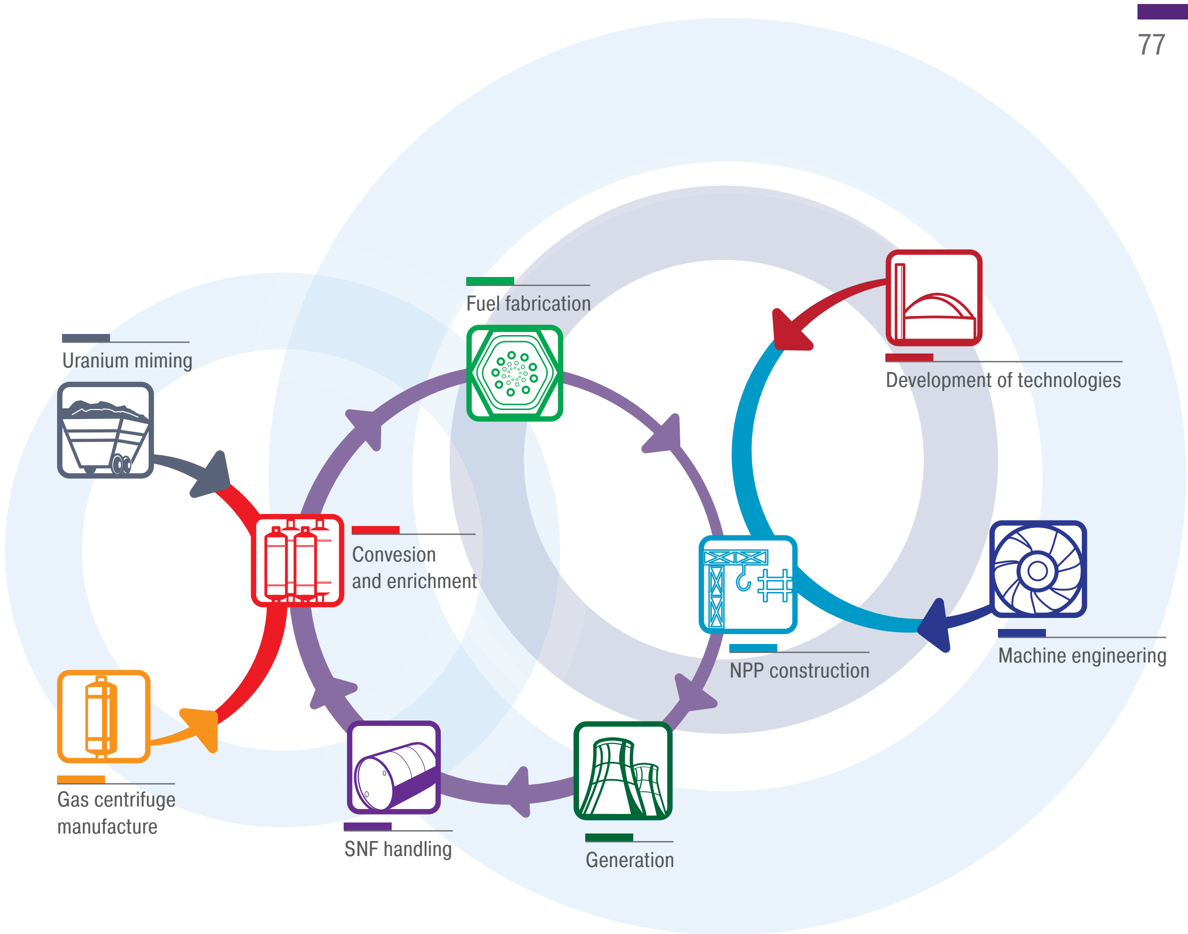
Table 2.1. NPC performance indicators

Indicators	Unit of measure	2008	2009	% to 2008
Electricity generation at Russian NPPs	bln kWh	162.3	163.3	100.6
NPP capacity factor	%	79.5	80.2	100.9
Number of nuclear units commissioned in Russia (first criticality)	pcs	0	1	–
Number of power units under construction in Russia	pcs	7	9	128.6
Number of power units under construction abroad	Pcs	5	5	100.0
Uranium mining output	tons	3,687	4,624	125.4
Uranium resources base[1]	thnd. tons	558	632	113.3
Number of fuel assemblies	pcs	7,129	6,984	98.0

1_Raw material resources base is a sum of explored resources (546,000 tons) and prospective reserves of high degree of confidence (86,000 tons).

Successful achievement of goals the Nuclear Power Complex is faced by is backed by well-coordinated interactions between all links of the integrated process chain.

Figure 2.1. Nuclear Power Complex process chain



Electricity generation

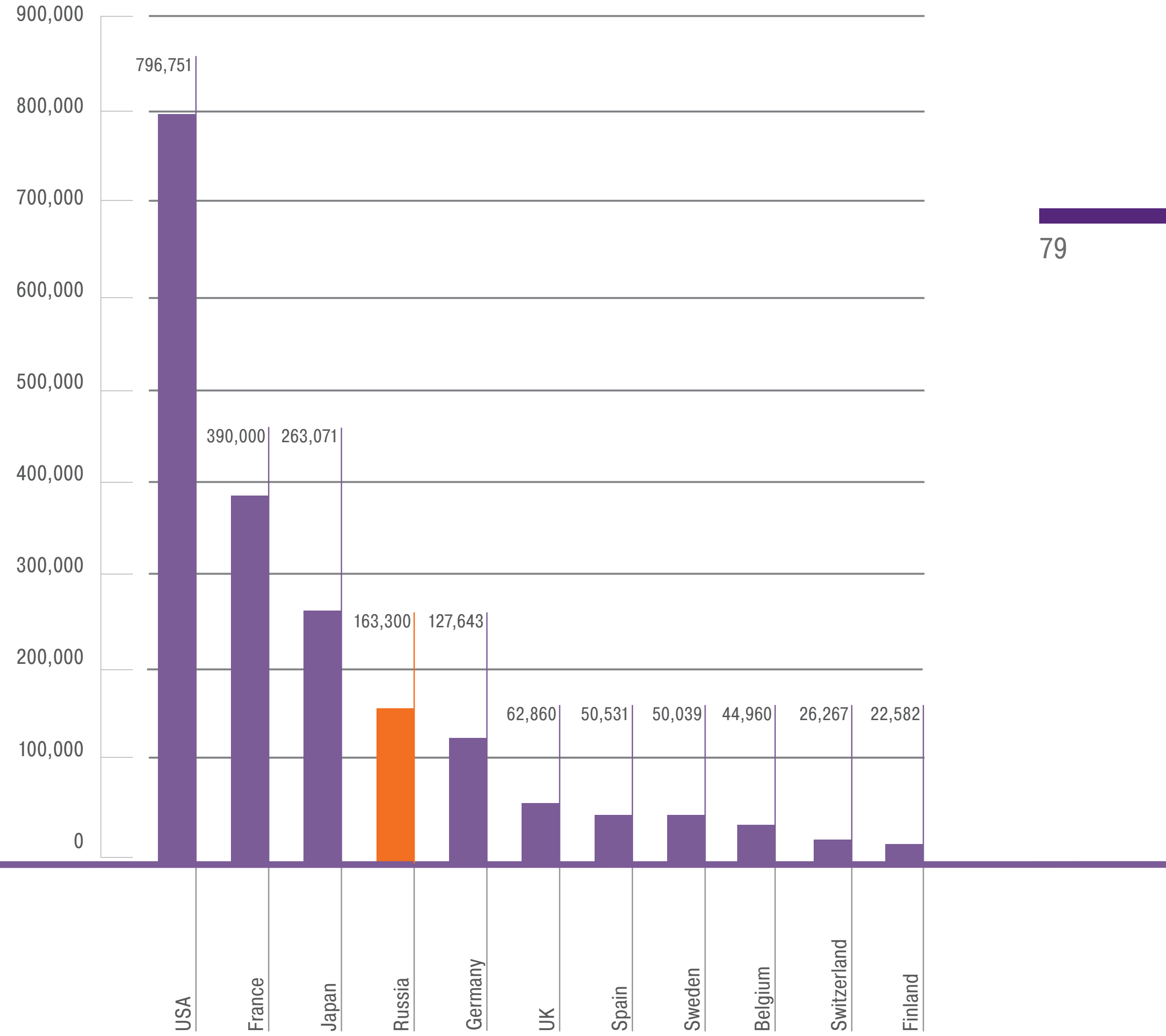
OJSC Concern Rosenergoatom is an operating utility for all NPPs operating in Russia, as well as the customer of the nuclear power plants being built and designed. Rosenergoatom incorporates 10 existing NPPs with a total installed capacity of 23,242 MW. It is the world's top second in terms of the installed capacity (after EDF, France).

A share of electricity generated by nuclear power plants amounts to 16 % of the total electricity production in Russia.
The Rosenergoatom holds the first place in electricity production among the Russian generating companies.

In 2009, in conditions of the economic crisis the Concern managed not only to avoid power generation reduction but also overfulfill the output plan: in the reporting year its nuclear power plants generated 163.3 bln kWh of electricity, which accounted for 100.6% of the target set by the FTS of Russia and 100.6% against the 2008 output.

Capacity factor of the Russian NPPs has been growing since 2004; in 2009, a capacity factor increase was 0.7% (capacity factor – 80.2%). A 1% growth in the capacity factor corresponds to a growth of annual electricity output by 2 bln kWh (~ 300 MW of installed capacity). As of December 24, 2009, an absolute record was achieved in the history of the national nuclear power: for the first time the peak load of nuclear facilities reached 22,800 MW, with installed capacity been 23,242 MW. On that day, the capacity factor was 98.1%.

Figure 2.2. Electricity generation in 2009, GW



Effective electricity generation and sales were achieved in the reporting year through NPP service life extensions, higher output at the operating NPPs and improvement of energy sales approach in the free electricity market.

Service life extensions of existing nuclear power units are an efficient tool of increasing power generation without significant financial expenses. A duration of additional service lives of nuclear power units is 15 to 30 years and determined on a case-by-case basis by technical and economic factors. As of 31.12.2009, service lives of 13 power units of a total installed capacity of 6808 MW had been extended: Novovoronezh-3, 4 (VVER-440), Kola-1, 2 (VVER-440), Leningrad-1, 2, 3 (RBMK-1000), Kursk-1, 2 (RBMK-1000), Bilibino-1–4 (EGP-6). Of these, life time of Kursk-2 and Leningrad-3 was extended in 2009.

Table 2.2. Service life extensions in 2009

Power unit	Power, MW	Design lifetime extended to
Kursk-2	1000	for 15 years until 31.01.2024
Leningrad-3	1000	for 15 years until 31.01.2025

As a result of modernization activities, the said power units' safety level has significantly grown to achieve values that meet the national regulations and the IAEA recommendations for NPPs built to earlier standards.

Figure 2.3. Share of nuclear power in electricity generation, %

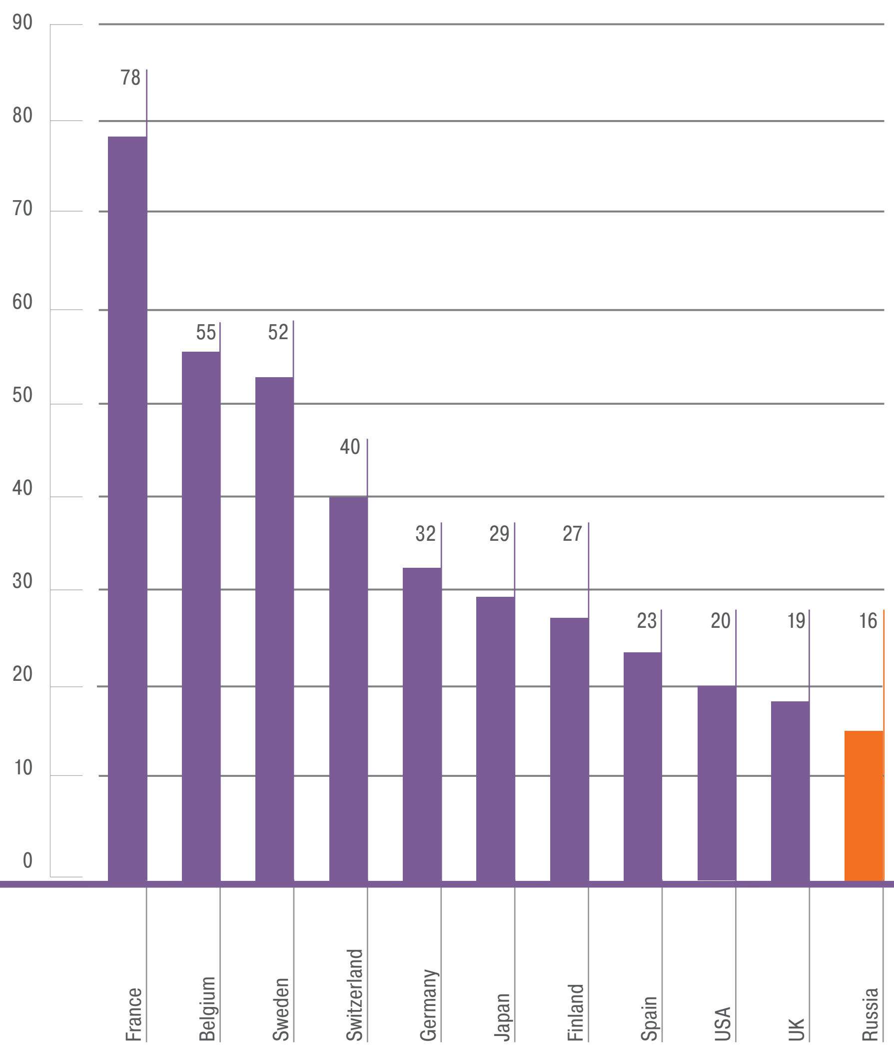
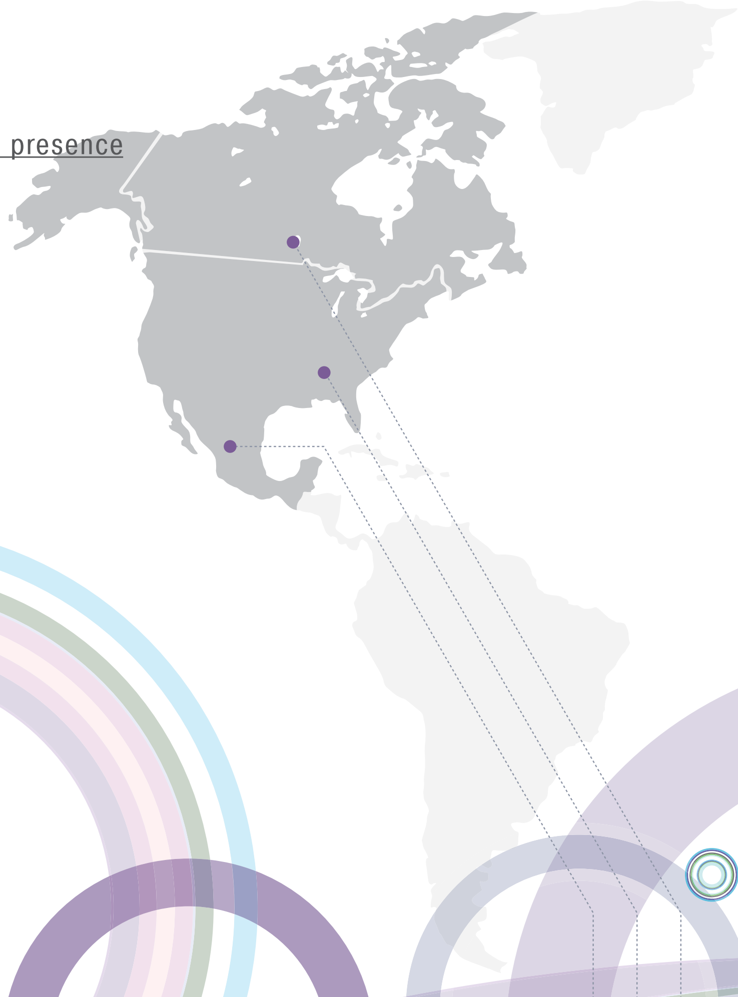
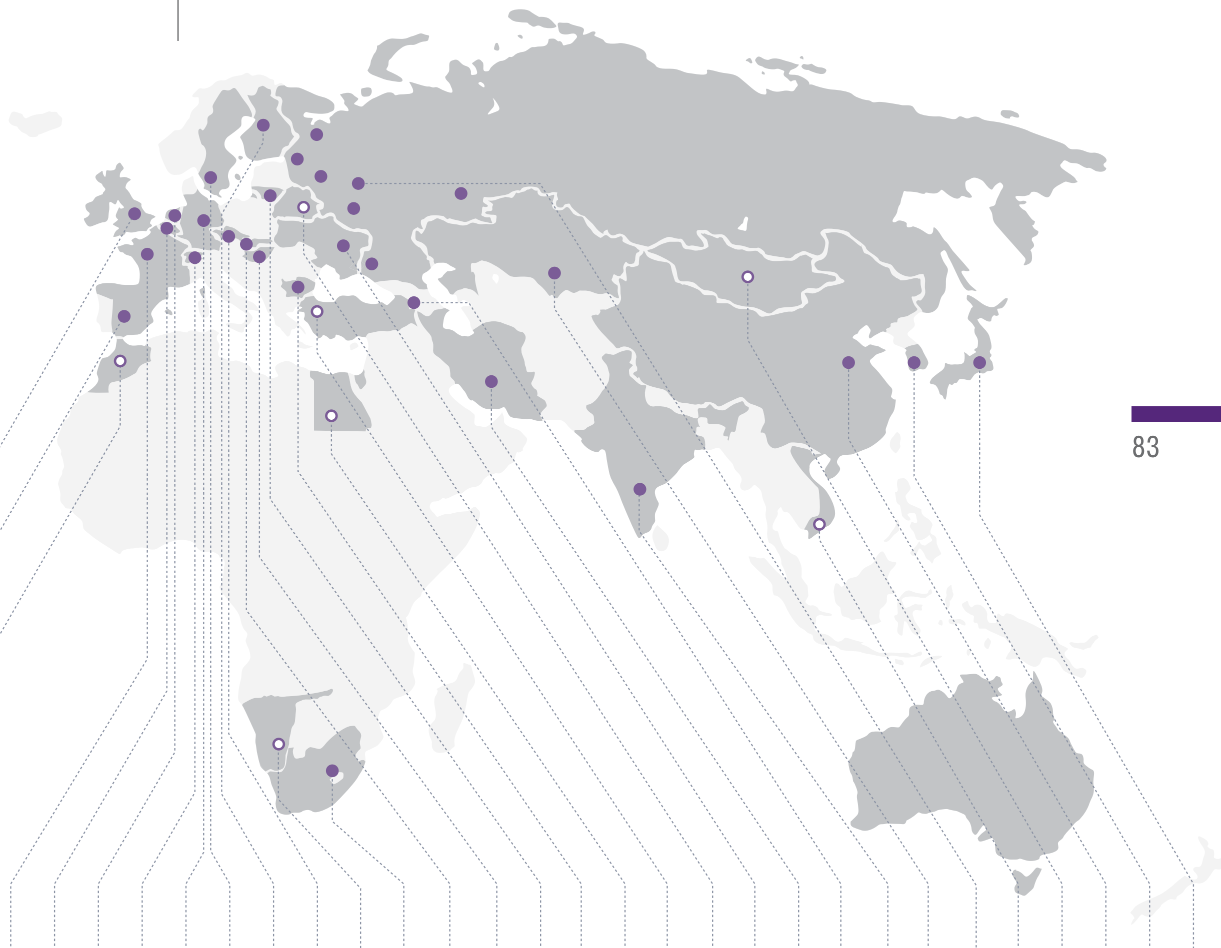


Figure 2.4. Global presence



COUNTRY	Mexico	USA	Canada
Uranium mining			○
Low-enriched uranium supply and enrichment services	●	●	●
Supply of nuclear fuel and its components		○	
NPP construction			

● Projects under implementation
○ Prospective projects



	Great Britain	Spain	Morocco	France	Belgium	Netherlands	Switzerland	Germany	Sweden	Finland	Czech Republic	Namibia	South Africa	Slovakia	Hungary	Lithuania	Bulgaria	Egypt	Turkey	Belarus	Ukraine	Iran	Armenia	India	Kazakhstan	Russia	Vietnam	Mongolia	China	Korea	Japan
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In 2009 the work was done to increase output at existing NPPs:

- modernization to improve power units operating reliability and stability;
- uprating of nuclear power units thermal capacity (RBMK-1000 by 5%; VVER-1000 by 4%; VVER-440 by 7%);
- transition of VVER-1000 power units to 18-month fuel cycle;
- modernization of RBMK-1000 reactors to move to a two-year interval between overhauls;
- NPP unit efficiency factor improvement.

In order to sell electricity at the wholesale market, Rosenergoatom updated monthly maintenance schedules for the plant critical equipment and equipment which operation influences power output. Additional gains reached RUB0.8bn.

Optimization of energy sales at tomorrow and balancing markets over 12 months of 2009 equaled 4.6% of the total extra revenue of Rosenergoatom.

As a result of the implemented measures, an electricity output at operating plants was increased by 987 mln. kWh (as compared to the 2008 output). An equivalent electricity increment was 0.17 GW as compared to 2008, and a cumulative gain due to the power generation increase program at operating units reached 1.8 GW since 2006.

Nuclear fuel cycle

Uranium mining

JSC Atomredmetzoloto (ARMZ) is an authorized company of ROSATOM for uranium mining in Russia and abroad. It is one of the five world's largest uranium mining companies and had a market share of 9.3% in 2009.

In 2009, ARMZ's enterprises in Russia and joint ventures in Kazakhstan (taking into account ARMZ's actual share in the JV output) produced 4,624 tons of uranium which is by 25.4% more than in 2008. In terms of uranium output, ARMZ retained the fifth place in the world in 2009, and it holds the second place in the world in term of resources. The gain was achieved mainly by joint ventures of ARMZ with Kazakhstan (JSC Zarechnoye, Karatau Ltd. and Akbastau JV JSC). An ARMZ share in the JVs production in Kazakhstan was about 1,000 tons of uranium, which was 6.4 times more than in 2008.

ARMZ participates in the projects carried out nearly in all world regions, which are promising from the viewpoint of uranium mining. In 2009, ARMZ acquired assets of the Effective Energy N.V., thus consolidating the uranium mining assets owned by Russia in the territory of Kazakhstan. Having finalized the deal on assets swap with Canadian company Uranium One Inc., ARMZ acquired 19.95% of its shares.

Figure 2.5. Countries' shares in the uranium mining market in 2009

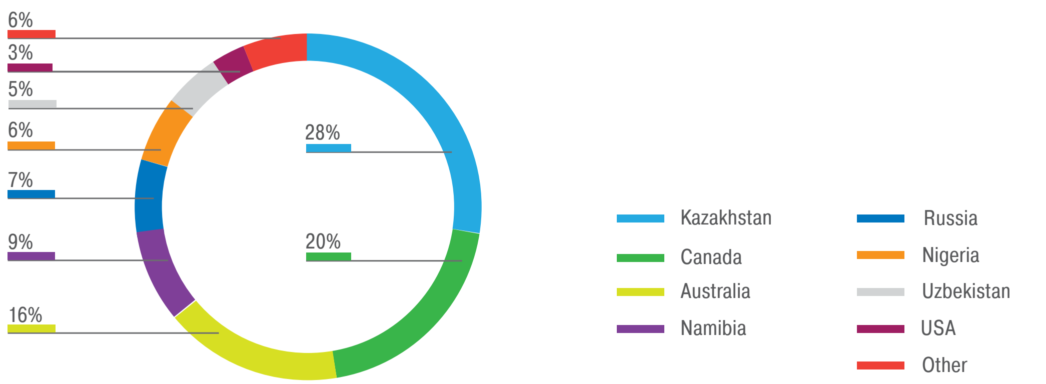


Figure 2.6. Companies' shares in the uranium mining market in 2009

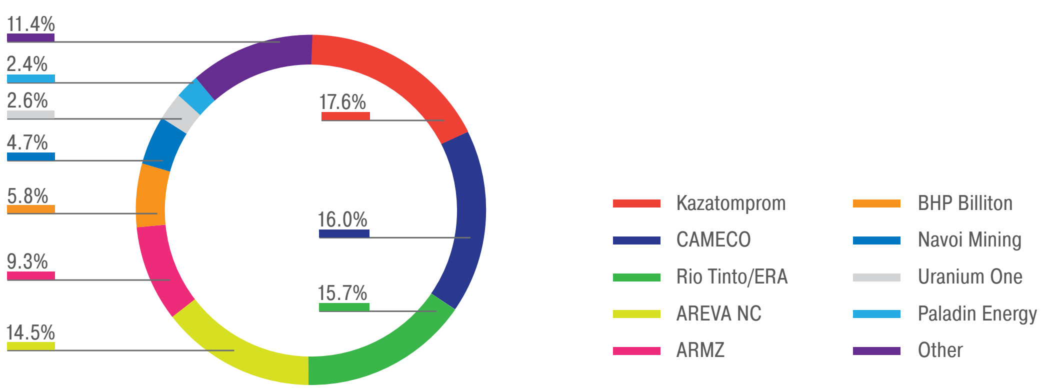
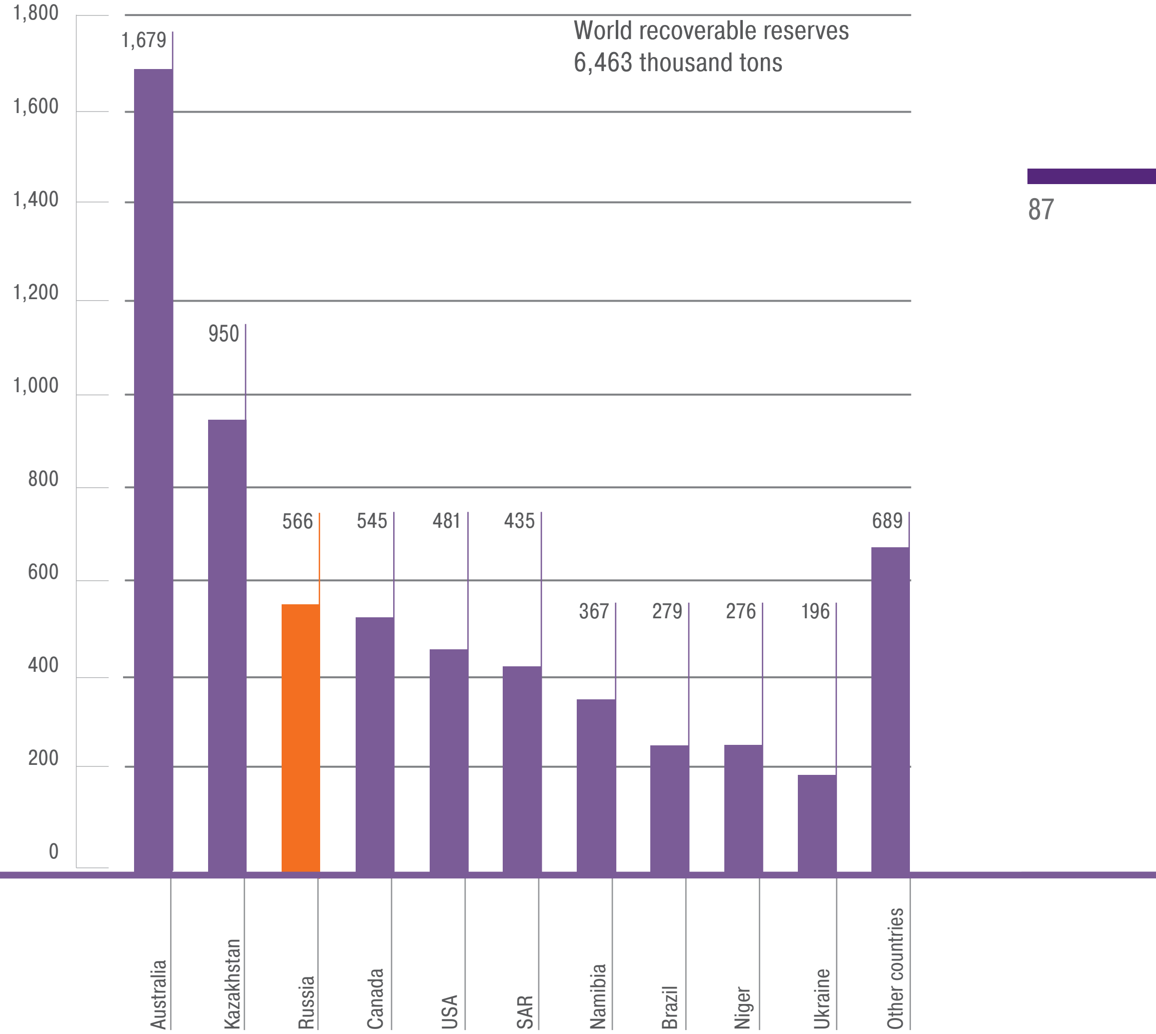


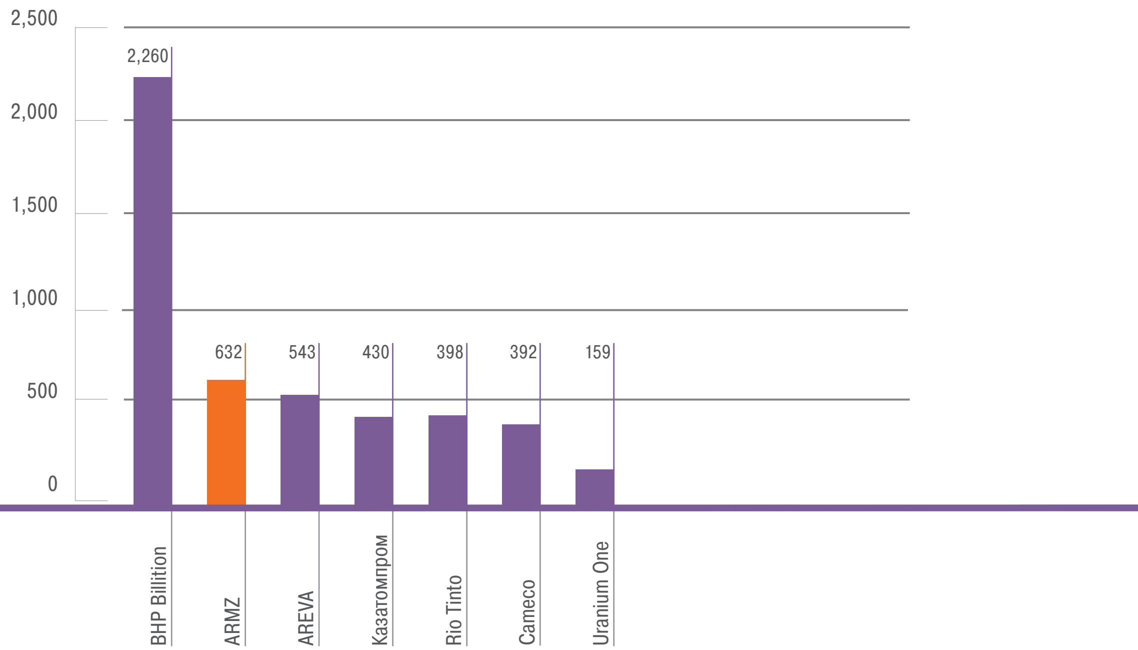
Figure 2.7. Reserves of largest uranium mining countries, thnd. tons, 2009



An important event for ARMZ was its entering the market as an independent natural uranium supplier. In 2009 the company signed contracts with consumers for uranium supply for three subsequent years, as well as contracts for material storage and account service at two foreign conversion facilities.

An important event for ARMZ was its entering the market as an independent supplier.

Figure 2.8. Uranium reserves of the largest uranium mining companies, thnd. tons, 2009



Nuclear fuel fabrication

September 25, 2009, ROSATOM Board of Directors made a decision to create, on the basis of JSC TVEL, a Fuel Company to consolidate production assets related to nuclear fuel fabrication, uranium enrichment and conversion, production of gas centrifuges and auxiliary equipment, a scientific and design capabilities for development of new nuclear fuel technologies and advanced gas centrifuge process platform.

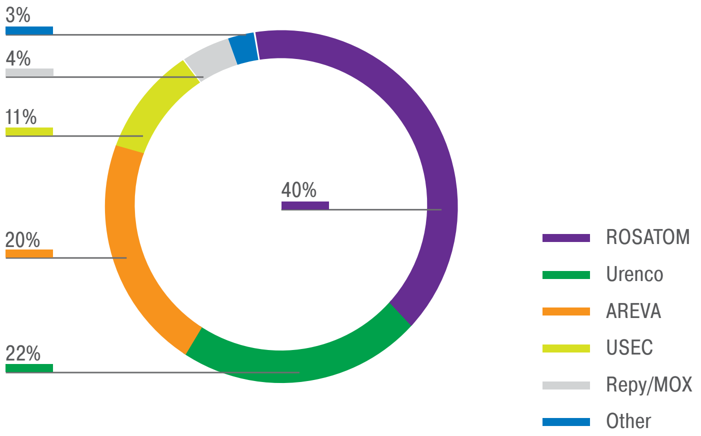
Enrichment and conversion complex

The ROSATOM's enrichment complex comprises four plants for production of uranium hexafluoride (UF6): Ural Electrochemical Combine, PA Electrochemical Plant, Angarsk Electrolysis and Chemical Complex, and Siberian Chemical Combine. A total capacity of the Russian enrichment plants accounts for 40% of the world capacities.

In 2009, modernization of enrichment and conversion facilities, i.e. replacement of gas centrifuge machines of earlier generations with more cost-effective and efficient ones, continued. Under the project of the safe handling of depleted uranium hexafluoride (DUH), a defluorization plant (W-ECP) was launched.

In 2009, the program to create a new image of JSC TVEL started in 2008 and aimed at JSC TVEL activities efficiency increase through productivity growth and cost reduction, inter alia, the restructuring of auxiliary, supporting and non-core divisions, continued. As a result of this program implementation, savings amounted to over RUB800m in 2009.

Figure 2.9. Russia's share in the world market of uranium enrichment services



Uranium enrichment technologies and equipment

In line with the "Consolidated List of Research and Development for Enrichment and Conversion in 2009", the work to organize a full-scale production of new generation gas centrifuges was carried out, along with shaping the project on development of advanced gas centrifuge makes.

In 2009, under the contract between Techsnabexport and CNEIC (China) concerning assistance in construction of Phase Four of the uranium enrichment plant, the major gaseous centrifuge equipment made especially for export was manufactured and supplied on schedule.

Advanced materials (carbon fibers)

The Khimpromengineering is the key producer of domestic carbon fibers which are manufactured at its affiliates Argon Ltd. (Balakovo, Saratov Region) and Carbon and Composite Materials Plant LLC (Chelyabinsk) as carbon tapes and bundles. In addition, Khimpromengineering coordinates R&D on PAN (polyacrylonitryl fibers, a feed for carbon fibers) and carbon fibers.

In October 2009, the New Composite Materials LLC was established with its interest owned by ROSATOM, State Corporation Russian Technologies and Compozit Holding, to set up production of polyacrylonitryl and carbon fibers.

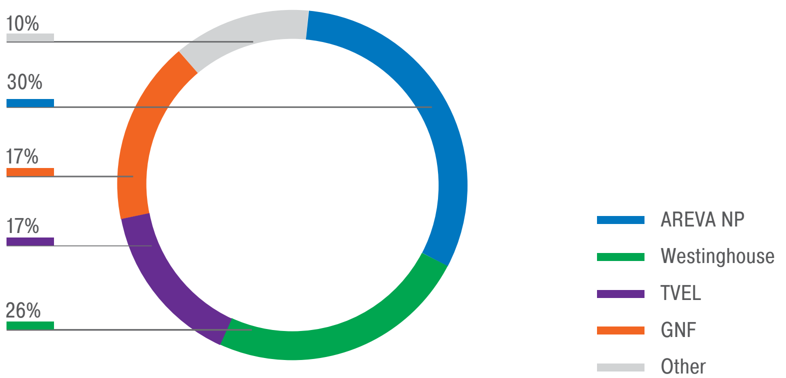
Nuclear fuel fabrication

JSC Mashinostroitelny Zavod, a subsidiary of JSC TVEL, completed introduction of a new technology of finishing the fuel assembly (FA) end pieces.

JSC NCCP, together with the Technological Design Institute of Scientific Instrument Engineering SB RAS developed a concept of innovative laser measuring machine improvement.

JSC Mashinostroitelny Zavod together with Moscow Engineering and Physics Institute developed and implemented an ultrasonic unit for helium pressure monitoring in fuel rods. Apart from the fuel rod leak monitoring by non-destructive methods, this device makes it possible to monitor media within the fuel cladding of the end product.

Figure 2.10. World market of nuclear fuel fabrication



Nuclear fuel export

JSC TVEL concluded contracts with the Department of Atomic Energy of India for supply of low enriched uranium pellets for a BWR power unit at Tarapur NPP for about US$85m, natural uranium pellets for a PHWR power unit at Rajastan NPP for over US$700m. Contracts were signed for fuel supply to Bushehr NPP (Iran) for over US$600m.

In 2009, JSC TVEL enterprises shipped FA for the initial charge and first reloading of Kudankulam-2 (India) worth over US$99m.

Fuel assemblies were supplied for a full reloading of Temelin-1 (Czech Republic) to be carried out in 2010. Within the framework of the Russian-American program of fuel enrichment reduction at research reactors, in July 2009, fuel was supplied to the research reactor in Rez, Czech Republic.

JSC Mashinostroitelny Zavod together with its foreign partner manufactured and delivered the 2000-th fuel assembly for western-design reactors. As of 2009, JSC TVEL supplied nuclear fuel for 17% of the world's reactor fleet.

Export of low enriched uranium and enrichment services

In 2009, JSC Techsnabexport resumed direct cooperation with the U.S. utilities by having concluded six long-term contracts for supply of low enriched uranium worth about US$3bn.

During the year, new contracts and supplements to existing long-term contracts for supply of low enriched uranium to the European Union and Asian-Pacific countries totaling about US$7.5bn were signed.

As of the end of 2009, the uranium products export portfolio for the next five years (exclusive supplies under the HEU Agreement) amounted to over US$8bn (for reference: the HEU Agreement is an agreement between the Government of the Russian Federation and the U.S. Government on the use of highly enriched uranium extracted from nuclear weapons; under the agreement Russia has undertaken to supply to the USA over 20 years (until the end of 2013) low enriched uranium (LEU) converted from 500 tons of highly enriched uranium (HEU) extracted from nuclear weapons and recognized by the Russian side surplus for the defense purposes.

In 2009, uranium products were supplied to foreign customers under commercial contracts worth over US$2bn. Besides, as a result of the HEU-LEU program, about US$1bn was paid to the Federal budget.

NPP engineering and construction

In compliance with the ROSATOM Long-Term Activity Program (LTAP), NPP construction is a priority area of the nuclear power engineering development.

Construction is carried out in compliance with the investment program financed from Rosenergoatom own budget and the Russian federal budget; in compliance with the LTAP, the money is transferred to Rosenergoatom authorized capital and included in its investment Program.

The Atomenergoproekt, NN AEP and SPb AEP designated general contractors, carry out NPP construction works on specific sites, in accordance with contracts signed. Each of these organizations (created on the basis of research institutes) performs a complete cycle of works supporting NPP construction, among other, procurement, delivery and construction management.

As of 31.12.2009, there were 437 nuclear power units with a total capacity of 370.7 GW under operation in the world, 55 power units with a total capacity of 50.9 GW were under construction. According to expert estimates, in 10–15 years nuclear capacity is expected to double worldwide.

Engineering bloc of the Corporation directorates

A group of engineering directorates has been formed in ROSATOM central administration and is in charge of the investment program and NPP construction efficiency.

Main areas of the Engineering Development Program during nuclear facilities construction:

- enhancement of the management system for the investment program and projects within it,
- development of the industry pricing system,
- upgrading NPP construction technologies,
- creation of a unified industry material and technical resources,
- improvement the existing procurement system complying with the NPP construction tasks,
- development of the industry quality control and management during the NPP construction.

Improvement of the investment program management system

The development of the industry-wide investment program management system allows the ROSATOM as investor to fully control the NPP construction process. It is an important factor of ensuring construction manageability and attracting private investors to the nuclear industry.

Within the framework of the investment program management system improvement, in 2009 an information-based planning model of Long-Term Investment Program for NPP Construction was developed, including a three-tier pattern of investment planning, from setting strategic targets to detailed action plan, the investment program monitoring and reporting systems, and an algorithm of interactions with organizations were formed; and the institute of NPP construction project manager was founded.

In 2009, the Corporation started dissemination of the investment management system acting within the framework of the Nuclear Power Complex to all enterprises of the industry. In December 2009, the ROSATOM Investment Committee was set up and Regulation on the Investment Policy was adopted, which determined unified corporative principles of investment activities, rules and regulations of investment decision-making by the Corporation and its organizations as well as the system of investment documents, with the key documents being an enterprise investment memorandum and investment project passport.

Development of the industry pricing system

The aim of the pricing system development is to form an industry common policy in the area of pricing and cost estimation among the investment stakeholders aimed at reducing NPP construction costs in order to provide their competitiveness in the domestic and foreign markets.

In 2009, a methodology for determining construction costs of nuclear facilities was worked out and, on its basis, all necessary indices for recalculating construction and installation costs for planning 2010 works were determined (total 336 indices), and new industry ratios (106 ratios and costs) were established. For series construction, a resource and technological model of a standard NPP power unit was developed.

Generation of the unified industry-wide material and technical resource database

In 2009, a functional structure and requirements to the unified industry-wide database of material and technical resources were defined. The base should include reference books: on technological and consumer properties and parameters of equipment and materials; basic prices (as of 2001) and current prices formed on the basis of market monitoring; equipment and material suppliers and manufacturers.

The generation of the unified industry-wide database of material and technical resources will increase the transparency of engineering functioning and significantly enhance the effectiveness of cost management of NPP construction projects.

Development of the industry NPP construction quality control and management system

The aim of development of the nuclear industry NPP construction quality control and management system is the assurance of safe and reliable NPP operation by means of improving the quality of goods, works and services procured from organizations participating in the NPP construction. In 2009, regulations and procedures for the project of the of the industry goods/works quality control and management system creation for NPP construction were developed (a total of 104 procedural documents).

Creation of industry technological institution

The initiative to create an industry-wide institution for nuclear facility construction was launched to shorten a NPP construction period for "AES-2006" project to 48 months (for one power unit).

In 2009, the creation of such an institute began on the basis of VNIPIET. The advanced construction technology development and introduction was based on 4D-model which will ensure maximum unification of chronometrical technological operations, construction and installation activities, and standardization of relevant element base for achieving the construction preset completion dates and minimal construction costs.

The works are performed in coordination with engineering companies which in the recent years have started mastering multidimensional modeling of NPP construction (6D-design, including application of the Toshiba experience).

Multidimensional resource model of a facility construction:
3D – Facility design data
4D – Scheduling and planning
5D – Configuration, arrangement, material and equipment delivery
6D – Labor, technical, financial and other resources

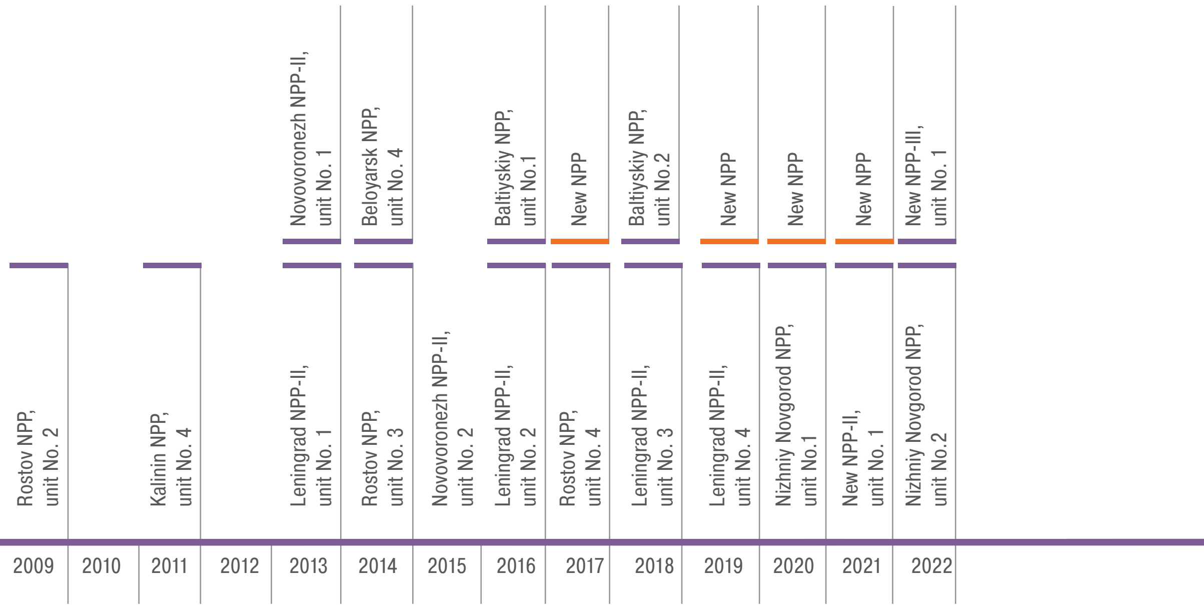
Investment program

In line with the optimization of the federal budget expenditures in 2009, the Corporation adjusted the LTAP in part related to the Rosenergoatom Investment Program, which shifted NPP commissioning dates to 1–2 years.

The scope of the Rosenergoatom Investment Program for 2009 amounted to RUB171.5bn, of which RUB117.35bn were designated for series construction of power units. The main result of the Rosenergoatom Investment Program implementation in 2009 was the first criticality at Rostov-2.

According to the Rosenergoatom Investment Program, NPP units commissioning is assumed as follows:

Figure 2.11. Program of commissioning of NPP power units under the Investment Program adopted in 2009



Power units whose financing was not provided for by the Investment Program for 2010–2012 approved by the Russian Government on 15.09.2009

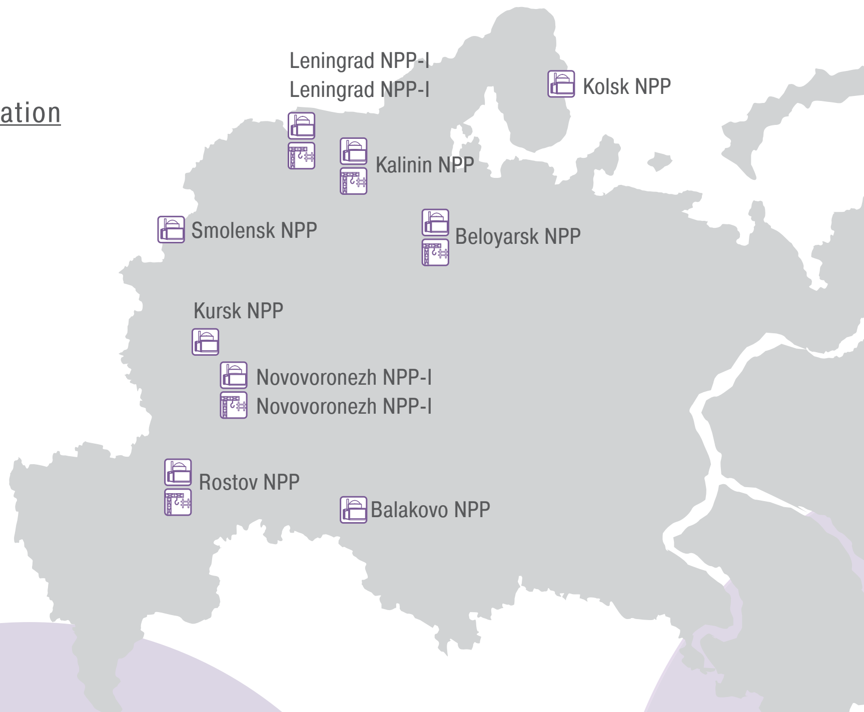
As potential financing sources, revenues from the power market, federal budget replenishment, and loans are considered.

Rostov (Volgodonsk) NPP, Units No.2, 3, 4	A set of activities was performed aimed at Rostov-2 operational preparedness to the “first criticality” program; on December 24, 2009, the loading of all 163 FAs into the reactor core was completed. At Rostov-3,4 projects, design documentation was approved, financing started, and the site preparation works began.
Novovoronezh NPP II, Units No. 1, 2	Walls’ concreting above the foundation elevation has been completed at all main buildings and structures of startup facilities. Installation of the core melt trap and the first layer of the reactor building internal containment began.
Leningrad NPP II, Units No. 1, 2	At Unit 1, outer wall concreting and the reactor vault inner lining were completed. At Unit 2, the foundation pit was prepared and installation of foundation plates of the safety building and auxiliary building began as well as the works for building a tunnel under the foundation plate.

In 2009, ROSATOM was constructing nine power units in Russia

Kalinin NPP, Unit No. 4	Installation of outer and inner walls of the rigging was completed. In the turbine hall, erection of turbine generator upper structure columns was finished, foundation for condensers was completed, and the roof was built.
Beloyarsk NPP, Unit No. 4	In the reactor vault, the lining installation and concrete casting were carried out. In the reactor assembly building, a number of activities for the first stage of the “clean zone” arrangement were completed.
Floating NPP Academik Lomonosov	In May 2009, the keel of the floating power unit was laid at shipway “A” at Baltijskiy Zavod. In 2009, two KLT-40S reactors were manufactured and the last steam generator was completed. Besides, a transportation package for storage and transportation of floating power units’ fresh nuclear fuel was tested.
Baltic NPP	In 2009, the Russian Government Order on Baltic NPP siting was signed, investment justification worked out, environmental impact assessment report and preliminary safety justification report were developed, license for siting and start of the preparatory works was obtained.

Figure 2.12. Russian NPPs: under operation and construction



	Smolensk NPP	Rostov NPP	Kursk NPP	Novovoronezh NPP-I	Novovoronezh NPP-II	Leningrad NPP-I	Leningrad NPP-II	Balakovo NPP	Kalinin NPP	Beloyarsk NPP	Kolsk NPP	Bilibino NPP	Floating NPP
Operating units	3	1	4	3	–	4	–	4	3	1	4	4	–
Unit type	RBMK-1000	VVER-1000	RBMK-1000	VVER-440 VVER-1000	–	RBMK-1000	–	VVER-1000	VVER-1000	BN-600	VVER-440	EGP-6	–
Summary capacity	3000	1000	4000	1834	–	4000	–	4000	3000	600	1760	48	–

	Smolensk NPP	Rostov NPP	Kursk NPP	Novovoronezh NPP-I	Novovoronezh NPP-II	Leningrad NPP-I	Leningrad NPP-II	Balakovo NPP	Kalinin NPP	Beloyarsk NPP	Kolsk NPP	Bilibino NPP	Floating NPP
Units under construction	–	3	–	–	2	–	2	–	1	1	–	–	1
Unit type	–	VVER-1000			VVER-1200		VVER-1200			BN-800			KLT-40S
Summary capacity	–	3300	–	–	2400	–	2400	–	–	800	–	–	70

Construction abroad

ROSATOM is the world leader in terms of a number of NPPs being constructed abroad in parallel (five power units). In the projects under implementation, the VVER reference technology is used, which was successfully tested at Tianwan NPP in China (two power units). The foreign nuclear construction projects are executed by Atomstroyexport.

Bulgaria

In 2009, at Belene NPP construction site (2 power units) the dismantling of reinforced concrete and metal structures was completed, a foundation pit for the first unit construction was prepared. Orders were placed with vendors, and the manufacture of the long-lead equipment, including reactor pressure vessels and their internals and upper blocks, steam generators, turbine generators, and auxiliary equipment for turbine halls began. Active works were carried out with the customer concerning the Belene NPP detail design review.

Iran

In 2009, the construction of Bushehr NPP (1 power unit) came to the finalization stage. Late November 2009, hydraulic tests of the power unit primary circuit were completed. The tests under pressure exceeding the operating conditions by 40% proved the safety and high strength margin of Bushehr NPP process systems.

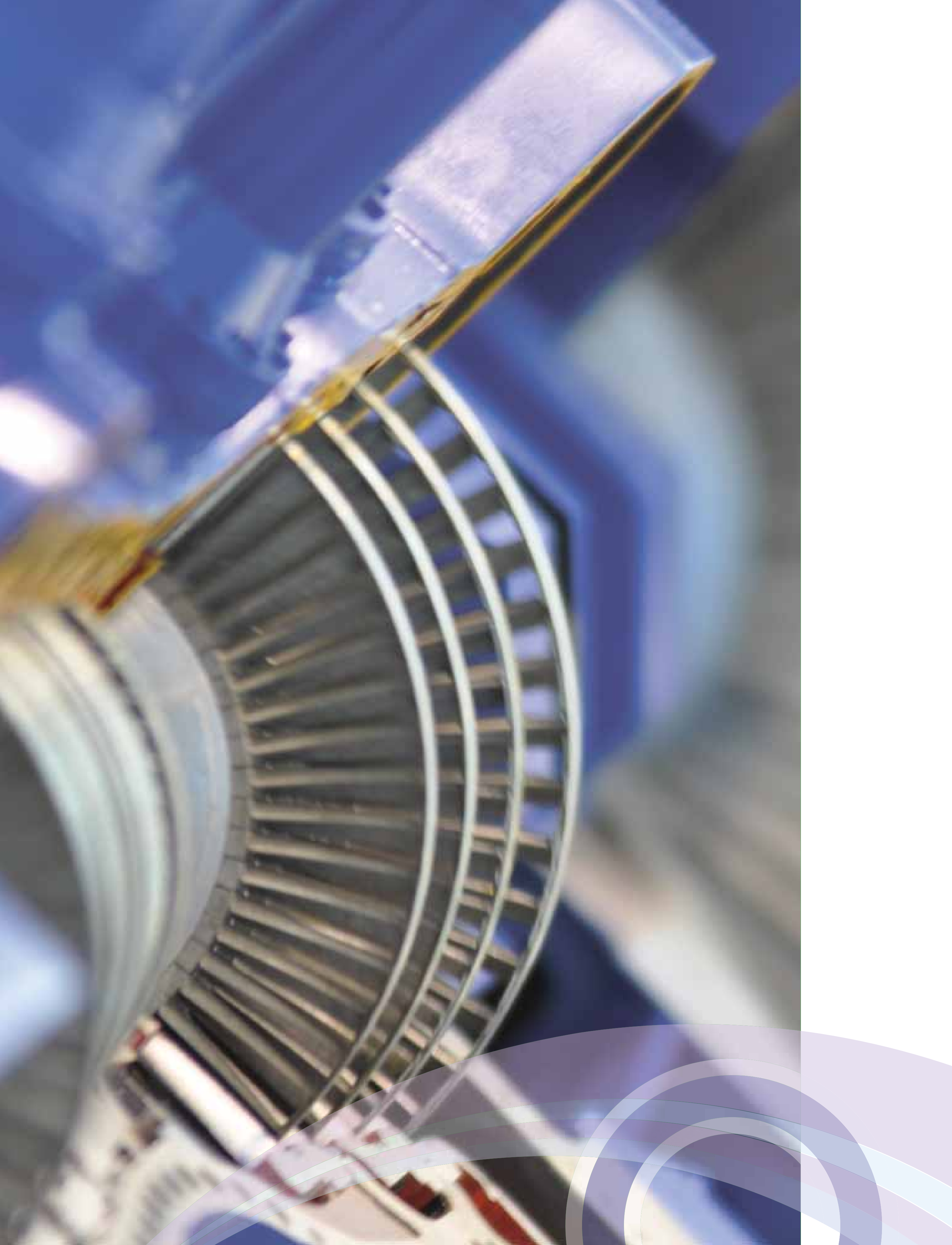
India

By December, 2009, at Kudankulam NPP (2 power units) all buildings and structures were erected, engineering utilities installed, and major equipment mounted. As planned, the consumers' power supply started. Washout and commissioning operations on process systems were carried out. Water chemical clean-up system was commissioned.

Perspectives of expanding the foreign nuclear construction market

In September 2009, the warranty operation period of Tianwan NPP (two power units) finished. In fall 2009, ROSATOM and China National Nuclear Corporation (CNNC) signed a Letter of Intent for the construction of Tianwan NPP Phase Two – Units 3 and 4. In October, during Russian Prime Minister V.V. Putin's visit to China, Atomstroyexport and CNNC's affiliated companies signed a contract for the development and transfer of documentation for pre-design research and justification of constructing a NPP with two power units with a demonstration BN-800 reactor in China (CDFR project).

In 2009, ROSATOM held negotiations on NPP construction perspectives with Turkey, Vietnam, Belarus, Ukraine, Armenia, Bangladesh and other countries.



Nuclear Machine Engineering

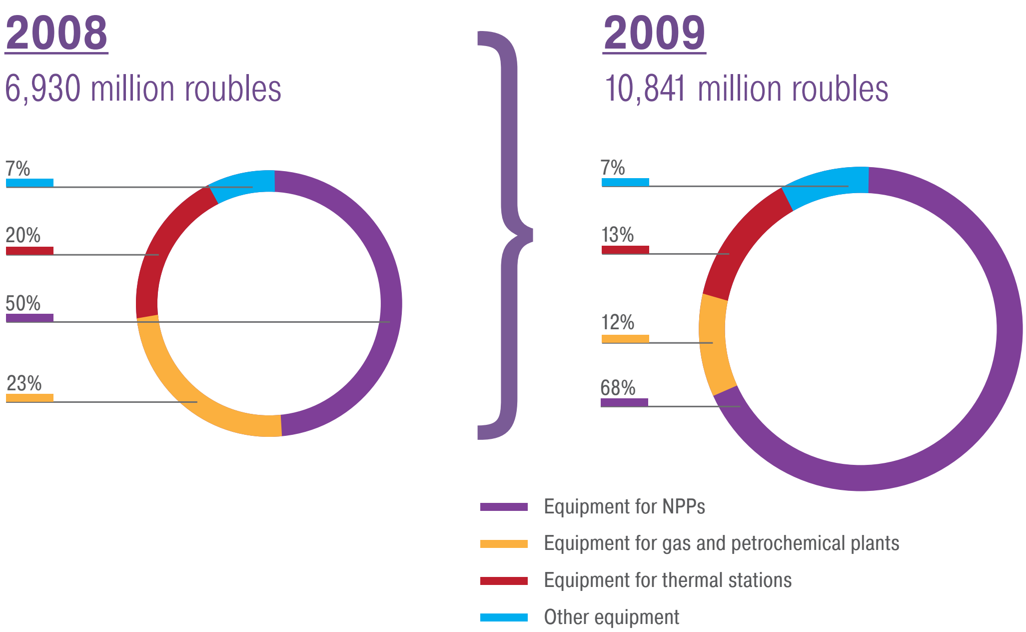
In 2009, the enterprises within the Atomenergomash group of companies manufactured equipment worth RUB10.8bn (by 50% more than in 2008).

A growth of production is due to the fact that a number of industry assets were consolidated under the Atomenergomash management; these were transferred in the course of an additional issue of the company's shares, as well as due to higher production at the existing enterprises (the growth in comparison with the previous year was 15%). In the production structure, the largest share falls with the products for nuclear industry – 68%, for gas and petrochemical industry – 12%, thermal power engineering – 13%.

In the reporting period, the enterprises of the Atomenergomash group supplied equipment for Rostov, Kalinin, Leningrad, Kursk, Smolensk, Kola, Bilibino, Beloyarsk, Novovoronezh NPPs in Russia, and for the NPPs in operation and under construction abroad, including Kudankulam, Belene, Tianwan, and Kozloduy NPPs.

Availability of enterprises possessing competence in equipment manufacture for SNF and RW management within Atomenergomash group allowed the company to participate in the implementation of the FTP "Nuclear and Radiation Safety". In the reporting year, experimental equipment for PA Mayak, equipment for spent RW reprocessing and concentration for Russian Federal Nuclear Centre – All-Russia Research Institute of Technical Physics was manufactured, and a number of design activities for Atomflot and MCC were carried out.

Figure 2.13. Equipment production structure at Atomenergomash enterprises in 2008 and 2009



Consolidated portfolio of orders of the Atomenergomash group as of 31.12.2009 amounted to RUB38.9bn.

Consolidated proceeds of the Atomenergomash group by the results of 2009 grew more than 30% and amounted to RUB16.034bn while the company net profit, by the year results grew more than threefold and amounted to RUB1.382bn. An Atomenergomash's share in the volume of sales in the Russian power machine engineering amounted to 15% (2nd largest in Russia).

Key projects in the thermal power engineering in the reporting period are the manufacture of equipment for Novgorod, Kostroma, and Tver thermal power plants (all are TGK-9), TEC-9, TEC-26 (Mosenergo), and Chelyabinsk TEC.

Aiming at improving competitiveness in the power equipment market as well as at raising performance efficiency, the Atomenergomash group implements investment projects dealing with modernization and technology development, which provide for introduction of new processes and new high-performance process equipment. In the reporting period, RUB1.615bn were spent to implement the investment policy, including for the technology development – 58% of the funds allocated. Namely, payment for advanced high-technology CNC machines was effected, including metal-cutting equipment for ZiO-Podolsk, turning and boring equipment for CDBMB.

In addition to technical development programs, at Atomenergomash enterprises (in particular, at ZiO-Podolsk Machine Building Plant), measures for the introduction of Rosatom Production system were successfully implemented for the second year. This system is built on the principles of Lean Culture. The Program introduction at the industrial enterprises allows to achieve significant production growth without large capital expenses.

SCIENTIFIC AND TECHNICAL COMPLEX

The State Atomic Energy Corporation ROSATOM possesses the richest innovative potential which is implemented not only on the markets which are traditional for the industry.

In the coming decade, the priority of the industry innovative development destined to provide a powerful impetus for the Russian “nuclear renaissance” will be given to development of a new technological platform for the nuclear power engineering based on fast reactors with closed fuel cycle. The transition to the new platform will significantly increase the feedstock reserves due to the use uranium-238, which reserves are practically inexhaustible, and will allow Russia to realize its competitive advantages in creating maximally effective and environmentally safe power plants. As said by Enrico Fermi, a country that is the first to develop the fast reactor will be the leader in the nuclear engineering. We are close to solving this task. Besides, ROSATOM possesses the richest innovative potential which is implemented not only in the markets, which are traditional for the industry, but also in the fields of nuclear medicine, space exploration, material studies, superconductors, and other science-intensive areas. The potential of these fast growing markets is comparable, and sometimes exceeds, the potential of markets traditional for the nuclear industry.

Petr Shchedrovitskiy,

Deputy Director General for Strategic Development,

Director of Directorate for Scientific and Technical Complex

2.3.3 Scientific and technical complex

In 2009, the State Atomic Energy Corporation ROSATOM carried out a broad variety of scientific and innovative works aimed, among other, at realization of the course to the Russian economy modernization announced by the Government. The Corporation scientific potential allows working not only to meet the needs of the nuclear industry but also taking an active part in associated developments, widening the spheres of nuclear technology applications. Through this the Corporation increases its competitiveness and creates conditions for Russia's integrating the international community as a supplier of high-tech products and services.

Table 2.3. Financing of scientific, research and design works of ROSATOM in 2009, mln RUB

	Federal budget	The ROSATOM budget	Total
FTP "National technological basis for 2007–2011"	377	377	754
FTP "Development of nanoindustry infrastructure in the Russian Federation for 2008–2010"	304.3	42.4	346.7
FTP "Research and development in priority areas of Scientific and Technical Complex"	67.65	–	67.65
R&D to solve industry-wide problems	2258.7	–	2258.7
"Work for ITER International Project (international thermonuclear experimental reactor) in 2007–2012"	2172.4	–	2172.4
Total	5180.05	419.4	5599.45

Federal Target Program "Nuclear Power Technologies of the New Generation in 2010–2015 and until 2020"

One of the main achievements of the scientific and technical complex in 2009 was the approval of Federal Target Program "Nuclear Power Technologies of the New Generation in 2010–2015 and until 2020" by the Russian Government resolution No. 1026-r of 23.07.2009 (the FTP was approved by Government Decree No. 50 of 03.02.2010).

The Program goal is the development of nuclear energy technologies of the new generation for nuclear power plants to meet the country's electricity needs, the increase in natural uranium and spent nuclear fuel use efficiency. The Program includes the development of fast neutron reactors with closed fuel cycle as a key nuclear energy technology of the fourth generation, construction of experimental demonstration reactor installations, development of new generation fuel manufacture technologies and non-aqueous techniques of its reprocessing, build-up of an experimental base, ensuring the international priority of Russia in the field of nuclear research. Besides, the implementation of the Program will ensure accelerated development and restoration of the nuclear engineering scientific and technical potential, attracting young specialists, creation of the environment for issuing competitive science-intensive products of a world class.

Total funding under the Program amounts to RUB128,294m, including: from the federal budget – RUB110.428m, from non-budgetary sources – RUB17.866m.

Basic Science Development

In 2009, ROSATOM adopted the "Concept of Modernization and Development of the Nuclear Power Experimental Basis and Basic Science for 2010 –2020". The nuclear industry organizations provided a scientific support to development of advanced NPPs as well as to development and functioning of the nuclear fuel cycle.

At U-70 accelerator facility, fast proton beam extraction to the proton radiography installation was tested successfully at energy of 50 GeV. For the first time, a long-term circulation of deuterium nuclei beam was achieved at the large synchrotron of U-70. An important stage of the work program for light nuclei acceleration in IFVE accelerators was accomplished to support tasks of the nuclear industry and basic studies.

At the OKA installation, data collection on a unique beam of separated K-mesons with 25–30-fold enrichment of the beam was carried out. The Russia's largest cryogenic system was developed for superconducting separators operation, which cools down the separator deflectors with superfluid helium to a temperature of 1.8 K. A total amount of the superfluid helium in the system is more than 1,000 liters.

In the GEMMA experiment at Kalinin NPP, the world's best laboratory limit for neutrino magnetic moment (less than $3.2.10^{-11}$ of Bohr magneton) was achieved.

At the third generation lead neutron delay spectrometer (SVZ-100), a set of large-scale measurements of fission cross-sections by resonance neutrons (from 0.1 eV to 20 keV) was carried out in regard of all isotopes of americium and curium which accurate data are necessary for solving the problem of transmutation of minor actinides, which are the most radiotoxic waste generated by the nuclear power. The results are included in the national library of nuclear data – BROND-3. It was demonstrated that one VVER-1000 reactor when operated in the transmutation mode is capable of disposing actinides from several dozens of standard VVER reactors (ITEF).

The State Atomic Energy Corporation ROSATOM takes an active part in international projects in the area of the basic nuclear science. The Corporation's organizations were engaged in the development of the Large Hadron Collider (ATLAS, CMS, LHCb and ALICE), launched in 2009 in the European Centre for Nuclear Research (CERN). The Large Hadron Collider (LHC) is the planet's largest installation for acceleration, collection, and colliding beams of super-high energy elementary particles. It is assumed that with its help it will be possible to reproduce the Big Bang model, which presumably resulted in our Universe origin. In the coming 20 years, the LHC (CERN) will be a global scientific center in the area of basic studies of properties of matter. ROSATOM enterprises plan for a large scope of works in the field of problem-oriented research at the LHC.

For prominent scientific results in the studies of rare processes (K-meson fission) at U-70 accelerator beams, employees of IFVE were given the Russian Academy of Sciences' Markov Award. Besides, in 2009, the developers from ITEF received the RAS Veksler Award for development of a unique recharge injection system at ITEF-TVN.

Research and Development

A yearly increment in production volume of innovative and improved products and services in 2009 amounted to 3.3% (in comparable prices). By the results of the performed R&D for the purpose of the state accounting of results of the civil scientific and technical activities (RSTA), 201 objects were created.

In 2009, 10 technologies and pilot specimens of products were developed, of which four are intended for deployment in other industries.

Table 2.4. Results of the scientific and technical activities (RSTA) to be put on the RSTA State Unified Register

Number of patent applications submitted	Number of know-how developed	Number of patents received	Databases and computer programs
17	17	2	7

R&D to solve common industry tasks

- A mock-up of a short circuit current limiter based on high-temperature superconductors was developed and tested on a laboratory scale. The mock-up is intended for parameters: 3.5 kV and 250 A DC. This class equipment will be applied in transport, in petrochemical industry, and electric melting equipment.
- An experimental sample of radiopharmaceutical synthesis unit, means for a patient positioning and immobilization, a system of passive generation of a carbon beam dose field for proton beam therapy of breast cancer were manufactured.
- Experimental samples of medical electron accelerator “Ellus-6M” and additional equipment (multileaf collimator, dose field verification system, therapy table, accelerator digital control system) were developed.
- For the first time in the world practice, high-dose micro-sources based on ytterbium-169 for brachytherapy, intended for intra-operational irradiation of human tissues (breast or interfacial malignant tumors) were developed. The high-dose micro-sources successfully passed strength and leak tightness tests; final pre-clinical tests to determine a dose burden for human tissues are under way.
- MSS-30/15 cyclotron for radionuclide build-up for nuclear medicine and scientific research was manufactured and delivered to Finland (Juväskylä University), it is able to provide proton beams with energies from 18 to 30 MeV and deutons from 9 to 15 MeV.

Table 2.5. Potentially workable RSTAs for solving common industry tasks

Patents	Number of applications for useful model	Put under custody by enterprises (know-hows)
1	8	11

High-technology customs inspection equipment

The State Atomic Energy Corporation ROSATOM innovative developments allow industrial-scale manufacture of customs inspection, large-size bulky cargo customs inspection and radiometric sets. A fixed customs inspection set (CIS) that underwent an expert review by the Federal Customs Service of Russia has high economic and technical competitiveness. In addition to the customs control, the CIS are of great interest for ensuring safety and security of essential facilities and operations. The sets allow checking up to 25 large-size containers per hour, with a level of detail less than a centimeter. The CIS for inspection of rolling stock are able to perform high-performance automated inspection of carriages, tank-cars, containers without their opening at an on-route speed of up to 18 km/h. The CIS for seaports allow examining shipping containers without their opening.

Technologies for water desalination, clean-up and treatment

Technologies for water desalination, clean-up and treatment developed in the nuclear industry can be used nearly in all other industries and public utilities. The technology has been introduced at more than 100 facilities; it is good for household and industrial use and based on photochemical mechanisms of oxidization under the influence of vacuum ultraviolet. The main advantage of the Corporation as a supplier of goods and services in this area is that it comprises entities of the entire process chain: from drinking water and industrial-purpose water treatment through household and industrial waste water and NPP radioactive waste clean-up.

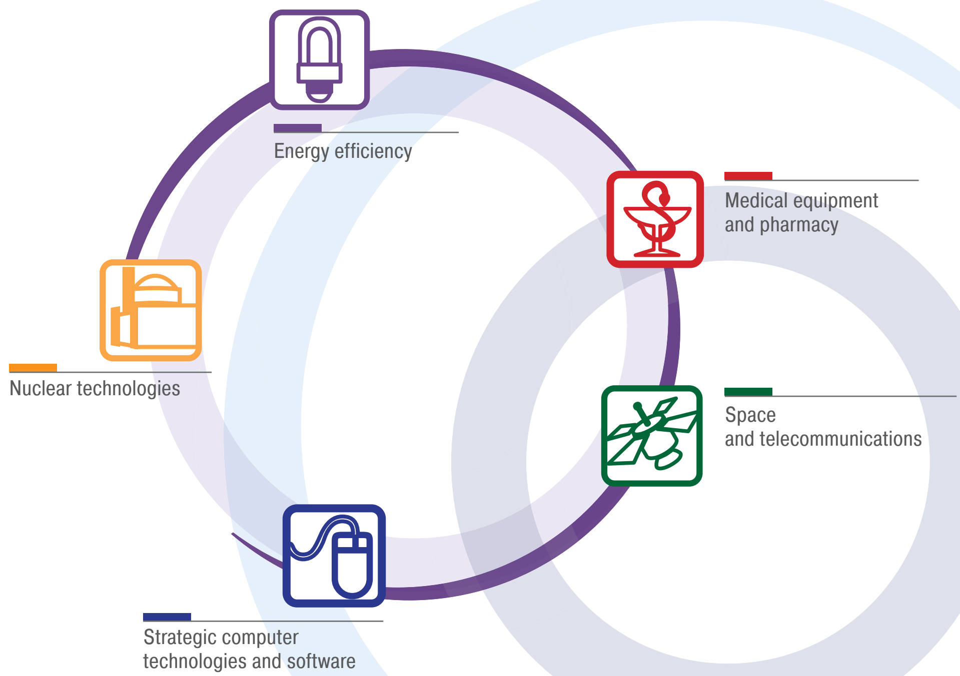

Energy efficiency
Medical equipment and pharmacy
Nuclear technologies
Space and telecommunications
Strategic computer technologies and software

Table 2.14. Activities within the framework of the Commission for Modernization and Technical Development under the President of Russia

Projects of the Commission

Area	Projects
Nuclear technologies	Project "Thermonuclear Synthesis Control", Project "VVER-TOI" Project "Closed NFC and BN-Reactors"
Space and telecommunications	Project "Creation of Transportation and Energy Module"
Energy efficiency	Project "Superconductor Industry"
Strategic computer technologies and software	Project "Development of Super-computers and Grid Technologies"
Medical equipment and pharmaceutices	Project "Creation of Complex for Radio-isotopes and Molibdenum-99 Production"

The State Atomic Energy Corporation ROSATOM participates in each of the five areas of activity pursued by the Commission for Modernization and Technical Development under the President of Russia (the Commission was founded on 20.05.2009), implementing seven projects of the strategic significance for the national economy.

Nuclear technologies

Project “Development of Standard Design of Optimized and Informatized VVER Technology (VVER-TOI)”

The project is aimed at development of a standard optimized power unit of large power capacity based on VVER-1000 technology. Notwithstanding the fact that the nuclear power is competitive comparing to other technologies of electricity generation (lower fuel consumption at capital expenses comparable with those for conventional power engineering), VVER-TOI project is destined to increase efficiency even higher due to a lower cost of the generated energy (reduction of NPP construction and operation costs). Within the framework of the project, it is necessary to improve VVER power unit layout, upgrade and standardize the existing NPP projects, improve the construction technology using 6D design.

The project will be implemented from 2009 to 2012 at ROSATOM own funds. As a result of the project implementation, a Russia's share at the world nuclear construction market may increase significantly both in terms of existing NPPs modernization and life time extension, and in terms of new reactor units' construction.

Nuclear technologies

“New Technological Platform: Closed Nuclear Fuel Cycle with Fast Neutron Reactors”

The aim of the project is the development of a comprehensive industrial technology which allows overcoming resource limitation of the modern nuclear power oriented to U-235 consumption, and will not allow to build up significant amounts of SNF systemically.

Formation of the new technological platform includes: creation of experimental demonstration reactor installations of various types with liquid metal coolants, with further construction of pilot NPP units, development of new generation of uranium-plutonium-nitride fuel and non-aqueous methods of its reprocessing, as well as the development of an experimental basis to provide for the implementation of technological tasks.

In 2009, at the industry level the aqueous chemical recycling of SNF of uranium-fueled reactors with plutonium separation and high-level radwaste vitrification was demonstrated. At the experimental level, the technology of mixed uranium-plutonium oxide fuel (MOX-fuel) for BN-type reactors was demonstrated. R&D on alternative technologies for nuclear fuel cycle with fast neutron reactors were started (nitride fuel, SNF dry treatment, minor actinides transmutation in fast neutron reactors).

Nuclear technologies

"Controlled Thermonuclear Synthesis"

The project main purposes are: harnessing fusion energy on the basis of domestic innovative technologies using the results of international cooperation; start of commercial generation of electricity by fusion in Russia by 2050.

Controlled fusion is one of the most promising energy sources. The fuel for a thermonuclear reactor is lithium and water; their reserves are practically unlimited. In the Earth conditions, realization of controlled fusion is a complex scientific and technical task connected with achieving a substance temperature of more than 100 million degrees and isolation of obtained plasma from the reactor walls.

Russia's participation in the ITER project (International Thermonuclear Experimental Reactor) consists in the development, manufacture and delivery to the reactor construction site (Cadarache, France) of the main process equipment. In addition, in the framework of international obligations, Russia takes part in the ITER project financing, the scope of financing from federal budget in 2009 amounted to RUB2.172,4bn.

In 2009, the Corporation enterprises designed the equipment, tested it, and manufactured pilot batches of equipment, including superconductor strands for ITER magnetic system, superconducting cables and conductors, electronic equipment. Technologies of chromium and nickel plating of thinnest wire with a cross-section smaller than that of a human hair as well as technologies of metal heat resistance and strength improvement were mastered.

In 2009, three agreements with the ITER were signed: for the supply of vacuum chamber branch pipes, poloidal field magnetic system conductors, and diverter central assemblies.

Space
and telecommunications

"Development of Transport and Power Generation Module Based on a Megawatt-class Nuclear Propulsion Installation"

The project purpose is to develop a nuclear power unit with the capacity of about 1 MW based on a high-temperature gas-cooled reactor and a gas turbine with a service live of not less than 10 years, with high efficiency.

Space nuclear power unit will ensure the independence of generated power from the orbit lighting and spacecraft orientation. Compared to solar power systems, it has advantages in terms of mass and dimensions.

There is also a task of high-density fuel development on the basis of nanostructured compositions. The uranium-intensive high-temperature fuel developed in 2009 by Research Institute – Research and Production Complex Luch was considered as basic one for the space unit.

Development of a space nuclear unit with N(e) ~ 1 MW will ensure:

- required level of advanced spacecraft power supply;
- high thermal efficiency of the propulsion mode, using high-power electric jet engines;
- possibility of development of high-efficiency inter-orbital vehicles for implementing large-scale space projects (manned flights to Mars, the Moon study and exploration, etc)
- effective power supply of long-term Moon (Mars) bases/stations (electricity and heat supply to living modules, scientific and technical facilities).

Strategic computer technologies and software

"Development of Supercomputers and Grid Technologies"

The project purpose is to provide a scientific and technical foundation for developing domestic supercomputer industry and supercomputer-based computations. The supercomputer potential will allow solving many fundamental and applied problems, which modeling and analyzing require large-scale computations.

In frames of this project the Corporation pursues:

- development of the basis array of supercomputers,
- development of design and simulation technologies for supercomputers using the basic software,
- massive introduction of domestic supercomputer technologies at enterprises of high-tech industries, and widening the areas of application of domestic supercomputer technologies.

Energy efficiency

“Industry of superconductors”

The project's main goal is to develop an innovative engineering basis to increase energy efficiency of the country’s economy. This goal will be reached through the setting up enterprises to produce a wide variety of electrical equipment based on new technologies associated with application of unique materials, i.e. high-temperature superconductors of the latest generation.

Anticipated effects:

- reduction in power losses during the electricity transmission and distribution;
- increase in the fuel efficiency during electricity generation;
- increase in energy efficiency in the energy-consuming industries;
- reduction in electrical devices and equipment material intensity in power engineering, transport, and industry;
- secure consumer power supply.

Integrated losses at all stages of production, distribution and consumption could be 2.5 times lower in case of simultaneous reduction in the equipment material intensity by 2–3 times due to replacement of the traditional equipment with that based on superconductors. In addition, with the use of high-temperature superconducting materials, there appears a possibility of creating compact high-efficiency sets for effective control of the generated electricity distribution and economical consumption.

The bases for development of superconductor-based electrical devices are the technologies of the second generation high-temperature superconductors (HTSC-2) in the shape of flexible strip conductors on a metal base, as well as voluminous HTSC materials.

Medical equipment
and pharmaceuticals

"Production of New Radiopharmaceuticals and Network of High-Tech Medical Services" "Medradiopreparat"

Within the framework of this project, a complex for production of radionuclide molybdenum-99 is developed. Technical possibilities of increasing production of molybdenum-99 at existing radiochemical facilities have exhausted, therefore even if the reactor build-up increases, there will be no increase in reprocessing volume. Development of a new production of molybdenum-99 at production facilities of NIIAR will allow increasing production outputsignificantly, including that for export, and solving the task of setting up a national brand of IA Isotope, which is the only operator of radionuclide production in the Russian Federation.

Molybdenum-99 is a medical radionuclide used to manufacture generators of technetium (99m), which is the main diagnostic radionuclide used in the modern nuclear medicine. Molybdenum-99 build-up is by irradiation of targets containing uranium-235 in reactor, with further radiochemical processing with the aim of extraction of the target radionuclide and its clean-up from impurities

Management of Innovations and Technologies

The enhancement of management effectiveness of Scientific and Technological Complex is implemented via introduction of design control, scientific and research activity regulation, assessment of scientific organization effectiveness, introduction of elements of a unified system for intellectual property control. In 2009, priority areas and projects were formed, as well as scientific and technological activity regulations. In particular, a system of effectiveness assessment was developed and tested at several organizations; it includes the assessment of scientific and technological activities of both the organizations proper and R&D groups and projects.

Table 2.6. Priority projects of the Corporation scientific activities

Short-term	2012 VVER technology optimisation	Preserving competitiveness at the world market
Medium-term	2020 Closed fuel cycle with fast reactor + VVEP upgrading	Technological leadership and long-term position at the market
Long-term	2040 Controled thermo-nuclear synthsis / ITER	Mastering perspective technologies
Strategic	Fundamental physis development	Basis for scientific and technical progress, new sources of energy

NUCLEAR AND RADIATION SAFETY COMPLEX

The future of the nuclear power sector directly depends on how efficiently we address the nuclear and radiation safety challenges of today. Having been delaying solution of the piling up problems for more than half of a century, we now have to establish up-to-date national systems for management of radioactive waste and spent nuclear fuel, and for decommissioning of nuclear and radiological hazardous sites and facilities.

For ROSATOM, the high safety standards required of the nuclear sector mean not only the need to meet them, but also possibility to come into a new promising service market. By implementing the back end business models, the Corporation will be in a position to offer a new product on the international market – the entire spectrum of nuclear technology services".

Evgeny Evstratov,
Deputy Director General,
Director of Directorate for Nuclear and Radiation Safety

STATE ATOMIC ENERGY CORPORATION ROSATOM

Annual Report 2009

The future of the nuclear power sector directly depends on how efficiently we address the nuclear and radiation safety challenges of today.

2.3.4 Nuclear and Radiation Safety Complex

Nuclear and Radiation Safety Policies

Provision of nuclear and radiation safety (NRS) is a strategic goal of the State Atomic Energy Corporation ROSATOM. Provision of day-to-day accident-free operation of nuclear facilities is the prime objective in attaining this goal. Licensing and supervision over everyday activities of design, construction, and operating organizations are provided by the Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor).

Another strategic objective is to deal with the nuclear legacy problems, i.e. take actions that were neglected at the time of "planned economy" and defense programs and have hence led to the buildup of a large amount of radioactive waste (RW) and spent nuclear fuel (SNF). Apart from associated expenditures, this mission demands from ROSATOM new, often inventive approaches to tackle these challenges; new RW and SNF processing and storage techniques, and new modalities for remediation of contaminated territories.

In 2009, safety enhancement activities were carried out in the framework of the ROSATOM Long-Term Activity Program (LTAP) which incorporates inter alia a section on the Provision of Safe Operation of Nuclear Facilities and Adherence to Nuclear and Radiation Safety Regulations.

The Long-Term Activity Program envisages step-by-step implementation of the following actions:

In 2008–2011:

- provision of infrastructure for management of radioactive waste and spent nuclear fuel;
- further elaboration of the regulatory framework on the management of radioactive waste and spent nuclear fuel, and on decommissioning of nuclear facilities.

In 2012–2015:

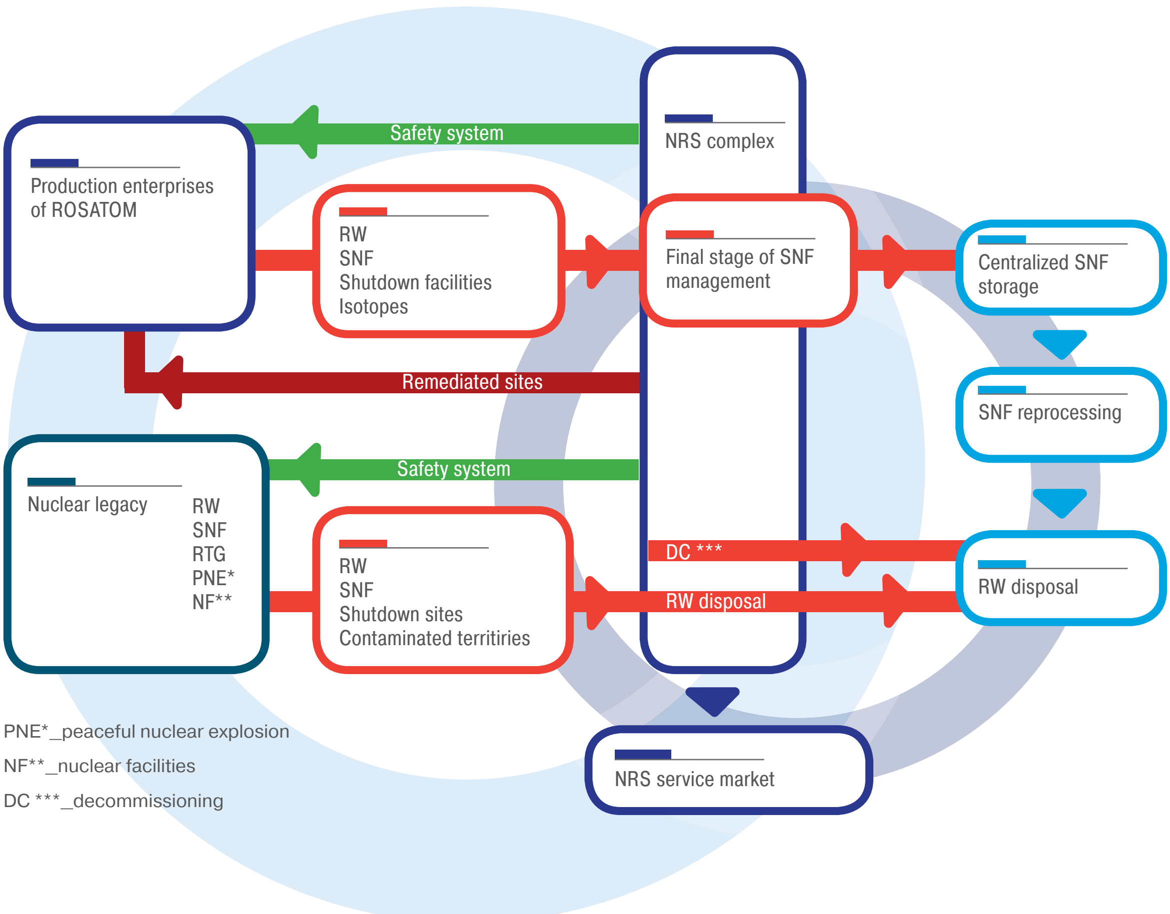
- commissioning of RW storage facilities with total capacity 19,600 m^3;
- preparation for decommissioning of 181 hazardous nuclear and radiological facilities;
- phase-out of 36 shutdown hazardous nuclear and radiological facilities;
- remediation of 1,482,000 m^2 of contaminated territories.

According to the Long-Term Activity Program, 89% of federal budget allocations for the Program will be spent to set up a national infrastructure for management of radioactive waste and spent nuclear fuel. The program will deliver new commercial reprocessing and conditioning techniques for the spent nuclear fuel and radioactive waste, respectively, as well as a demonstration SNF reprocessing center based on innovative technologies. The 2008–2015 program will set the stage for a subsequent significant increase of the nuclear operator's fees associated with the management of the new SNF and RW produced in the course of related activities, up to the total coverage of these expenses.

Even though the Long-Term Activity Program became a breakthrough in the State's attitude towards nuclear and radiation safety assurance, its implementation is but a first step towards resolving the problems of the past, which, if not taken care of now, would make the radiological situation worse. In the next stage (2015–2025), these problems (nuclear legacy) should be dealt with in a systematic way, with considerable expansion of SNF and radwaste management infrastructure.

The Nuclear and Radiation Safety Complex

Figure 2.15. NRS complex operations



PNE*_peaceful nuclear explosion

NF**_nuclear facilities

DC ***_decommissioning

The NRS Complex incorporates federal state unitary enterprises dealing with reprocessing / conditioning and storage of SNF and RW: MCC, SevRAO, DalRAO, Federal Center for Nuclear and Radiation Safety (FC NRS), G. Khlopin Radium Institute, and RosRAO.

The State Atomic Energy Corporation ROSATOM has in-house emergency rescue forces: regular emergency response teams: ETC SPb with affiliated branches in Moscow, Novovoronezh, and Seversk; Epron; an independent military mine-rescue group (Krasnokamensk), technical emergency response centers and emergency response departments at Nuclear Weapons Complex organizations, as well as extra (non-regular) emergency rescue teams at ROSATOM's companies.

Table 2.7. Key Results in the NRS Complex in 2009

Tasks	Results in 2009
1. Provision of appropriate safety level	■ The achieved safety level has been maintained. ■ A Plan has been adopted to expand the automated radiation monitoring systems (ARMS).
2. Creation of NRS systems:	
2.1. National System for RW Management (NS RW)	■ NS RW Program has been drafted. ■ The RW Management bill was submitted to the State Duma. ■ RosRAO assets have been consolidated. ■ Declaration of Intent was prepared for the final repository for high-level waste.
2.2. National System for SNF Management (NS SNF)	■ Basic policy has been elaborated on SNF management. ■ Pace has been re-established in the construction of the dry storage facility for RBMK-1000 SFAs. ■ Arrangements have been made to ensure continued receipt of SFAs from VVER-1000 NPPs, in particular, owing to the upgrading of the wet storage facility at MCC. ■ In keeping with relevant commitments, SFAs supplied by the Russian Federation (Soviet Union) to research reactors in other countries were taken back from four countries.
2.3. Corporate decommissioning system	■ A list of facilities to be decommissioned has been drawn up. ■ A concept has been approved for an information system (data base) on decommissioning. ■ A demonstration center has been set up on decommissioning of uranium-graphite production reactor.
3. Decommissioning of nuclear-powered submarines (NS) and surface ships, and remediation of coastal technical bases	■ A project management information system has been introduced. ■ Reactors of two damaged nuclear submarines were brought in a criticality-safe state. Nine NS were disposed.

Surveillance and Monitoring Systems

The surveillance and monitoring systems incorporate:

- An automated national system for monitoring radiation conditions in the territory of Russia;
- A national system for preventing and eliminating radiological emergencies, including physical infrastructure of special emergency response forces, with provision of their preparedness;
- A national system for accounting and control of nuclear and radioactive materials, and radioactive waste;
- An automated system for continued monitoring of hazardous nuclear and radiological facilities /shipments and materials, in particular, during their transportation by all types of transport;
- A system for monitoring and taking account of individual doses to personnel;
- A physical protection system for hazardous nuclear and radiological facilities;
- A system for subsoil geological and hydro-geological monitoring.

All ROSATOM organizations have special divisions which monitor releases in atmosphere, condition of surface water reservoirs and waterways, radionuclide concentration in bottom deposits, etc. Subsoil condition is monitored as well, mostly with the focus on ground water contamination.

<u>Automated System for Monitoring Radiation Conditions</u>

The ROSATOM's automated radiation monitoring system (ARMS) which functions as part of the national automated radiation monitoring system is one of the most important instruments to keep the authorities and the public informed on the current radiological situation and to provide early notification in emergencies. The emergency response ('situation and crisis') center of ROSATOM works round the clock, collecting and analyzing data from the ARMS posts located at various facilities. In total, the ARMS sensors are installed at 28 sites.

Any person can get on-line information about the radiation levels at and around the nuclear sites on ROSATOM's website (http://www.rosatom.ru/ru/safety/askro/) which receives on-line information from 294 ARMS posts provided with 341 channels measuring radiation, chemical and weather parameters. With time, more measurement channels and sensors will be linked to the website.

System for Subsoil Monitoring at Sites

Following cooperation agreement between the State Atomic Energy Corporation ROSATOM and the Federal Agency for Subsoil Resources Management, a center was set up at the Agency's Institute "Gidrospetsgeologiya" to monitor condition of subsoil areas for ROSATOM enterprises.

A range of activities was performed in 2009 at nine enterprises (Novovoronezh NPP, MSZ, PIMCU, KCCC, Almaz, IPPE, PA Mayak, Leningrad RosRAO, and DalRAO), and at five hazardous radiological facilities (Rubin-2, Rift-1, Gorizont-2, Vidnoye, and Ust-Angarsk) to restore the surveillance network, test underground water filtration, investigate properties of geological barriers, and create an analytical information system on subsoil monitoring at various sites.

A detailed overview of the nuclear and radiation safety, including information about the monitoring and surveillance systems, is presented in annual safety reports of the State Atomic Energy Corporation ROSATOM[2] that have been published since 2002 following the decision of the Minatom Board. Nuclear and radiation safety information is also discussed in the national reports on the fulfillment of commitments resulting from the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management[3].

2_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/resources/153ca50043750dceae87bf82958bd8d4/rep2010.pdf

3_http://www.fcp-radbez.ru/images/stories/FCP/natrep_web.pdf

Nuclear and Radiation Safety in 2009

Nuclear and Radiation Safety Indicators

The principal safety evaluation technique consists in the physical counting of events, i. e. deviations from a certain level adopted as an indicator of safe operation. Any events (abnormal occurrences) in nuclear facilities operation come into focus of operating organizations, managing and regulatory authorities.

All ROSATOM plants, organizations, and facilities operated safely in 2009.

In the reporting year, 23 events that happened at the nuclear power plants were classified as Level “0” according to the International Nuclear Event Scale (INES) (not safety significant), and 5 events were below the scale criteria. The only event rated at INES Level “1” occurred at Leningrad-4 where the regular process of spent fuel assembly loading in a transfer canister was disrupted because of loading gear malfunction. The event did not lead to SFA failure and/or radioactivity release nor it affected radiation levels nor had any other safety effects.

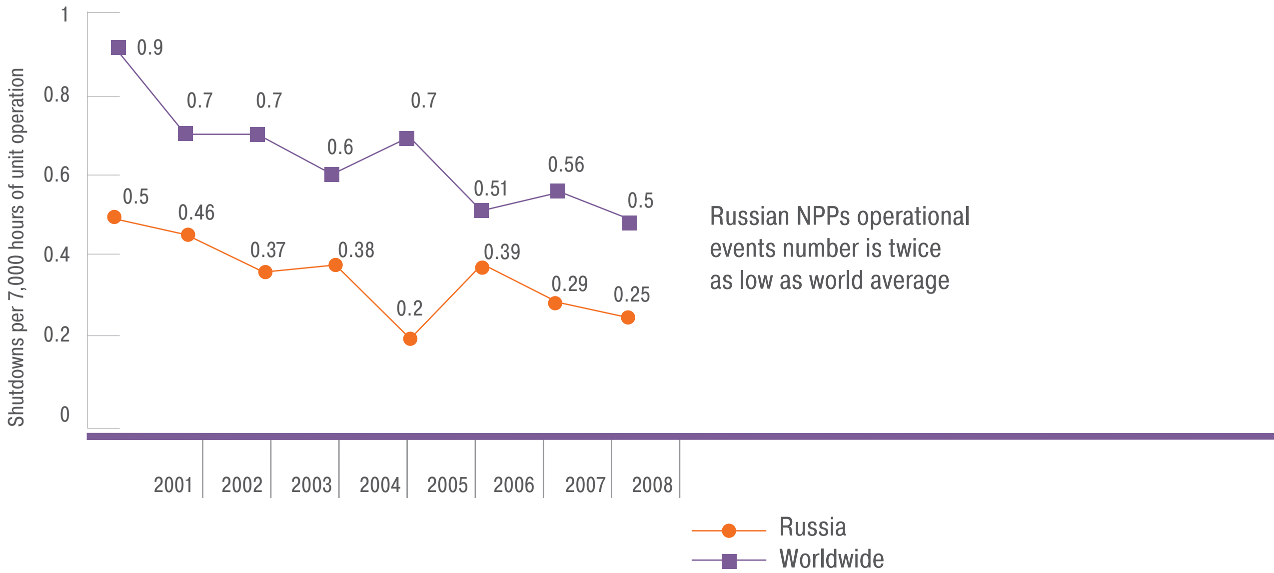
Russian NPPs are among the world’s three best performers in terms of a number of events per power unit and a number of scrams per unit. The international reviews of Russian nuclear plants (IAEA, WANO) have shown that their safety is up to the international standards.

Of the 14 events reported in 2009 by 20 Russian organizations operating research nuclear installations, nine occurred at ROSATOM enterprises, and five took place at the organizations belonging to other agencies. All events were rated at INES Level "0" (not safety significant). The number of abnormal occurrences has shown an obvious downward trend in the last four years.

There were no safety-related events at nuclear fuel cycle facilities in 2009. Production reactors sustained 8 events, 6 of which were rated as plant-level occurrences (i.e. below the INES scale), and two cases were rated at INES Level "0".

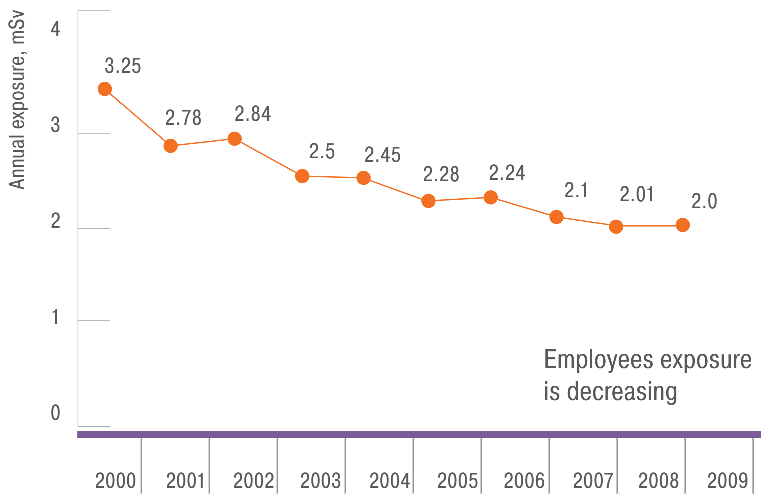
The State Atomic Energy Corporation ROSATOM attaches paramount attention to safety and security at all stages of the nuclear weapons life cycle. Inspections have demonstrated that the level of safety provided during design, manufacture, transportation, storage, dismantling and disposal of nuclear weapons and their components meets regulatory requirements.

Figure 2.16. Key nuclear and radiation safety indicators

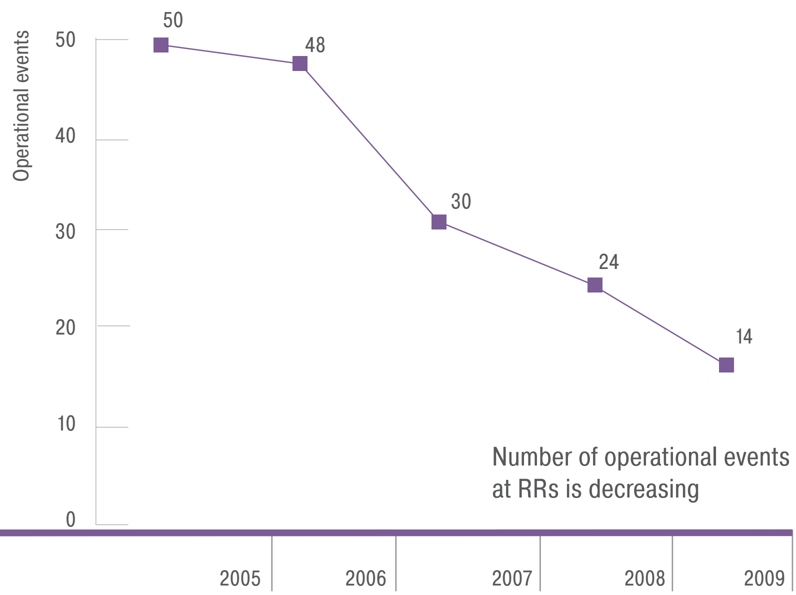


Russian NPPs operational events number is twice as low as world average

Number of reported events at NPPs is decreasing



Employees exposure is decreasing



Number of operational events at RRs is decreasing

Implementation of the Federal Target Programs and Other Programs in the Field of Nuclear and Radiation Safety

FTP: "Nuclear and Radiation Safety in 2008 and until 2015"

In 2009, the Corporation continued performing activities under the Federal Target Program "Nuclear and Radiation Safety", which is aimed at addressing, in a holistic way, the nuclear and radiation safety challenges associated with management of spent nuclear fuel and radioactive waste, and with decommissioning of hazardous nuclear and radiological facilities. Improvements were made in the systems essential for maintaining and monitoring nuclear and radiation safety in the Russian Federation.

The total of RUB14.87bn was allocated for the Program in 2009, including RUB9.28bn as capital investments, RUB1.55bn for R&D, and RUB4.04bn as other expenses. In all, 265 state contracts were signed in 2009 worth RUB11.13bn. 202 of them – worth RUB9.18bn – have the duration of more than one year.

Most important programmatic events of 2009:

- PA Mayak: commissioning of Phase I of the combined waste-water system, with the purified water drained to the left-bank canal of the Techa Cascade;
- decommissioning of NIIP reactor facility;
- upgrading of radioactive source storage facility at NIITFA;
- setting up a technological production complex EPRON;
- emergency response system boosted at Tver Region and integrated with the systems of executive federal authorities;
- construction and preparation for commissioning of start-up facilities of the dry storage complex for RBMK-1000 SNF at MCC;
- renovation of the wet storage facility for VVER-1000 SNF at the RT-2 plant at MCC.

Return of the Spent Nuclear Fuel of Research Reactors built to Russian (Soviet) Designs in Other Countries

The Russian Federation and the USA have been working together since 2005 under the Bratislava Nuclear Security Initiative to return fresh and spent fuel containing high-enriched uranium from research reactors built to Russian (Soviet) and US designs in other countries.

In 2009, 251 kg of highly enriched SNF were transferred to Russia from Soviet-type research reactors in Kazakhstan, Romania, Poland, and Libya. The fuel will be reprocessed to be reused in fuel assemblies of power reactors.

RTG Decommissioning

In the 1970's and 1980's, most of the stand-alone sea beacons used in sea navigation were equipped with radioisotope thermoelectric generators (RTG). In total, approximately one thousand RTGs were manufactured to be used in ground-based beacons.

The following work was done in 2009 in the framework of the federal target program on the nuclear and radiation safety using the funding provided as international technical assistance and as budgetary allocations of the Russian Federation:

- 24 RTGs operated by the Ministry of Defense in the Far North were disposed of;
- 39 RTGs belonging to the Hydrographic Service of the Pacific Fleet were taken out of service and shipped to a storage facility;
- 30 RTGs were removed from the Northern Sea Route; 19 of them were dismantled;
- 11 RTGs of the Ministry of Transport located in the territories of the Nenetsky Autonomous District were disposed of;
- 22 RTGs belonging to the Hydrographic Service of the Baltic Fleet were removed and sent for dismantling;
- 12 RTGs of the Ministry of Defense in Kamchatka underwent engineering and radiation examination.

As of the end of 2009, in total 575 RTGs (697 in 2008) remained in operation or were kept in temporary storage facilities; 293 of them were still in service.

The Norwegian Radiation Protection Authority evaluated environmental risk associated with the operation of 11 RTGs of the RF Ministry of Transport in the North of Russia and 22 Navy RTGs on the Baltic Sea. It was pointed out that the RTG decommissioning effort in the North-West of Russia significantly reduced the radiological risk.

Provision of the NRS Systems

RW Management

There were no RW management violations in 2009.

Waste Generation

Radioactive waste – solid (SRW) and liquid (LRW) – is generated in the course of production activities. The waste generated in the reporting year included 3.87 mln. m^3 LRW (2.156×10^{18} Bq), of which 3.7 mln. m^3 (95.6%) as low-level waste, 158,700 m^3 (4.1%) intermediate-level waste, and 11,100 m^3 (0.3%) high-level waste; and 1.37 mln. t SRW (4.4×10^{16} Bq), of which 422 t (0.03%) were HLW, 9,200 t (0.7%) ILW, and 1.36 mln. t (99.3%) LLW.

Waste Treatment

Both new and previously generated RW was treated and conditioned. During the reporting year, ROSATOM enterprises treated and conditioned approximately 3.5 mln. m^3 of LRW (4.4×10^{18} Bq), including 13,100 m^3 of high-level waste, 12,200 m^3 of intermediate-level waste, and 3.48 mln. m^3 of low-level waste. The SRW treatment totaled 1,533 Kt, of which 99.15% was LLW, 0.63% were ILW, and 0.22% were high-level waste.

Waste Storage

By the end of 2009, there were 485.4 mln. m^3 of LRW and about 84.9 mln. t of SRW at ROSATOM organizations, with total activity 6.57×10^{19} Bq.

Most of the accumulated LRW (about 97.2%) is low-level waste (9.0×10^{15} Bq), intermediate-level LRW – 13.7 mln. m^3 (2.47×10^{19} Bq), and high-level waste – 33.300 m^3 (1.75×10^{19} Bq). Most of the liquid waste – 427 million m^3 (88%) are kept in special tanks and reservoirs, including 99.6% of LLW and 0.4% of ILW. All high-level waste and 86% of the intermediate-level LRW are isolated from the environment and are stored deep underground. The data of the systems monitoring the safety of underground storage of LRW confirm their environmental safety.

Accumulated SRW include 83,000 t (0.1%) of high-level waste (2.3×10^{19} Bq), 945,000 t (1.1%) of intermediate-level waste (5.0×10^{17} Bq), and 83.9 mln. t (98.8%) of low-level waste (7.4×10^{15} Bq). All high-level SRW is kept in dedicated buildings, reactor storage facilities and reinforced concrete trenches clad with appropriate lining, and are isolated from the environment.

RW Management in the Reporting Period

The major part of the radioactive waste (more than 90%) generated in the nuclear sector from the onset of its operation has accumulated at three sites: PA Mayak, SCC, and MCC.

PA Mayak performed the following RW management activities in 2009:

- completed water treatment investigations, including the try-out of a membrane water purification technique for the Techa Cascade and sorption membrane technology for liquid effluents conditioning;
- developed a concept for a closed LRW treatment system to be used for the waste of the reprocessing, radioisotope production and reactor plants;
- developed a detailed design for a demonstration organic waste solidification facility;
- had a full-scale trial calciner manufactured at VNIINM to be used as part of a two-stage facility incorporating a cold crucible melter, intended for immobilization of the high-level waste at PA Mayak.

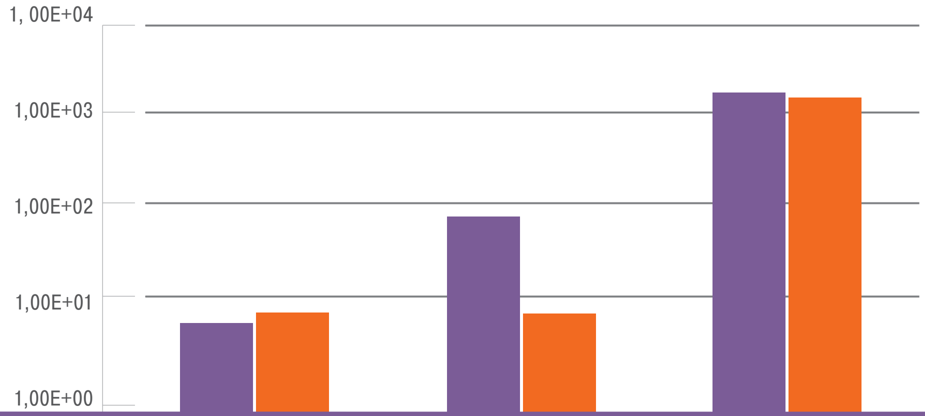
MCC performed in 2009 a spectrum of activities to care and maintain the underground storage reservoirs for radioactive pulp, namely:

- upgraded pulp lifting equipment and sampling devices; put in place demonstration units intended for solidification of insoluble and non-extractable pulp residues;
- developed engineering documentation to try out commercial solidification of insoluble pulp residues extracted from storage tanks, and solidification of non-extractable pulp residues directly in storage tanks;
- had a container manufactured and tested for a long-term storage of solidified radwaste;
- an Environmental Impact Assessment (EIA) on the underground storage of waste put in the underground storage reservoirs cleared of radioactive pulp was produced.

In 2009, a number of activities were carried out at SCC to ensure the safe management of the radioactive waste, in particular:

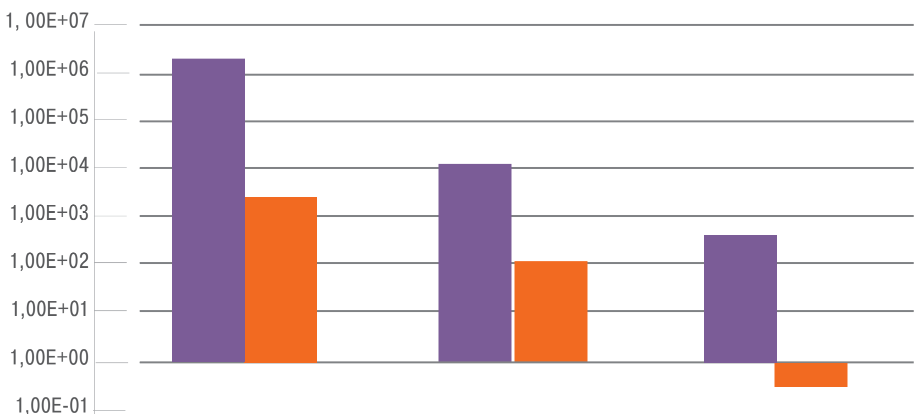
- investigations into the sanitary and radiological condition of underground water, with a subsequent preparation of relevant maps. The exercise provided an input to develop a process for putting extra safety barriers around surface RW storage facilities;
- investigation of sorption and desorption properties of barrier materials in relation to plutonium-239 and americium-241;
- geological monitoring in the area of the pilot injection station for the reprocessing plant pulp;
- radiation and engineering survey and assessment of the technical condition of injection wells.

Figure 2.17. LRW generation and treatment in 2009, thnd m^3



	HLW	ILW	LLW
generated	1,12E+01	1,58E+02	3,70E+03
treated	1,31E+01	1,22E+01	3,48E+03

Figure 2.18. TRW generation and treatment in 2009, tons



	LLW	ILW	HLW
generated	1,36E+06	9,21E+03	4,18E+02
treated	1,52E+03	9,69E+01	3,80E-01

Provision of the National System for Management of Radioactive Waste (NS RW)

One of the most prominent achievements of the year was drafting and submission to the State Duma of a bill on the Management of Radioactive Waste which envisages, in particular, creation of a national RW management system (the bill was approved in the first reading on 20.01.2010).

The bill is meant to establish a legal framework for a national RW management system in compliance with Russia's commitments arising from the ratification of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

Russia still has the practice of storing RW predominantly at RW producer sites. Consequently, there are more than a thousand RW storage facilities in the country, with about 550 mln. tons of RW therein. Limitation of RW management to storage only and lack of national requirements for the final disposal of the radioactive waste were two of the key considerations that motivated the drafting of this bill.

The bill envisages step-by-step establishment of the national RW management system, including:

- provision of appropriate regulatory and administrative framework for the national RW management system; initial inventory of the waste and of its storage conditions;
- construction of final repositories for low-level and intermediate-level waste;
- construction of final repositories for high-level RW.

The key players of the national RW management system will be the RW management authority (the State Atomic Energy Corporation ROSATOM) and the national operator on the management of the radioactive waste. The managing authority will be in charge of coordination and implementation of the practical side of putting in place the national RW management system (provision of appropriate infrastructure; setting limits on the interim storage of RW; preparation of proposals on RW disposal fees, and monitoring of national operator activities). The national operator for RW management will be responsible for RW disposal activities. Waste treatment, conditioning, transportation and storage services will be provided by dedicated organizations.

The bill obliges RW producers first bring the waste in a condition suitable for its safe disposal, and then transfer the conditioned waste to the national operator for final disposal. The bill also contains a requirement to set time limits for the interim storage of the waste at producer sites, which will drive waste producer to fulfill their obligations.

By putting on waste producers the financial burden associated with the entire RW management cycle, including final disposal (and hence implementing the nature protection principle – “polluter pays”), the bill gives them a strong incentive to minimize waste generation and look for new technological approaches, in particular, new RW treatment and conditioning techniques.

The bill also provides for expanding RW classification to introduce new categories, such as ‘very low-level waste’ and ‘radioactive waste generated in the process of mining and processing of uranium ore’. This radioactive waste may be disposed of following a simplified procedure.

SNF Management

The nuclear fuel cycle companies of the State Atomic Energy Corporation ROSATOM performed various activities in 2009 to ensure safe management of the spent fuel, in particular:

There were no abnormal events in the SNF management in 2009.

- 174.5 t of SNF were shipped from Russian VVER-1000 plants and placed in a long-term storage in the wet storage facility at MCC;
- 62.1 t of VVER-440 and BN-600 SNF were shipped from Russian NPPs to PA Mayak; 57.9 t of VVER-440 SNF and 7.3 t of BN-600 SNF were reprocessed;
- techniques were developed to cut, transport and reprocess at the RT-1 plant at PA Mayak the SNF from the AMB reactor of the Beloyarsk NPP, previously classed as non-reprocessible fuel. A safety case was prepared for these activities, and work commenced to arrange a special bay for AMB fuel to cut it and prepare for reprocessing;
- a review was performed on the geodetic survey carried out at the PA Mayak site in support of the design work on the SNF cutting and packing bay. Optimum processes were developed for cutting the AMB fuel and treating resultant solid RW. The relevant tools and equipment are under development;

- the start-up complex of the dry storage facility for RBMK-1000 SNF which is currently under construction at MCC was brought to 78% level of technical readiness for commissioning;
- renovation of the wet storage facilities for VVER-1000 SNF continued at the RT-2 plant at MCC. Rostechnadzor issued a permit to increase the capacity of the existing wet storage facility to 7200 t;
- engineering documentation was developed to implement a strategic project of setting up a demonstration SNF reprocessing center. Real SNF was used to try out in hot cells some steps of the reference process, and design documentation was elaborated for 26 new items of equipment.

Rosenergoatom performed several activities to ensure the safe management of the spent fuel from nuclear power plants, in particular:

- developed techniques for handling faulty SFAs from RBMK reactors;
- designed TUK-140 shipping casks to transport VVER-440 SFAs and developed program for testing the cask;
- developed a cycling-based leak detection methodology for claddings, to assess cladding leakage in VVER spent fuel assemblies before their shipment from NPP;
- construction work was completed at Leningrad NPP and main equipment was delivered to the site to enable SNF storage in casks. More casks of the UKH-109 type were manufactured;
- at the Kursk NPP, more sheaths (“ampoules”) were manufactured to hold the RBMK fuel bundles, and the sheaths with fuel were progressively loaded into the UKH-109 casks;

- dedicated equipment was fabricated and installed at Beloyarsk NPP to put K-17u sheaths into thin-wall canisters and load K-17u, K-17n and K-35 sheaths with SFA into TUK casks. Thin-wall stainless steel canisters for K-17u sheaths were manufactured and delivered to the site; TUK-136 cask was manufactured to transfer BN-600 fuel elements to the Institute of Reactor Materials (IRM) for investigations;
- a technique was developed at the Kola NPP to handle leaky and defective SFAs of VVER-440 reactors. A special facility – MKS-01 VVER was put in trial operation as part of the effort to introduce a burnup measurement system at the VVER plants.

Provision of National SNF Management System

It is planned to set up a National SNF Management System, along with a similar national system for the management of the radioactive waste. In 2009, the Corporation drafted a federal law on SNF Management. The bill will be applicable to the management of the spent nuclear fuel of all reactor facilities, including defense nuclear power installations. The bill is meant to regulate various aspects of the safe management of the spent fuel, including ownership, responsibilities, secure funding of the entire SNF management cycle and especially its back end. The bill stipulates that SNF producers should make sufficient upfront payments to cover both current expenses and the deferred costs.

Corporate Decommissioning System

Work was in progress in 2009 to prepare for decommissioning the permanently shutdown Novovoronezh-1, 2 and Beloyarsk-1, 2. Decommissioning programs were developed (and approved by Rostechnadzor) for Kursk-1–3, Leningrad-1–4, and Bilibino-1–4. A total of 56 hazardous nuclear and radiological facilities have been prepared for decommissioning.

In 2009:

- 9 nuclear submarines were dismantled;
- for the first time ever, a transshelf semi-submersible open dock vessel was used to deliver two decommissioned Victor class nuclear submarines from Kamchatka to Maritime Territory;
- another unique operation was defueling of a nuclear submarine with a removable nuclear fuel part;
- fuel was taken out of a damaged nuclear submarine and its reactors were brought in a criticality-safe condition.

Also, an effort was continued in 2009 to improve the safety of the former Navy coastal maintenance bases used to store the spent fuel and radioactive waste of nuclear-powered submarines and surface ships:

- 12 trains shipped SNF to PA Mayak for reprocessing;
- 6 single-compartment NS units were relocated for ground storage in Saida Bay in Murmansk Region;
- engineering documentation was developed and construction commenced to set up in Far East a facility for isolating damaged nuclear submarines (the project to be completed in 2012).
- 1020 m^3 t of solid radioactive waste was brought in an environmentally safe condition in the North-West and Far East Regions.

Table 2.8. Financial resources consolidated in 2009 for decommissioning of nuclear submarines and remediation of former Navy bases, million RUB

Budget allocations	International technical assistance	Total
2 383.19 (27.2%)	6 375.7 (72.8%)	8 759.6

Provision of a Decommissioning System

Two reference concepts were approved in 2009 – “Standard Concept for Developing Demonstration Center for Decommissioning of Nuclear Facilities” and “Concept of an Information System on Decommissioning of Hazardous Nuclear and Radiological Sites”. Work was continued on a project for developing a concept and terms of reference to draft a bill on Decommissioning of Nuclear Facilities. A Concept of EurAsEC Intergovernmental Target Program on ‘Remediation of EurAsEC Member State Territories Subjected to the Effects of Uranium Production’ was prepared and approved by the EurAsEC Integration Committee.

NUCLEAR ICEBREAKER COMPLEX

Issues of protection of information constituting state secret and other restricted access information in the State Atomic Energy Corporation ROSATOM, are attached with outmost significance. Initially, it was due to the fact that nuclear employees were mainly dealing with defense tasks. Today, when we are entering the world market with innovative high-technology developments, the information protection to ensure competitiveness of our technologies, products and services are gaining ever more topicality. Each year an amount of information subject to security arrangements as per the Russian Federation legislation is growing. It is not an easy job, it is a serious work which requires strict observance of regulations and laws in the area of information protection and building up uniform information security policy in all organizations of ROSATOM.

Evgeny Sofiyn,

Deputy Director General for Security

STATE ATOMIC ENERGY CORPORATION ROSATOM

Annual Report 2009

Each year an amount of information subject to security arrangements as per the Russian Federation legislation is growing.

2.3.5 Nuclear Icebreaker Complex

Following Russian President directive No. PR-2006 dated 26.09.2008 and Russian Government directives No. VP-P17-6063 dated 08.10.2008 and No. SI-P7-7475 dated 20.12.2008, a Nuclear Icebreaker Complex was established within the ROSATOM organization in 2009. The managing company for the complex is Atomflot (federal state-owned enterprise).

The Nuclear Icebreaker Complex incorporates watercraft and coastal shipyard infrastructure. The operating fleet comprises four nuclear ice-breakers with two-reactor nuclear power installations with 75,000 horsepower capacity – Rossiya, Sovyetskiy Soyuz, Yamal, and 50 Let Pobedy; two icebreakers with single-reactor power installations with 50 h.p. capacity – Taimyr and Vaigach; and a nuclear light container carrier Sevmorput with a reactor installation of similar capacity. The service fleet includes two floating technical bases – Imandra and Lotta, motor ship Serebryanka used to transport liquid radioactive waste, and a radiation monitoring boat Rosta-1. Three nuclear icebreakers – Lenin, Arktika, and Sibir; two floating technical bases – Lepse and Volodarskiy – are moored. The pioneer of the nuclear icebreaker fleet Lenin is moored at the Murmansk marine station and open to visitors. 25,000 people visited it in 2009.


Greenland
Frantz Josef Land
Arctic Ocean
North Pole
Novaya Zemlya
Severnaya Zemlya
Alaska
Cape Chelyuskin
Anzhu Islands

Nuclear icebreakers lead ships along the Northern Sea Route all year round. They carry sea freights and provide support to missions studying hydrometeorological conditions on sea and exploring mineral resources in the Arctic shelf next to the northern coast of Russia. The nuclear icebreaker fleet supports ice rescue operations along the Northern Sea Route and on non-Arctic freezing seas; arranges holiday cruises to the North Pole, islands and archipelagos in the Central Arctic; provides general and special maintenance services for the N-Fleet, and provides safe management of nuclear materials and radioactive waste.

In the reporting year, the nuclear ice-breaker fleet fulfilled all its commitments on maintaining the navigation along the Northern Sea Route, including direct control of sea operations and navigation of all ships along the Northern Sea Route by the sea operations headquarters, and several voyages to remove intact SNF from the former Navy base in Gremikha.

Figure 2.19. Northern Sea Route

- Navigation regionarea for nuclear icebreakers
- Navigation region for diesel-electric icebreakers

The following activities were performed to enable stable operation of the fleet:

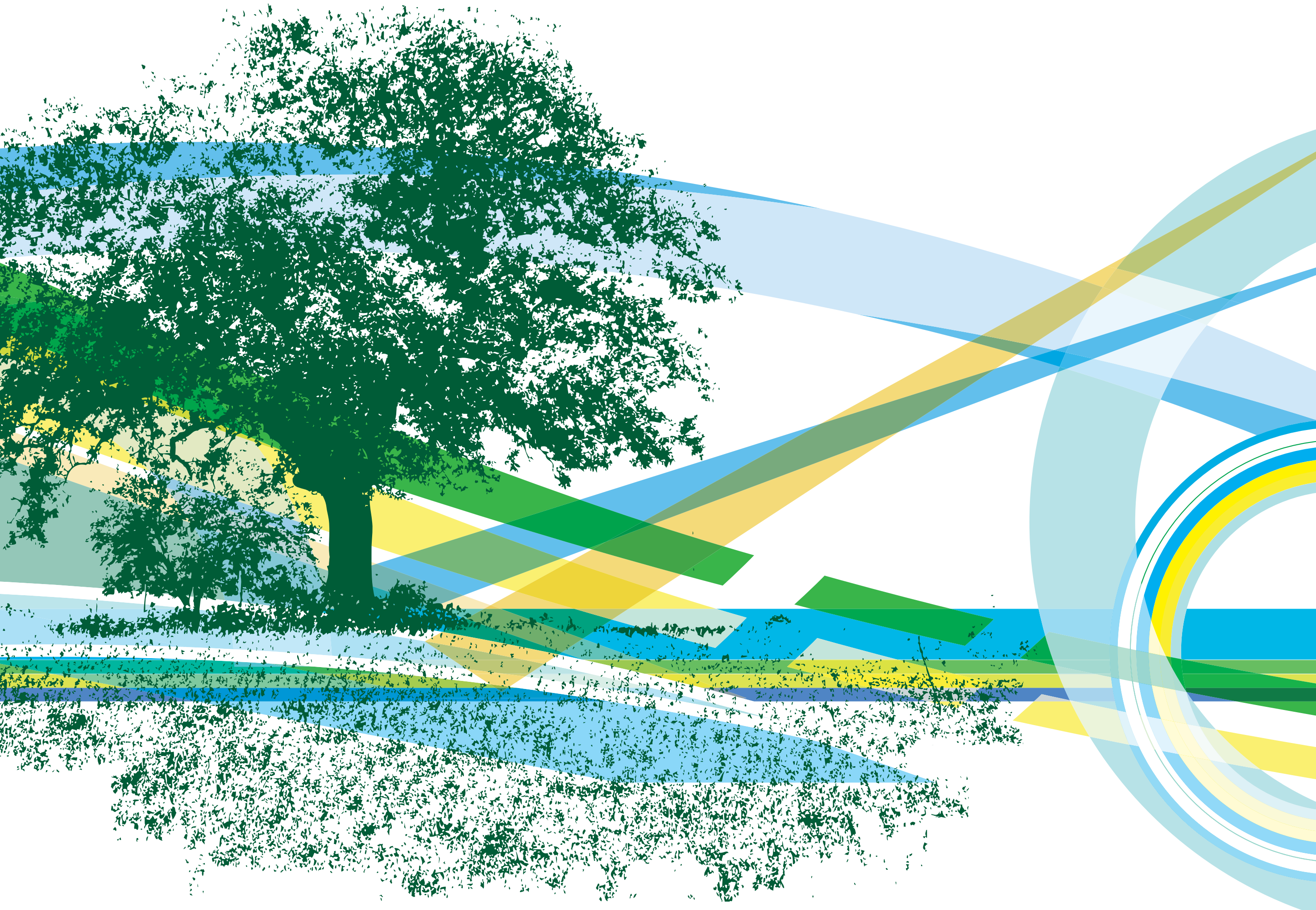
- renovation of the motor ship Serebryanka, which made it possible to use her to carry SNF in shipping casks;
- defueling of the nuclear ice-breaker Arktika which was taken out of service at the end of 2008;
- the icebreaker Sibir was put in “cold” mooring;
- fresh nuclear fuel was purchased and loaded into the power installation of the nuclear ice-breaker Taimyr;
- a detailed design documentation was developed for a new-type icebreaker that would be suitable for making voyages on sea and in northern rivers.

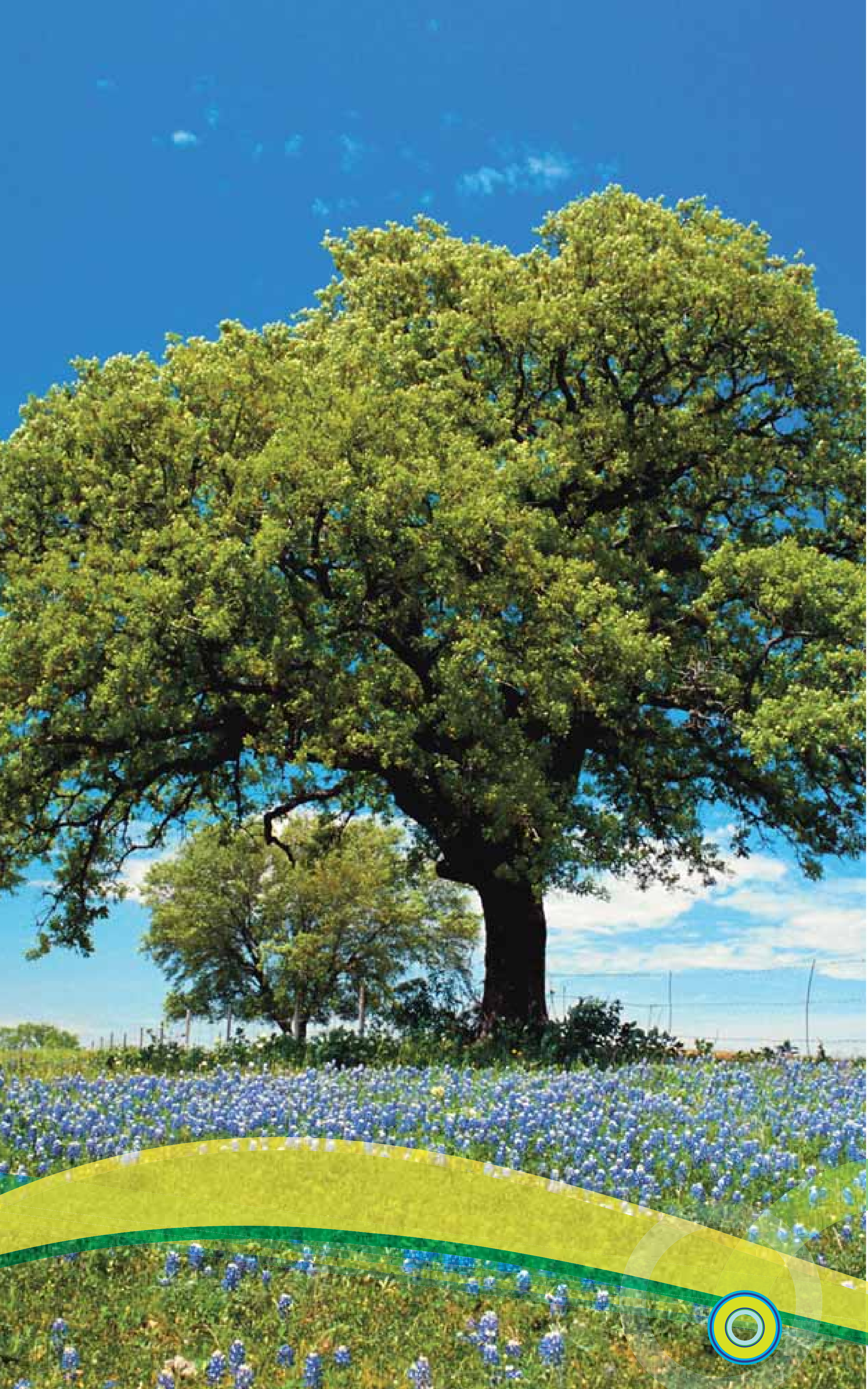
To improve management of the Northern Sea Route navigation, a proposal was sent to the RF Ministry of Transport to revise the regulations on this navigation. The suggested changes seek to expand water area of the Northern Sea Route, introduce Arctic duties and compulsory charges for ice escort.

Table 2.9. Outline of Atomflot activities in 2009

Operations	Funding, million RUB	Results	Financial indicators	Funding, million RUB
Watercraft maintenance and repair	206	Three nuclear ice-breakers ready to run and maintain appropriate levels of nuclear and radiation safety	Proceeds for services	985.5
Maintenance and repair of hydraulic and industrial buildings and facilities, hygiene systems at shops and departments	196		Tax payments and mandatory assign-ments to the state budget	702.3
Fixed capital expenditures	435.2			

3 Sustainable development activities





3.1 General description of activities aimed at ensuring sustainable development

In defining strategic objectives and current activities, the State Atomic Energy Corporation ROSATOM management recognizes that adherence to the concept of sustainable development is a mandatory prerequisite of effective performance of the state designated authorities and of successful business development.

Due to specifics of the nuclear power technologies and the systems ensuring their safe application (high specific energy content of fuel, advanced scientific, design and engineering solutions etc.), they have been originally developed consistently with the sustainable development concept: protecting man and nature against negative effects of human activities, removing protecting interests of the future generations, and preserving energy and biological resources.

Presently, a formative principle of ROSATOM in relation to the sustainable development is ensuring safety of the environment and the general public during operation of nuclear facilities, and systematically solving the legacy of the Soviet period of the industry functioning. →

“Sustainable development is the development that meets the demands of the present without jeopardizing the ability of the future generations to meet their demands.” – UNO International Commission for Environment and Development.

The Corporation recognizes its role and the unique contribution of the methods of nuclear power into the ongoing search for the balance between environmental protection and economic growth. In the immediate future, combining enhancement of environmental discipline in the power industry with the upwards trend of the economic activities will be a priority goal for Russia.

By developing nuclear power, the Corporation contributes significantly to solving the problem of environmentally friendly power generation. A substantial advantage of the atomic energy (lack of CO_2 emissions) is being augmented by new environmentally friendly and energy-efficient nuclear technologies : “AES-2006” design, research and development activities aimed at transitioning to a closed nuclear fuel cycles based on fast neutron reactors enabling usage of spent nuclear fuel, and the development of controlled thermonuclear synthesis with the prospect of environmentally friendly power generation with the use of practically unlimited resources.

The Corporation also believes it to be of fundamental importance to expand the applications of nuclear technologies in other sectors of the economy. Application of the state of the art nuclear technologies yields significant benefits today and promises to result in real breakthrough in the future in the areas of power saving, medicine, information and space technologies.

The social mission of the State Atomic Energy Corporation ROSATOM is to produce electricity needed by the society, which is achieved inclusively at the expense of investing into power infrastructure of the country, affecting the availability of electric power and long-term power supply.

Fulfilling the social mission, the Corporation notably affects the economic growth in areas where it is represented via taxes paid into the budgets of all levels, creation of new jobs, support of domestic suppliers and vendors, and investments into the regional infrastructures. In addition, in recognition of it social responsibility the Corporation is implementing a number of social projects focused on resolving the legacy issues inherited from the economic and defense-oriented activities of the industry over the previous decades.

The 275,000 employees work in organizations of the Corporation. Taking into account all their family members and the population of "nuclear" cities and townships, activities of the Corporation directly affect on at least two million individuals. Indirect influence (power supply, contribution of nuclear technologies to the interfacing sectors of economy including medicine, agriculture, car-making industry) extends a much wider range of people.

ROSATOM also recognizes the need to invest into human capital, which constitutes one of the most valuable resources in the nuclear sector. The Corporation provides an adequate level of remunerations for its employees, grants social packages, creates opportunities for professional growth and career development, ensures labor safety, and uses a range of non-material stimuli.

On the whole, the activities of the State Atomic Energy Corporation ROSATOM related to sustainable development are aimed at achieving the following objectives:

- improving the present and future life quality of public;
- creating favorable conditions for social and economic growth and development in the territories where it is represented;
- ensuring high and stable rate of economic growth of the organizations of the Corporation and of the country as a whole.

3.2 Engagement of stakeholders

Figure 3.1.

Stakeholders

- State authorities
- Regulatory and supervisory bodies
- International organizations
- Business partners
- Vendors and suppliers of equipment and services
- Consumers of products and services
- Regional and municipal authorities
- Local communitiescommunities
- Citizens of the Russian Federation
- Environmental organizations
- Employees of the Corporation and its organizations, trade union

Interests of stakeholders

- Maintaining the regime of nonproliferation of nuclear materials and technologies
- Economic efficiency of the organizations of the industry
- Renovation of the nuclear sector
- Competitive ability on the international markets
- Reliable supply electrical power
- Ensuring nuclear, radiation and environmental safety
- Resolving legacy issues problems
- Complying with the requirements of the international and Russian law
- Fair competition and responsible behavior on the markets
- Improving quality of products
- Transparent procurement policies
- Adequate remuneration and motivation for personnel, safe working conditions
- Improving life quality at the territories where the Corporation is represented

One of the strategic goals of ROSATOM is to ensure acceptance of development of the nuclear technologies by the society. In order to achieve this goal, the Corporation interacts with all the stakeholders to create constructive and objective attitude to nuclear facilities and industry development programs.

Types of engagement

- Cooperation with the IAEA and other topical international organizations, participation in international programs and projects
- Interaction with the representatives of federal, regional and municipal authorities
- Reporting System: annual reports to the Government, annual reports of ROSATOM and companies, environmental reports of organizations, annual safety assessment report of ROSATOM
- Participation in the programs for social and economic development of the territories
- Mass media of the industry, websites of ROSATOM and its organizations, information centers, publicly accessible automated radiation monitoring system
- Forums, conferences, exhibitions, fairs
- Public hearings and public environmental expert reviews of the designs of new power units
- Cultural and educational programs
- Social programs
- Training qualification upgrade programs
- Sociological surveys
- “Hot lines” (on the issues of counteracting corruption and violations of professional ethics)

3.2.1 Documents regulating engagement of the stakeholders

Concept of charitable activities and interaction with local communities

In 2009, the Concept of charitable activities and interaction with local communities of the Corporation was issued (approved on 18.02.2010). The concept outlines unified principles and priorities to be used during such activities and is recommended for all organizations of the Corporation.

Establishing the standard for charitable activities and monitoring adherence to the standards by the organizations of the Corporation is the responsibility of the Charity Council of the State Atomic Energy Corporation ROSATOM (established on 25.12.2009). The organizations implement their own plans of interaction with local communities and charitable activities that are to be coordinated with the Corporation. The Corporation supervises implementation of the industry-wide programs and defines the financial and financial reporting standards.

Figure 3.2. Priorities, principles, and requirements to organization of charitable activities and interaction with local communities

Principles

- The initiatives that would result in significant social changes have priority.
- Choosing the initiatives having tangible results at justifiable costs.
- Activities should not substitute the ones funded from federal, regional or local. budgets.
- Targeted charity aimed at improving lifequality of life in concerned territories where organizations of ROSATOM are represented.
- Encouraging competitive bidding for charity.
- Encouraging personal charity, volunteer activities, and sponsorship.

Requirements set for charitable activities

- Interaction with local communities and charitable activities are carried out on three levels: industry-wide (ROSATOM initiatives), local (organization initiatives), and individual (personal charity).
- The stakeholders are actively involved in the activities on the principles of partnership and shared funding.
- The structure of acitivites is determined by the ROSATOM plans, specifics of the project and of the enterprise.
- The activities are open to public, transparent and can be easily understood by all stakeholders.

Priorities

- Ensuring public and environmental acceptability of development of nuclear technologies and of the projects based on their application.
- Disseminating unique knowledge (scientific discoveries and engineering developments) and productive achievements (innovations).
- Supporting education and creating conditions for development of the new generation of engineers and technicians.
- Forming and maintaining high social and cultural standards at the territories where nuclear facilities are located.
- Facilitating formation of traditions for coordinated and professional management of growth and development at the territories where nuclear facilities are located.

Code of Ethics

The Code of Ethics of the State Atomic Energy Corporation ROSATOM[4] was issued in 2009. The Code was developed taking into account the IAEA Guidelines “Establishing a Code of Ethics for the Organizations of Nuclear Sector” No. NG-T-1.2. IAEA.

The following organizations took part in developing the Code: the Russian Trade Union of Nuclear Power and Industry Workers, the Council of Veterans, and the Russian Nuclear Society. More than 30 events were organized to present the Code for public discussion; more than 2,500 people took part in these events. The Code was reviewed by ROSATOM and accepted as a basis for final revision and subsequent approval.

The purpose of the Code is to implement ethical practice on a systematic basis. Trial application of the Code is in progress in eight ROSATOM organizations, Councils on Ethics were formed in the Corporation and in a number of its organizations; ethics councilors were appointed, and 50 claims concerning ethical issues were examined. Total duration of training of the employees to use the Code was 350 hours. A “hot line” was opened on the Corporation website for messages concerning violations of the Code[5].

4_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/resources/232808004351208db8a7fec5687e4a83/kodeks_091209.pdf

5_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/employee/corporateethics/

Ethical Principles

- Act to the good of society and for the sake of security.
- Be professional. Strive to achieve concrete results.
- Think. Show initiative. Become a leader and make an innovative breakthrough today.
- Respect the spirit and essence of laws, defined corporate standards and regulations. Do not allow situations causing unpredictable consequences to arise.
- Work in a team. Develop the notion of mutual assistance. Apply mutual control in order to reduce frequent mistakes.
- Always fulfill your obligations. Be responsible for your actions and the consequences.
- Treat personal criticism carefully. Learn more about the problem; look for a solution, but don't blame it on someone else.
- Learn from your business rivals. Win honestly.
- Respect traditions and sector veterans. Remember that your predecessors' intelligence and determination were behind the first atomic project. Help young people to become real professionals worthy of working in the nuclear sector.
- Respect the freedom, rights and dignity of others. Develop and support the spirit of partnership and mutual respect in your relations with all interested parties.

Public Reporting Policy

Growing responsibility of major companies before a wide range of stakeholders is recognized at the international level as an important factor of development of world markets. Transparency and accountability are becoming inalienable parts of implementation of the principles of sustained development (G8 Summit Declaration – "Growth and Responsibility in the World Economy" 2007). The endeavor of the State Atomic Energy Corporation ROSATOM to create a company that could become one of the dominant players on the world market of nuclear technologies implies compliance with the standards of corporate reporting adopted by the international community, consistent disclosure of information on economic, environmental and social aspects of its activities.

The ROSATOM policy on public reportability[6] approved on 25.12.2009 regulates the formation and development of public reportability systems. The policy was developed in order to improve the transparency and accountability of the Corporation and its key organizations to the level ensuring competitive ability on the Russian and international markets, and to enhance the trust of all the stakeholders in the activities of the Corporation and its organizations, thus ensuring corporate stability and decreasing the business risks. The policy envisages integration of the existing mechanisms of interaction with the stakeholders into the reporting processes. Under this policy the Corporation voluntarily committed to issue the annual reports. In 2009, the methodology was developed for preparing consolidated reports incorporating both financial and non-financial reporting (reporting according to requirements of the Federal Financial Markets Service, and reporting on sustainable development), and taking into account both Russian and international reporting standards. Development of a system of indicators for the

6_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/resources/e8e14b0043512039b777f7c5687e4a83/Politika_Goskorporatsii_Rosatom_v_oblasti_publichnoy_otchetnosti.pdf public reporting was initiated. A generic standard of public reporting for open joint stock companies was produced. A list of key organizations whose reports will receive special attention was developed (key organizations are the organizations whose operations are of social and political importance and/or are essential for positioning the Corporation on the domestic and international markets).

This methodological approach was used for production of trial annual reports of the key companies of the Corporation (TVEL, Tekhsnabexport, Rosenergoatom, SPb AEP, AEP, NN AEP, AEM and ARMZ). Training and methodological support was organized for the members of the working groups producing the reports: total of 90 academic hours of workshops were conducted, a methodology guideline was issued. An external independent review of the trial reports was conducted, and industry-wide ratings were determined based on its results. One of the achievements of the first year of development of the public reporting system is six wins of the key organizations in the national contests of annual reports.

The public reporting system comprises the following annual reports: a consolidated report of the State Atomic Energy Corporation ROSATOM, Safety Assessment Report of the State Atomic Energy Corporation ROSATOM, reports of the open joint stock companies including consolidated reports of the key organizations, and environmentalenvironmental reports of organizations included in the list of environmentally significant (65 environmental environmental reports were issued in 2009).

3.2.2 Mechanisms of engaging the stakeholders

Public Councils

The Public Council of the State Atomic Energy Corporation ROSATOM was established in order to involve public organizations in development of the policy of the use of nuclear energy, environment protection, nuclear and radiation safety.

The Public Council[7] includes the representatives of the Corporation, scientific community, and public and environmental organizations. The members of the Public Council work on a voluntary basis.

Regional Public Councils on the issues of safe use of nuclear energy are created at the initiative of the general public or regional authorities. The Regional Public Councils (RPC) are public forums where the currently important issues related to operation of the nuclear facilities located on the territory of the region in question can be discussed. RPC have been established in Irkutsk, Murmansk and Kostroma Regions. The councils include the representatives of governmental and municipal authorities, public organizations, scientists and experts, community activists, and the senior managers of nuclear facilities. The councils are established as permanent collegial bodies; RPC members also work on the voluntary basis.

7_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/aboutcorporation/publiccouncil/

Objectives of the Public Council

- collective development of recommendations on decision-making in the area of the use of atomic energy, environmental protection, radiation and nuclear safety;
- participation (as prescribed by the law) in the public review of the decisions related to the use of atomic energy, environmental protection, radiation and nuclear safety;
- participation in developing recommendations and implementing the measures aimed at providing proper training the employees of nuclear facilities, social support and health protection of the personnel of nuclear and radiological facilities, participants of accident mitigation activities and victims of radiation accidents and catastrophes, as well as the population of the territories affected by radioactive contamination and in the immediate neighborhood of nuclear facilities.
- preserving and developing the scientific, historical and cultural potential of the nuclear industry, participation in the environmental monitoring and surveys of the usage of atomic energy;
- involving public and social organizations into development of the policy of the use of atomic energy;
- organization of exchange of opinions between the scientists, experts, officials, representative of social and environmental organizations and unions, representatives of general public on the issues related to the use of atomic energy, implementation of the targeted federal programs in the are of nuclear and radiological safety;
- increase of the level of awareness of the public about the main activities of the Corporation in the area of the use of atomic energy, implementation of the targeted federal programs in the are of nuclear and radiological safety, mitigation of the consequences of defense-related nuclear projects;
- improved interaction of the Corporation with public and environmental organizations and individual citizens.

Research activities

The members of the Public Council are research coordinators, organizers and participants various research projects. In particular, in 2009 the science and expert group of the Public Council conducted experimental studies in the framework of site selection for nuclear facilities with the use of new technologies, such as:

- civilian pilotless aircrafts;
- high-resolution geophysical sonar for obtaining large-depth (up to 100 m) geological and hydro-geological profiles;
- computer-assisted mapping information technologies for processing environmental information.

The Buysk District in Kostroma Region (old Kostroma NPP site) and the new alternative site #2 for construction of Central NPP were selected as a testing ground. The studies demonstrated that the applied experimental technologies could be successfully used for site selection and survey activities.

Publications

The Public Council, jointly with the Department for Interaction with Regions of the State Atomic Energy Corporation ROSATOM is publishing a popular scientific series called “Bibliotechka Obshchestvennovo Soveta” (Library of the Public Council). In 2009, sixteen books were published, two of them were translated monographs on environmental safety and strategic prospects of development of nuclear technologies. Total of 82,000 copies of books were issued.

Public hearings on construction of new power units

The engagement of the stakeholders includes organizing public hearings on construction of new power plants or new units of the operating plants in accordance with the regulations on evaluating the impact of the planned economic or other operations on the environment. Public hearings are scheduled at different stages of pre-design studies, licensing of NPP power units, and design activities associated with siting and construction of nuclear power facilities. Public hearings are made especially important by the fact that as they take place prior to the State environmental review, which takes into account the opinions of the public review commissions and the results of public hearings. Ten public hearings and nine public environmental reviews were conducted in 2009.

10 public hearings were held in 2009:

- Baltic NPP (3 hearings in Kaliningrad, Neman, Sovetsk);
- Rostov NPP (2 hearings, Volgodonsk);
- Seversk NPP (1 hearing, Tomsk);
- Leningrad NPP II (1 hearing, Sosnovy Bor);
- Tver NPP (1 hearing, Udomlya);
- Nizhniy Novgorod NPP (1 hearing, Navashino township);
- Central NPP (1 hearing, Chistiye Bori township).

Organizations representing personnel interests

The State Atomic Energy Corporation ROSATOM adheres to principles of protecting employees' rights to form organizations representing their interests.

The Russian Trade Union of the Nuclear Power and Industry Workers was formally established in March, 1992 (the history of activities of the union dates back to 1948). As of 31.12.2009, the organization united 163 individual trade-union organizations (including the organizations that are not members of the Corporation), and 326,500 members (also including the members who do not belong to the Corporation). In addition, there are 98,500 non-working retirees and 12,500 students and trainees registered with the trade union. Total number of the trade union members is 437,500 people.

In December 2008, a permanent industrial commission regulating social and labor relations was created; it includes representatives of the Russian Union of Employers of Nuclear Industry, Power Engineering and Science and of the trade union. Ten commission meetings were organized in 2009 to discuss the issues concerning new systems of remuneration and incentives to be introduced as well as the social policies and corporate social programs.


МИР АТОМНОЙ ЭНЕРГИИ
завтра будет!

Communications and Information

The State Atomic Energy Corporation ROSATOM is publishing information about its business activities in the federal, regional and industry-wide mass media and posts it in the Internet. The websites of the Corporation and its organizations are important sources of information about activities of the companies and about on radiological situation at the nuclear facilities in the real time.

In 2009, the first information centers – multimedia educational resources on nuclear issues were opened in Tomsk, Voronezh and Rostov-on-Don. More than 44,000 people visited these centers over the reporting period.

The Corporation and its organizations conduct a large number of exhibitions, forums, conferences and fairs. In the reporting year, the Corporation conducted for the first time an International Forum "ATOMEXPO 2009" in Moscow (May 26–28) with participation of: AREVA, Alstom, Siemens, Nukem Technologies, NPCIL, CNNC, CGNPC, Kazatomprom, etc. Total of thirty countries were represented at this forum. This international forum will be an annual event organized by the Corporation.

Public forums and science and technology conferences

- Annual international forum «Atomexpo» (Moscow);
- Annual international dialog-forum (St. Petersburg);
- Regional annual dialog-forums (Irkutsk, Murmansk, Chelyabinsk);
- Regional annual science and technology conferences (St. Petersburg, Chelyabinsk, Kirov).

3.3 Contribution to economic development

3.3.1 Creation and distribution of economic value

The general overview of economic results of the State Atomic Energy Corporation ROSATOM in the reporting year is shown in the table on Creation of economic value and its distribution among the stakeholders (see Table 3.1.). The created value is distributed among the suppliers and contractors (as operational costs), lenders of capital (as interest paid to creditors), Corporation personnel (as wages and social payments), the state (in the form of taxes), local communities and regional and municipal authorities (as social investments, charitable donations, and taxes). Part of the created value remains in the Corporation – this is the undistributed value including the investment into further business development.

Table 3.1.

Creation and distribution of costs, million RUB

Component	2009	2008
1. Direct economic value created		
Income (revenues from sales, income from financial investments and asset sales)	458,200	361,503
2. Distributed of economic value, including:	381,798	–
a) operational costs (payments to suppliers and contractors, costs for material procurement)	216,670.6	–
b) salaries and other payments and benefits to employees	99,404.4	–
c) payments to capital lenders	13,823	45,930
d) payments to the state	50,785	–
e) investments into communities , including donations	1,115	–
3. Undistributed economic value	76,402	–
4. Substantial assets received from the state	642,597 (including 450,016 million RUB – RF ownership contribution in the form of shares)	40,390

Inclusion of the line containing information on substancial financial aid received from the state into the table is justified by the considerable share of the state support in the equity of the Corporation and by the importance of gradual reduction of this share.

The increase in added value is to a large extent associated with increased effectiveness of the procurement system, and of the program of reduction of regular costs. As the NPP series construction program expands and other investment projects are initiated, the share of operational expenses related to payments to equipment suppliers will be growing.

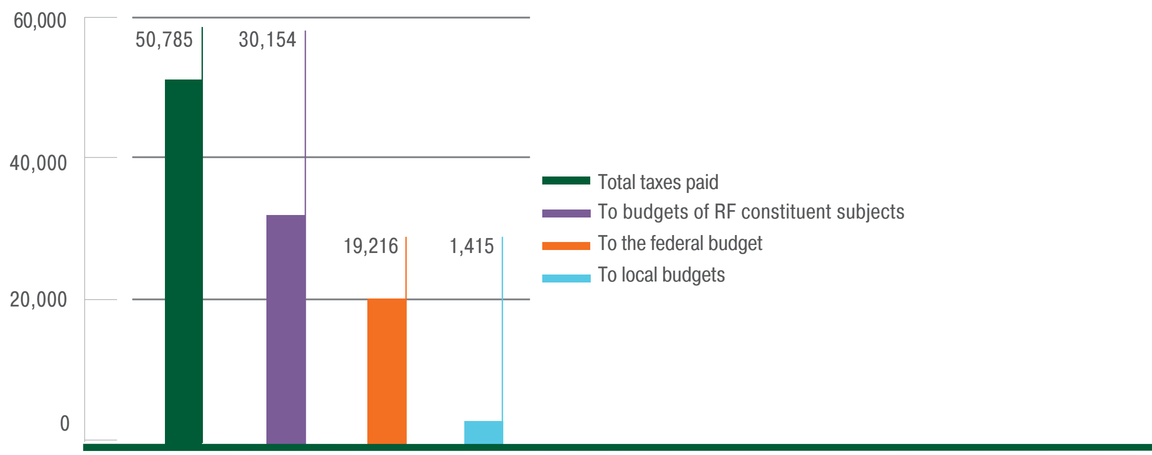
3.3.2 Contribuition to economic development of the Corporation host territories

The companies of the State Atomic Energy Corporation ROSATOM contribute to the economic development of territories where the corporation is represented primarily as large-scale employers and taxpayers.

Tax Payments to Budgets of Different Levels

The companies of the Corporation have a significant effect on the income part of budgets of the corresponding territories. 50,785 million rubles were paid into the budgets of all levels in 2009 (according to consolidation perimeter used in the public financial reporting), which is 10.6% more than in 2008.

Figure 3.3. Tax payments by the Corporation to budgets of different levels, million RUB



Contribution to development of the regional infrastructure

The activities of the State Atomic Energy Corporation ROSATOM and its organizations make important contributions to development of regional infrastructure of their host regions, thus boosting the investment appeal of the regions.

According to the "Scheme of Integrated Development of the Production Facilities, Transport and Power Industry of Yakutia for the Period until 2020", it is planned to create a multidisciplinary industrial region in the Far East of Russia. Implementation of the plan is based on the use of natural resource potential of Southern Yakutia and development of transport and electric grid infrastructure in the region.

In June 2009, an investment agreement on cooperative State and private project of "Development of Design Documentation for the Investment Project "Integrated Development of Southern Yakutia" was signed. In the framework of this project, the Corporation will develop design documentation for construction of the Elkonsky Mining and Metallurgical Combine in Yakutia.

Elkonsky Mining and Metallurgical Combine in Yakutia will become the largest uranium mining facility in Russia (with the rated output of 5 thousand tons of uranium per year and the reserves of 319,000 tons, or 5.3% of the worldwide reserves). After reaching the nameplate capacity, the facility will become the largest employer and taxpayer of the region and a locomotive of economical development of the entire region – besides the Elkonsky Mining and Metallurgical Combine itself, a number of auxiliary facilities and the associated infrastructure including power transmission lines, roads and railroads will be constructed.

Creation of new jobs during NPP construction

Experience proves that every employee working for NPP construction "provides" jobs for ten to twelve other specialists in the related industries (metallurgy, machine engineering, etc.).

When an NPP is under construction, the workers are mostly hired from among the local residents living within a radius of 100 km from the construction site. Thus, ROSATOM makes a significant contribution to maintaining employment of local populations in regions.

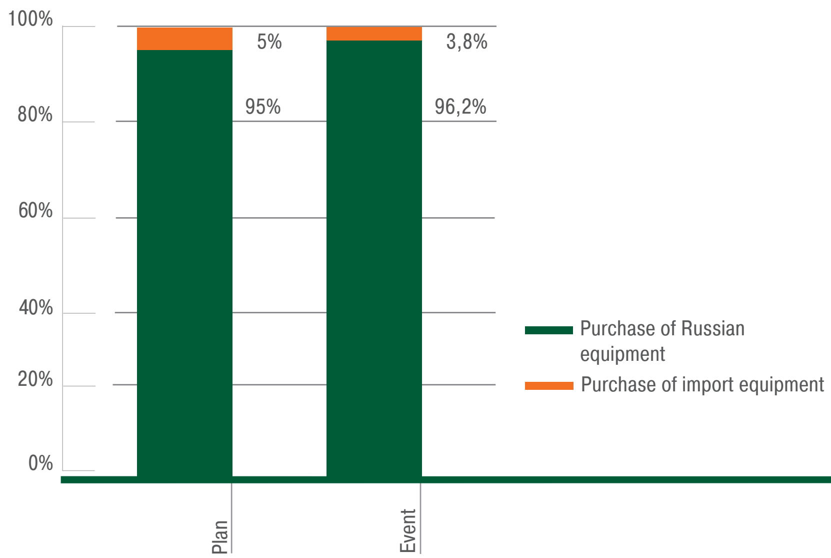
Table 3.2. Number of employed workers and subcontracted organizations at NPPs under construction in 2009.

	Number of major subcontractor organizations	Maximum number of personnel	Maximum size of workforce
Kalinin NPP, unit No. 4	38	4,424	3,505
Beloyarsk NPP, unit No. 4	30	3,060	2,662
Novovoronezh NPP II	33	4,226	4,186
Leningrad NPP II	9	2,085	1,313
Rostov NPP	22	7,000	6,180
Total	132	20,795	17,846

3.3.3 Support of domestic (local) suppliers and manufacturers

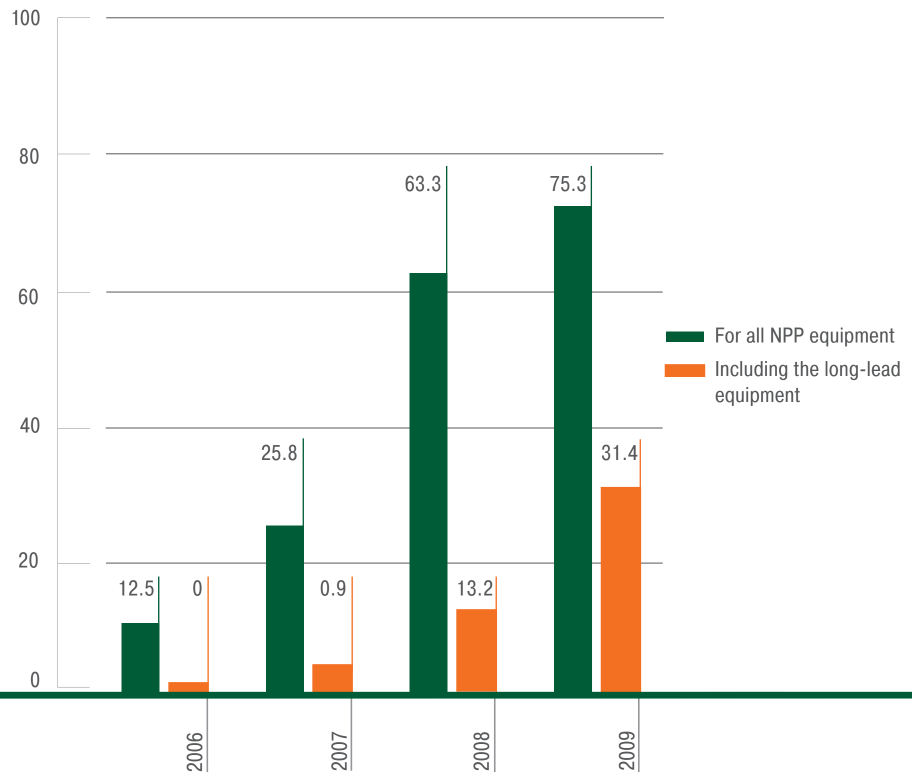
The State Atomic Energy Corporation ROSATOM is one of the largest consumers of goods and services produced by domestic suppliers. At the federal level, the Corporation acts as a customer purchasing equipment from domestic organizations specializing in power machine engineering. At the regional level, the Corporation applies its program of procurement from the local suppliers, thus supporting business operations of other enterprises in the regions where it is represented.

Figure 3.4. Purchased equipment for NPP construction, plan / event, 2009



The RUB176.9bn were spent on procurement of equipment for NPPs under construction over the last four years. In 2009, RUB75.3bn were used to purchase equipment for NPPs (including costs for the equipment manufactured over a longer timeframe); RUB72.41bn (96.2%) from the forementioned amount were spent on procurements from the Russian manufacturers. The share of imported equipment totaled 3.8%.

Figure 3.5. Dynamics of the equipment procurement for NPP construction, bln. RUB



3.4 Contribution into social development of the Corporation host territories

3.4.1 Aiding in the development of the territories

The State Atomic Energy Corporation ROSATOM pays special attention to development of closed territorial administrative formations (CTAF):

- Zheleznogorsk, Zelenogorsk (Krasnoyarsk Territory)
- Sarov (Nizhniy Novgorod Region),
- Zarechny (Penza Region),
- Lesnoy, Novouralsk (Sverdlovsk Region),
- Seversk (Tomsk Region),
- Snezhinsk, Trekhgorny, and Ozersk (Chelyabinsk Region).

There are three main lines of activities:

- implementing the State functions of the Corporation in relation to CTAF (ROSATOM State authorities defined by the federal law);
- creating comfortable social conditions for employees of the companies of the Corporation;
- implementing socially-responsible approaches in relation to local communities at the territories where nuclear facilities are located.

On the whole, more than two million people live in CTAF, NPP satellites, research center towns, and other “nuclear” inhabited locations. In all the CTAF and towns where the enterprises of the Corporation are major employers, they play an important role in supplying municipal institutions (educational, cultural, sports, medical) with equipment and inventory in the framework of sponsorship programs. The companies interact closely with the representatives of local communities in the framework of joint projects, many of which are of charitable nature. In 2009, a number of educational “kick-off” projects were organized at the regional and inter-regional levels for major professional groups in CTAF (teachers, medical doctors, municipal officials, culture and sports professionals); joint projects initiated by the Corporation and local communities were scheduled until 2013; some of these projects extend beyond CTAF boundaries and include other “nuclear” territories.

In 2009, the Corporation started synchronizing the plans for development of major employer-companies of the Corporation and of their respective territories. Two first projects of outlining the strategy for social and economic development of Seversk CTAF and of the town of Dimitrovgrad (Ulyanovsk Region) were implemented in 2009 as pilot projects.

State-designated authrities of ROSATOM with respect to CTAF

- Coordinating plans and programs of integrated social and economic development of CTAF in accordance with the Federal Law No. 3297-1 FZ of 14.07.1992 “On closed administrative territorial formations”;
- Approving the draft general plans of CTAF and CTAF territory planning based on the general plans according to the Federal law No. 3297-1 FZ of 14.07.1992 “On closed administrative territorial formations”;
- Approval of the decisions of the CTAF local administrations about permitting non-residents of the territory and the legal entities not registered at the territory to participate in transactions with real estate at the territory of CTAF;
- Approval of establishment of organizations with foreign investments on the territory of CTAF taking into account the requirements to maintain special regime of functioning of such organization within CTAF;
- Approval of the decisions of the local administration about reserving the land within CTAF for municipal purposes;
- Approval of the regulations for providing the individuals leaving CTAF for a new residential area with accommodation or for paying compensations to such individuals.
- Participation in the competitive procedure of appointing the heads of administration of CTAF.

3.4.2 Social Programs

Contest of social projects

In 2009, under the initiative of the Public Council of the Corporation, a contest of social projects was organized for the fourth time for public and non-profit organizations of 17 subjects of the Russian Federation: Voronezh, Irkutsk, Kaliningrad, Kursk, Leningrad, Murmansk, Nizhniy Novgorod, Penza, Rostov, Smolensk, Sverdlovsk, Saratov, Tver, Tomsk, and Chelyabinsk Regions, Krasnoyarsk Territory and Saint Petersburg.

Table 3.3. Contest of Social Projects

	2006	2007	2008	2009
Number of regions	1	7	16	17
Number of applications	38	150	219	182
Number of winners	12	49	57	48
Funding, mln RUB	12	37	64.8	38.5

The following projects were among the winners in 2009:

- "Nuclear Classes in Angarsk" project – organization of topical classes in the Gymnasium No. 3 of Angarsk (charitable fund "Fund for Municipal Development of the Town of New Angarsk);
- "Contest of creative works "Power Industry of the Future" project – creativity contest among children and youth of CTAF and reactor towns – photographs, posters, and caricatures (Saint Petersburg Fund for Modular Training of – "Peterfund");
- "School for Young Lecturers" project – training teachers, doctors, and social workers to lecture on the issues of development of nuclear power industry and of the Siberian Chemical Combine ("Seversk Municipal Chapter of "Znaniye" (Knowledge) Association of Russia" NGO);
- "Third All-Russian Teachers' Conference "Environmental Education and Upbrining" project ("Zelenaya Planeta" (Green Planet) All-Russian Children's Environmental Movement);
- "Atom of Trust" project – organization of interaction of the journalists of Kursk Region with Kursk NPP as well as with other nuclear facilities located in Russia ("Kursk Regional Union of Journalists" NGO).

Culture and Art Programs

The State Atomic Energy Corporation ROSATOM strives to make the life of local communities more vivid and satisfied. The "Nuclear Industry – Territory of Culture" program that was initiated in 2007 is aimed at acquainting the residents of "nuclear" towns with the best of performing arts, visual arts and theater, and at supporting local creative groups. The program includes mobile art exhibitions, musical and theatrical contests, guest performances, master-classes of well-known artists, and topical conferences for culture professionals.

82 events were organized within the framework of the "Nuclear Industry – Territory of Culture" program in 2009. Joint efforts of the Corporation, the International Art Fund, Moscow galleries, the State Hermitage, and private collectors resulted in more than 30 mobile art exhibitions. These included: the exhibition presented by artists-members of the "Byzantine Images of Russia" International Fund, Oleg Zakomorny's "Benevolent Energy", Irina Alaverdova's exhibition "Music for the Eyes", Bato Dugarzhapov's exhibition "Malevich's Calendar", Ilya Danshin's exhibition "Pages from a Traveler's Albums", and Harry Gordon's exhibition "Horizon".

The 32 performances were organized including the tours by soloists of the Bolshoi Opera Theater and Boris Pokrovsky Chamber Music Theater, chamber music and vocal ensembles, drama and puppet theaters. The wishes of public and heads of cultural departments were taken into account when the tour programs were developed.

→

Actors, composers, poets, artists, directors and critics who visited CTAF and NPP satellite-cities in the framework of the program, conducted master-classes for students and teachers of art schools and meetings with city residents.

"10 CTAF + 10 NPPs" project became a unique ground for organizing festivals and contests of different performers and groups in the satellite-cities and CTAE. Among the liveliest events of the project were the industry-wide festival of folk art "Spirit of the World" (Zarechny), the International Contest of performers of Russian romance "Romanciade" (Seversk), local rounds of the II theater contest of amateur and professional theater groups, and a contest of young pianists, whose final performance was held in the Organ Hall of the Central Musical School of the P.I.Tchaikovsky Moscow State Conservatory.

In 2009, the Corporation and volunteer services of the State Hermitage organized a joint project "CTAF Volunteers in the State Hermitage". Students from Zheleznogorsk, Zelenogorsk, Seversk, Novouralsk and Sarov took part in the project. Young people had an opportunity to enjoy the cultural heritage of the world, immersing themselves in the life of one of the largest museums in the world.

Results of the program "Nuclear Industry – Territory of Culture" were announced at the scientific conference "Social and Cultural Space of ROSATOM – Problems, Achievements, and Ways for Improvement". Representatives of the local governmental authorities and cultural institutions of Volgodonsk, Desnogorsk, Zheleznogorsk, Zarechny, Zelenogorsk, Navashino, Novouralsk, Ozersk, Sarov, Seversk, and Snezhinsk took part in the conference.

Social projects aimed at resolving the “Nuclear Legacy” issues

Over the last few years the State Atomic Energy Corporation ROSATOM and regional authorities have been engaged in projects of resettlement of the residents of Muslyumovo village in Chelyabinsk Region and of Oktyabrskiy township in Tranbaikalia Territory. Recognizing its social responsibilities, the Corporation voluntarily undertook to resettle people from these environmentally adverse territories despite the fact that the problems of these territories are under jurisdiction of federal and regional authorities.

The project on resettling the residents of Muslyumovo village was initiated in 2006 and is a collaborative effort with Chelyabinsk regional authorities. The Corporation allocated 600 million rubles for remediation of the consequences of contamination of the Techa River (including 7 million rubles for rehabilitation of the alluvial plains of the Techa River within the limits of Muslyumovo village and RUB593m for resettling the residents of Muslyumovo village). The government of Chelyabinsk Region allocated RUB450m, including RUB302m for financing construction and renovation of the engineering infrastructure, creation of the social infrastructures in the new “Novomuslyumovo” township, and RUB148m for resettlement of the residents of Muslyumovo village. Resettlement should be completed by fall 2010.

Construction of multistory residential buildings for the resettling residents of Oktyabrsky township was continued in 2009. The 272 families received new apppartments, the remaining 408 families are due to receive their apartments by the end of 2010. The resettlement program is a collaborative effort between ROSATOM Corporation and the government of Zabaykalskiy Territory initiated in 2007.

Childrens' network community

In 2009, ROSATOM jointly with its partners from Ukraine and Bulgaria initiated a project of development of a social network uniting the children of the employees of nuclear facilities. The first 50 members of the "Nuclear Kids" project have created over 30 days in a recreation camp a musical about the life of teenagers in a NPP satellite town. Intensive rehearsals united the kids, having created a real nuclear family out of a group of total strangers.

The first nights of the show were successfully organized in Moscow and Kiev. The cumulative number of copies of publications about the Nuclear Kids project exceeded 40 million. The kids themselves, as it was originally intended, became a part of NUCKIDS.RU social network and continue communicating on a regular basis.

3.5 Environmental Safety

3.5.1 Environmental Policy

In 2008, the State Atomic Energy Corporation ROSATOM approved "The Bases of Environmental Policy" (Environmental Policy)[8].

Pursuant to the corporate Environmental Policy, 65 companies approved the internal environmental policy documents in 2009. The organizations committed to resolve specific environmental issues, to reduce radiation impact and continuously improve the environmental management system.

In 2009, for the first time in the history of the industry, 65 environmentally significant orgnizations published reports on environmental safety (see Appendix 7 for the list of the environmentally-significant enterprises). The reports address a wide range of important environmental issues and the measures associated with implementation of state of the art environmental and radiological monitoring systems. Most of these reports can be found on the organizations' websites. The reports that have not been published in the Internet can be obtained from the Department of Interactions with Regions of ROSATOM.

Pursuant to the corporate Environmental Policy, implementation of the environment management system and its and certification for compliance with the ISO 14001 international standard was initiated, primarily in the exporting organizations. Atomstroyexport conducted certification of an integrated quality, ecology, healthcare, and labor safety management system for compliance with international standards ISO 9001, ISO 14001, OHSAS 18001, and ISO-14000. The activities to implement such an integrated management system are also in progress in JSC TVEL and Rosenergoatom.

8_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/resources/6023d88043512054b812fec5687e4a83/ecopolitiks.pdf

Environmental and radiological monitoring systems of the Corporation enterprises include monitoring of emissions and effluents of chemical and radioactive pollutants, radioactive waste accounting and control, and control of the industrial and consumer wastes, monitoring radiological and chemical parameters of the environmental objects located within controlled areas and surveillance zones, and assessing compliance of these parmeters with the regulatory requirements on of radiation and environmental safety (see the environmental reports of the enterprises of the Corporation for more details)[9].

Rosatom Corporation committed to the following:

- Ensure allocating adequate resources for ecological and ecological safety and environmental protection, including manpower, funding, technologies, and equipment;
- Implement and support best practices and methods of ecological management consistent with the state of the are international standards in the area of ecological management and safety;
- Encourage integration with international and national systems and institutions for environmental protection, ecological safety and sustainable development, interaction and cooperation with public environmental organizations;
- Ensure openness and accessibility of objective scientifically solid information about the impact of the industry and its enterprises on the environment and health of employees and general public in the vicinity of nuclear facilities.

9_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/partnership/environmentalmanagement/

3.5.2 Environmental impact

Water utilization

10.5%

12.1%

The nuclear industry is one of the major users of water resources; 34.8 billion m^3 were used in 2009. The share of the industry is about 10.5% of the total annual water intake from natural water reserves in the Russian Federation or about 12.1% of fresh water intake used for production purposes. Nuclear power plants and nuclear fuel cycles facilities are the largest waste consumers within the industry.

In 2009, fresh water intake by the nuclear facilities decreased by 554.5 billion m^3 compared to 2008, including reduction of fresh water intake by 135 billion m^3, and of seawater intake by 419.5 billion m^3.

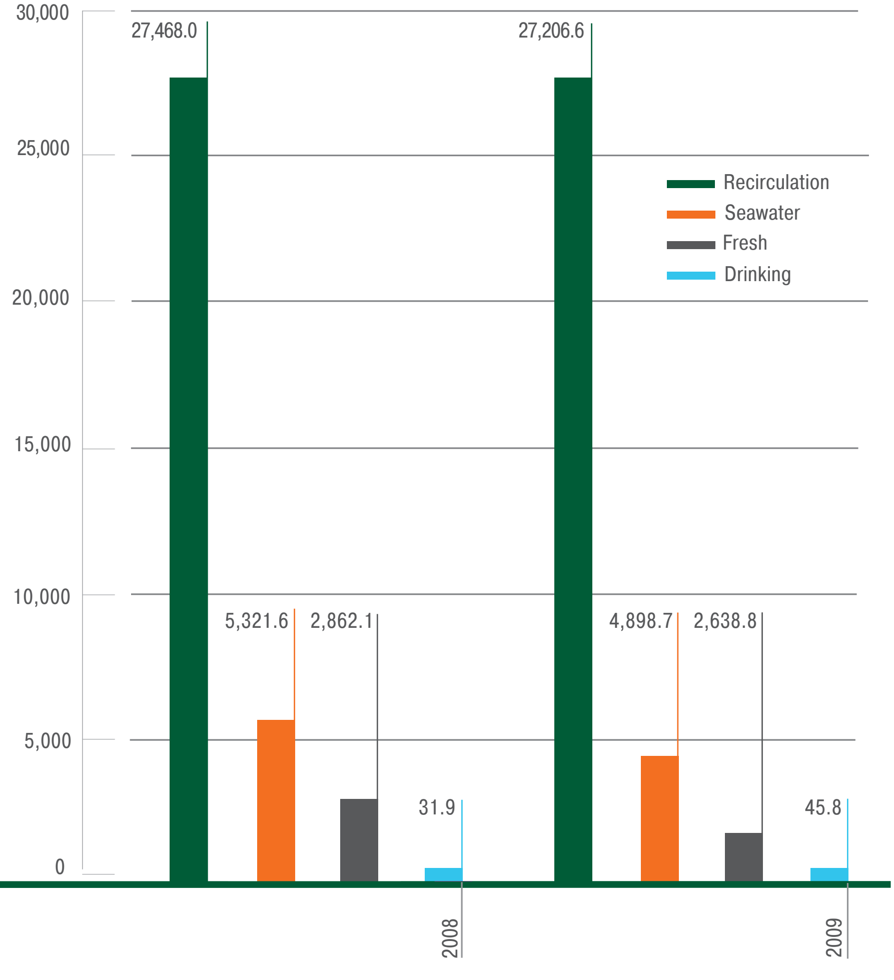
96.2%

96.2% of the total amount of water is used for production purposes. In 2009, 34.8 billion m^3 of water was used for production activities, 7.66 billion m^3 out of which was fresh water from natural sources and 27.21 billion m^3 – recycled water. Economy of water achieved by means of recirculation water supply amounted to 78% (90.7% exclusive of sea water), which is higher than the average throughout the electric power industry of the country (73%)[10].

78%

10_The figures provided in the reports by the Ministry of Natural Resources and Ecology were used in the calculations (http://www.mnr.gov.ru/part/?pid=153).

Figure 3.6. Water consumption by sector enterprises for production purposes, 2008–2009, m^3



Release of harmful chemical substances

In 2009, the industry released 7,297 million m^3 of waste water into surface water reservoirs, including:

98.3% regulatory clean water without processing

0.7% of effluents treated to standard water quality, and

1.0% of contaminated water.

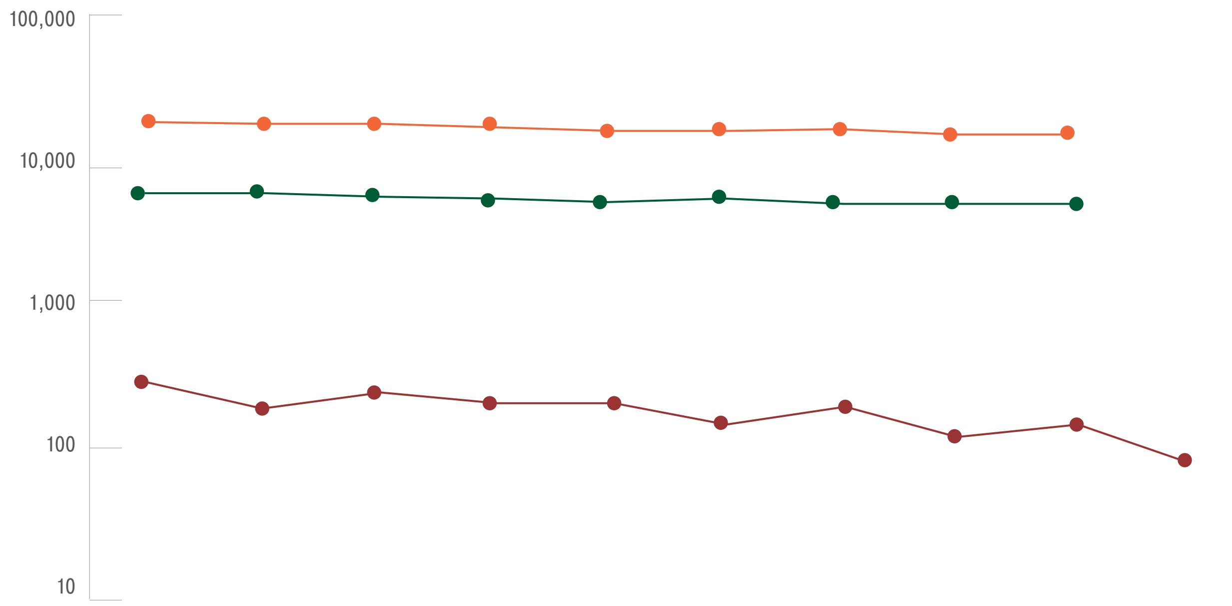
A percentage of polluted water released by the industry reached 1.05% of the total amount of water taken from natural sources, which was 14 times smaller than in the entire industrial sector of Russia[11].

In 2009, 28 companies of the industry were releasing contaminated waste water into surface water bodies with the following distribution between the catchment basins: Azov Sea basin– 0.265 million m^3 (Volgodonsk NPP), basin of the Arctic Seas – 37.2 million m^3 (11 enterprises), the Baltic Sea basin – 19.9 million m^3 (4 enterprises), The Caspian Sea basin – 17.3 million m^3 (11 enterprises), and the Pacific Ocean basin – 2 million m^3 (PIMCU).

The main substances released with the waste waters in excess of the allowable limits are oil products, ammonium nitrogen, waste from galvanic processing (heavy and non-ferrous metals), nitrites, and carbon tetrachloride.

11_The figures provided in the reports by the Ministry of Natural Resources and Ecology were used in the calculations (http://www.mnr.gov.ru/part/?pid=153).

Figure 3.7. Release of contaminated water into surface water reservoirs[12], mln m^3



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Russia	20,291.4	19,773.2	19,767.0	18,960.6	18,534.4	17,727.5	17,488.8	17,176.2	17,119.0	
Industry	6,514.0	6,351.5	6,175.6	5,851.6	5,664.0	5,611.2	5,363.8	5,263.5	5,290.9	
Sector	261.0	194.7	229.8	204.9	201.2	145.4	173.4	118.7	132.8	76.6

12_По данным Федеральной службы государственной статистики (http://www.gks.ru/free_doc/new_site/oxrana/tabl/oxr_vod3.htm)

Release of radionuclides

In 2009, the industry released 254.2 million m^3 of waste water containing 2.65×10^{10} Bq of alpha-active and 9.83×10^{13} Bq of beta-radioactive nuclides into the surface water bodies of the open hydrographic network. Compared to 2008, the amount of waste water released into surface water bodies decreased by 323.3 million m^3. SCC stopped releasing waste waters containing radioactive nuclides in the amount of 260 million m^3 with the activity of 7.3×10^{13} Bq due to the shutdown of plutonium production reactors.

Distribution of the effluents containing radionuclides between the basins of different seas in 2009 was as follows:

6.8%	the Baltic Sea basin,
39.1%	the Black Sea and the Azov Sea basin,
31%	the Caspian Sea basin,
46%	the Arctic Sea basin, and
5%	the Pacific Ocean basin.

There were no radiological incidents associated with release of radioactive nuclides into waste water receptacles during the accounting period.

In 2009, the release alpha-radioactive nuclides decreased by 19% compared to the previous year and amounted to $2.65*10^{10}$ Bq of mostly uranium nuclides released by PIMCU. Release into surface water bodies of the open hydrographic network included: uranium nuclides – 75.5%, thorium nuclides – 13.6%, polonium-210 – 5.6%, and radium-226 – 1.5%; plutonium nuclides totaled less than 0.004% of total alpha-radioactive nuclides.

The total volume of beta- and gamma-emitting nuclides released into water bodies of the open hydrographic network during the reporting period amounted to 9.83×10^{13} Bq, which is 45% less than the similar value reported for 2008. Major share of radioactivity was from short-lived nuclides including sodium-24 – 46.2%, tritium – 38.4%, phosphorus-32 – 7.4%, neptunium-239 – 2.1%, and other nuclides – 5.9%.

The share of long-lived nuclides (strontium-90, cesium-134, 137) was less than **1%** of the total released radioactivity.

In 2009, release of beta-radioactive nuclides decreased by the following factors:

- sodium-24 – 1.4 times,
- phosphorus-32 – 1.1 times,
- strontium-90 – by 9.8%,
- cesium-137 by 14.1%,
- total iodine nuclides 1.4 times,
- neptunium-239 – 5.82 times.

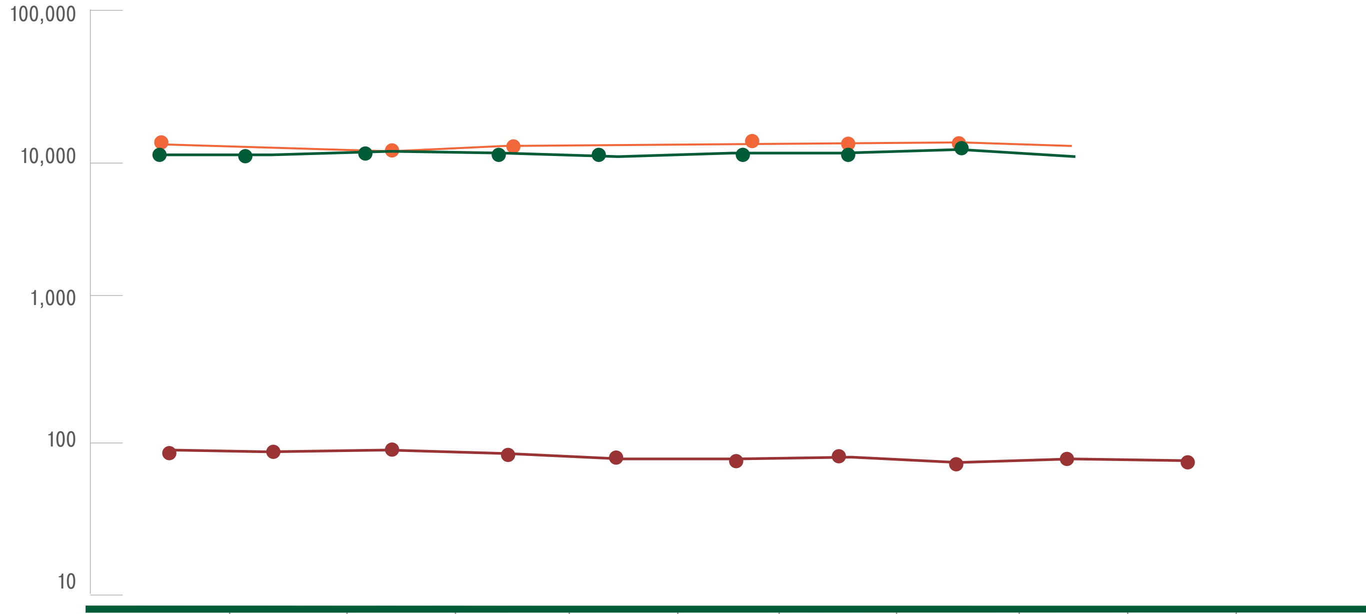
Emissions of harmful chemical substances

In 2009, a release of harmful chemical substances (HCS) into the atmosphere by the industry amounted to 60,600 tons. These emissions were dominated by solid particles (21,900 tons), sulfur dioxide (18,100 tons), and nitrogen oxide (13,200 tons). The largest share (86.3%) of the emissions by the industry is attributable to thermal power plants and boiler stations running on solid fossil and hydrocarbon fuel.

The emissions in excess of the limits amounted to 36.2 tons (less than 0.1% of total industry emissions). The amount of excess emissions decreased by a factor of two compared to the previous year.

As illustrated by Figure 3.8, the emissions in Russia and total industrial emissions increased by 7% and 10%, respectively between 2000 to 2008, whereas the emissions in the nuclear industry decreased by 30%. Enterprises of ROSATOM were responsible for 0.3% of total HCS emissions in the country.

Figure 3.8. Total HCS emissions in Russia, total industrial emissions in Russia[13] and emissions by the nuclear industry



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Russia	18,819.8	19,123.6	19,481.2	19,259.4	20,491.3	20,425.4	20,568.4	20,636.9	20,103.3	
Industry	15,221.8	15,491.6	15,842.0	15,874.7	16,732.5	17,353.3	17,353.3	17,630.1	16,858.8	
Sector	89.0	87.6	82.5	80.5	75.0	70.6	67.5	55.8	59.9	60.6

13_Data from the Federal State Statistics Service (http://www.gks.ru/free_doc/new_site/oxrana/tabl/oxr_vibr3.htm)

Radionuclide emissions

In 2009, a total activity of radionuclides emitted into atmosphere by the industry decreased by 11% and amounted to 5.02×10^{15} Bq compared to 2008. The 93.2% of the total activity was associated with the emissions of beta-radioactive nuclides (4.68×10^{15} Bq), 85.7% out of which were inert radioactive gases (IRG) and 8.7% – tritium.

Compared to 2008, emissions of beta-radioactive nuclides into the atmosphere were reduced by total of 10.3% mostly due to reduced emissions of inert radioactive gases (IRG) by 7.7×10^{14} Bq (19.1%). IRG emissions were discontinued at SCC due to shutdown of plutonium production reactors; IRG emissions were also reduced at MCC, Novovoronezh NPP, and NIIAR.

In 2009, there were no emissions of radioactive nuclides in excess of the prescribed limits. No radioactive incidents associated with radioactive nuclide emissions into the atmosphere were identified.

Table 3.4. Activity ratio of beta-radioactive nuclide emissions, Bq

Beta-radioactive nuclide activity, total	$4.68 \cdot 10^{15}$ Bq
Inert radioactive gases (total)	85.7%
Tritium	8.7%
Short-lived radioactive nuclides (SRN)	0.021%
Lead-214	0.02%
Bismuth-214	0.015%
Potassium-40, Cesium-137 and Strontium-90 (total)	0.0000015%
Iodine 131	0.0002%

Total alpha-radioactive nuclides emitted into the atmosphere by the industry was 3.35×10^{14} Bq, mostly consisting of radon-222 (94.6%) of radon-222 emissions from uranium mining facilities.

Radioactive nuclide emissions into the atmosphere were reduced by 22.1% compared to 2008 due to reduced emissions of radon-222 at PIMCU (by 7.47×1013 Bq or 23.6%).

In 2009, there were no emissions of radioactive nuclides in excess of the prescribed limits in the industry. The emissions of cobalt-60, strontium 90, zirconium-95, niobium-95, rutenum-103,106, iodine-131, cesium-134, cesium-137 amounted to 1 – 8 % of the prescribed limits for these nuclides.

Table 3.5. Activity distribution of the alpha-radioactive nuclide emissions, Bq

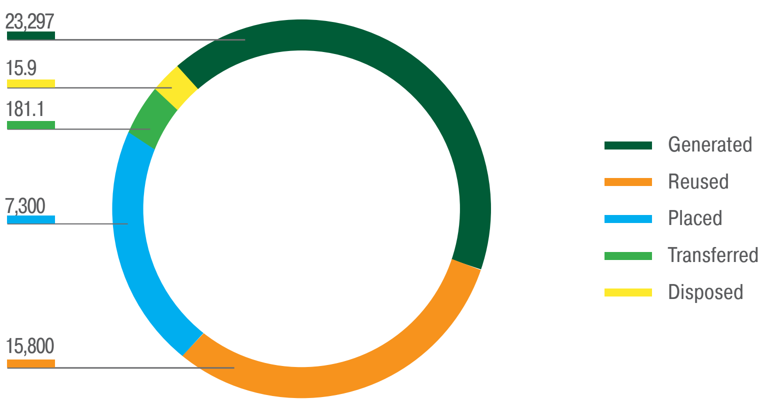
Beta-active nuclide activities, total	$3.35\cdot10^{14}$ Bq
Radon-222	94.6%
Polonium-210	5.37%
Others	0.03%

Production and consumption waste

In 2009, the industry generated 23.3 million tons of industrial and consumer's wastes, 23.1 million tons (99.3%) out of them being non-hazardous waste (hazard class 5). Most of this waste was generated by PIMCU (22.8 million tons) and consisted of overburdens and tailings associated with the mining and enrichment operations. In the reporting year, 95.0% out of the total amount of the hazard class 1 wastes (6,550 tons) were utilized and reprocessed, 61.3; level 2 – 550 tons and 61.3%; level 3 – 25,300 tons and 86.8%, respectively.

During the reporting year, the enterprises of the industry utilized 15.8 million tons and disposed of 15,900 tons of waste; 181,100 tons were transferred to other enterprises for utilization, disposal, storage and or burial, and 7,300 tons were placed into storage facilities and repositories belonging to the enterprises.

Figure 3.9. Generation of production and consumption waste, thnd tons, 2009



Impaired and contaminated territories

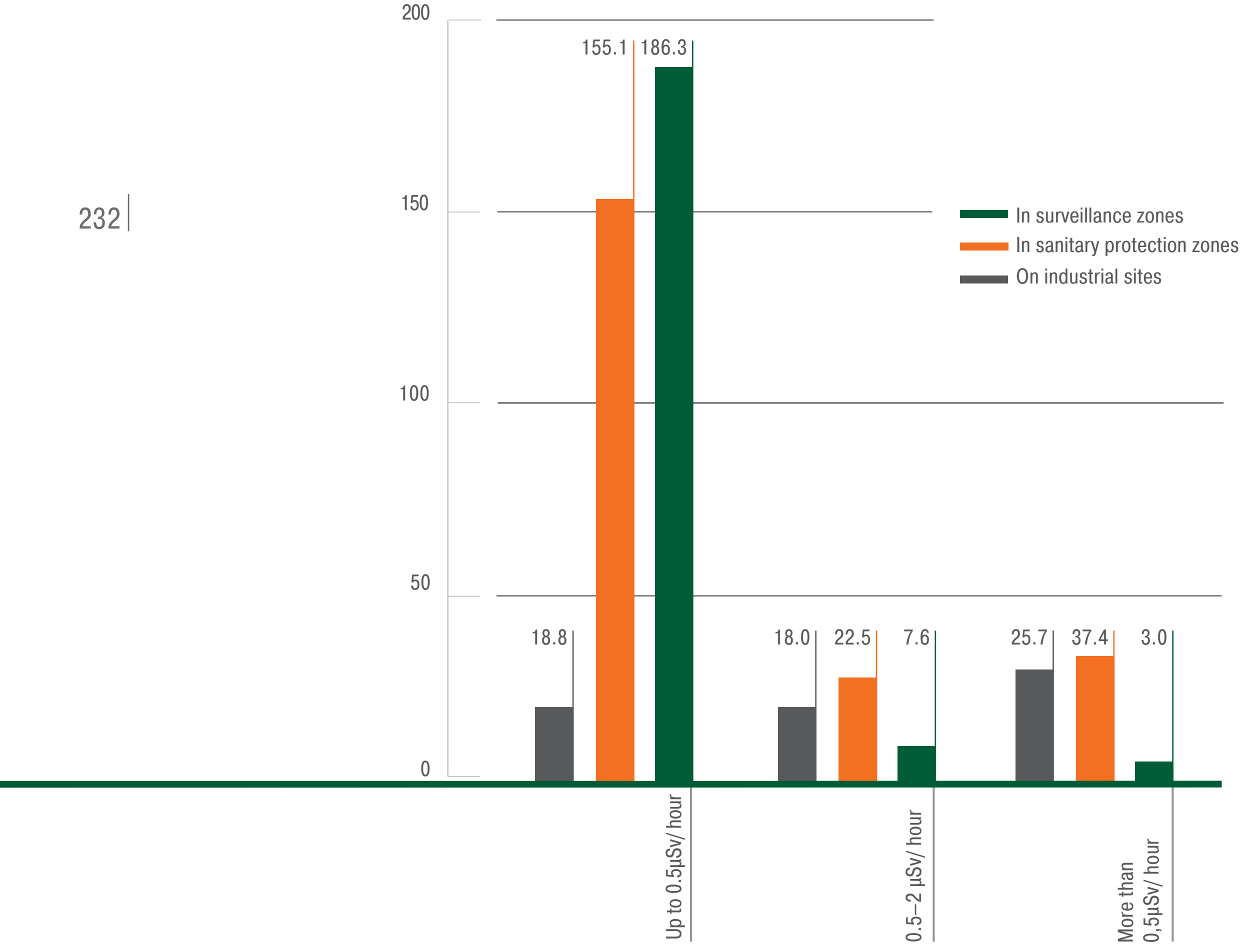
By the end of 2009, impaired land area totaled 50.029 km^2; 27.781 km^2 were impaired by development of mineral deposit sites and 20.735 km^2 during construction of industrial sites. In the reporting year, 0.031 km^2 of land were reclaimed, the activities were conducted at NCCP (0.019 km^2) and SCC (0.012 km^2).

Total area of polluted territories within the limits of the Corporation's responsibility is 474.74 km^2 (474.97 km^2 in 2008).

Radioactive contamination is mostly determined by the presence of the following nuclides: cesium-137, strontium-90, plutonium-239, natural uranium, and decay products. More than 90% (446.78 km^2) of territories polluted by radioactive nuclides were located at PA Mayak (consequences of the accident which occurred in 1957).

273.16 km^2 of contaminated territories were rehabilitated in the previous five years, including 19.16 km^2 in 2009.

Figure 3.10. Distribution of contaminated territories by gamma-radiation dose rate, km²



3.5.3 Radiological impact

Assessment of radiological impact

Safety of enterprises which use nuclear technologies is evidenced by extremely low level of additional radiation exposure of public caused by their operation.

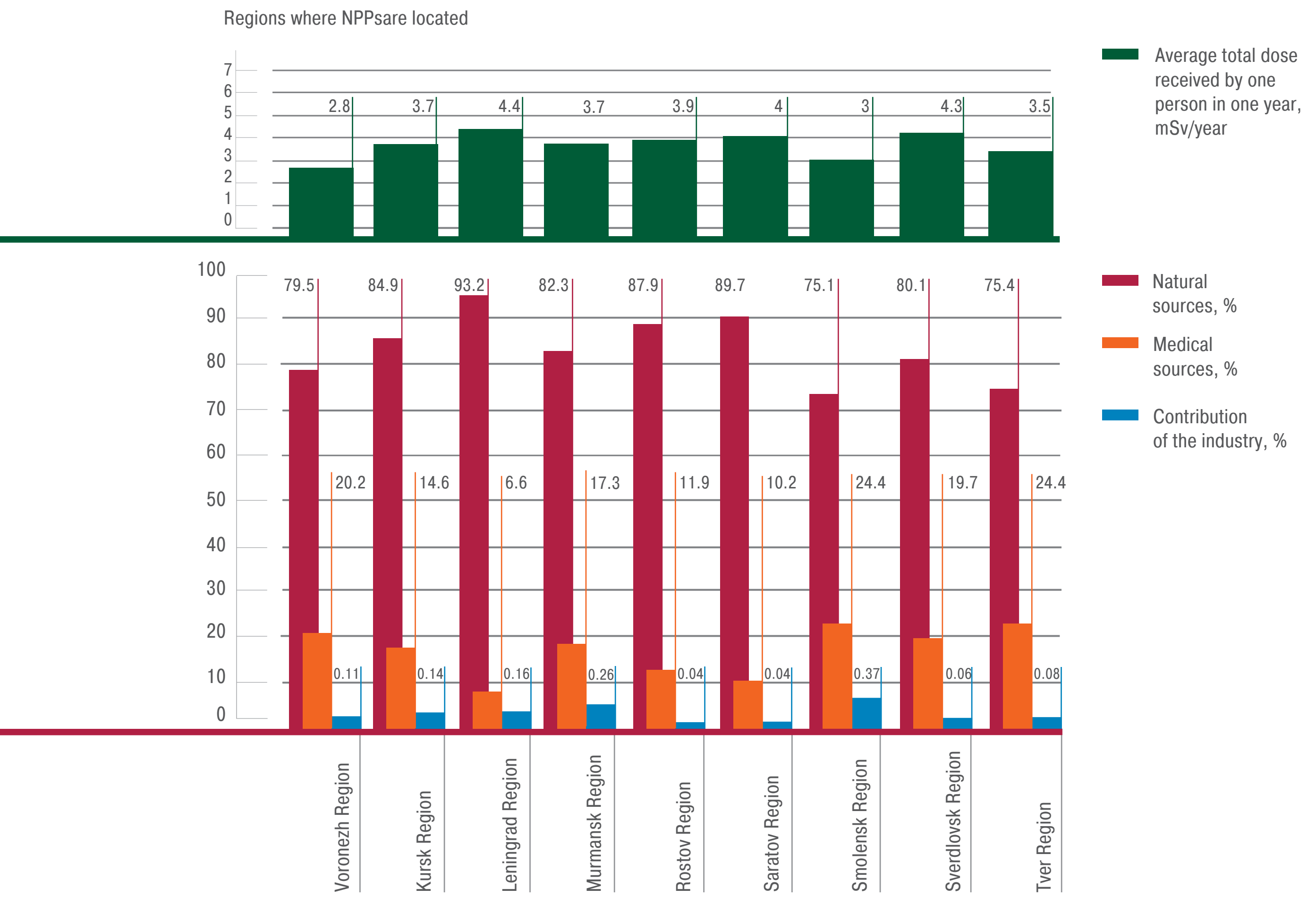
According to the results of radiological hygienic certification implemented in the subjects of the Russian Federation since 1999, the annual effective exposure doses to the public within the surveillance zones for most of the enterprises of the industry are below 10 μSv/y (the threshold, below which it is inexpedient take any measures for optimization of radiological protection).

According to the criteria of permissible impact, the nuclear industry is among the well-performing industries. In 2009, there were no incidents or accidents that resulted in contamination or adverse impacts on the environment.
Production activities of NPPs did not lead to any degradation of the environment in their neighborhood.
In the reporting year, no ecological surveys of the NPP construction projects yielded negative review ststements.

Figure 3.11. Average annual radiation exposure of population in some European countries and Russian regions, mSv / per annum

The natural background radiation dose received by a person is hundred times higher than the additional irradiation caused by nuclear facilities. On the territories of the Russian Federation, the natural background varies from 1.8 mSv per year (Tyumen and Ulyanovsk Regions, the Mari El Republic) to 9.1 mSv per year in the Altai Republic. Substantial variations of natural background radiation is also common for the European countries.

Figure 3.12 Relative contribution of the nuclear industry into total effective radiation dose to public in 2008, %



14_Data from the Radiation-Hygienic Certificate of the Russian Federation for 2008; information on Bilibino NPP is missing.

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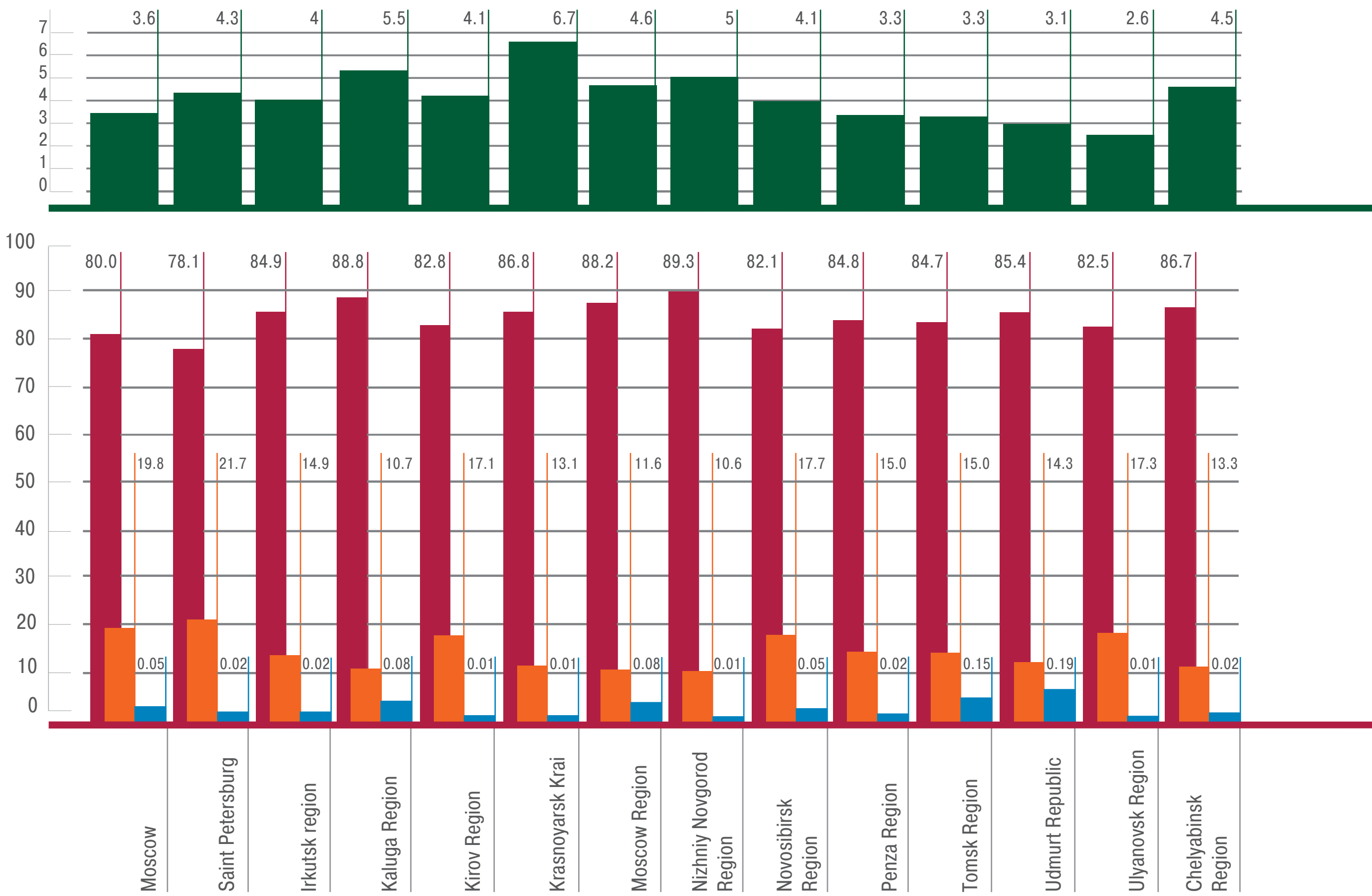
Regions where radiation hazardous sites are located



Naturaliy occurring and medical sources of ionizing radiation are the key sources of radiation exposure. An average radiation dose to the public of the Russian Federation is similar to worldwide exposure and is consistent between all the regions where the major nuclear facilities are situated.

According to information of Rosgydromet (Federal Service for Hydrometereology and Environmental Monitoring) presented in the brief annual information bulletin on radiological situation on territories of the Russian Federation in 2009, the radiological conditions in regions where nuclear facilities are located and/or where nuclear submarines intended for disposal are stationed remained stable. The content of anthropogenic radionuclides in the atmosphere, soil, and surface water was maintained at the same level as in the previous year.

Worldwide experience of maintaining environmental safety demonstrates that the most effective measures for protecting the environment are implementation of environmentally-acceptable technologies and use of environment quality management system based on risk assessment and risk management. In 2009, the Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE) conducted studies in order to evaluate the environmental safety in the regions where Novovoronezh NPP (NvNPP) and Novovoronezh NPP II construction (NvNPP-II) are located with the aid of risk analysis methodology, and to define environmental targets for development of a sustainable development strategy for the Voronezh Region[15].

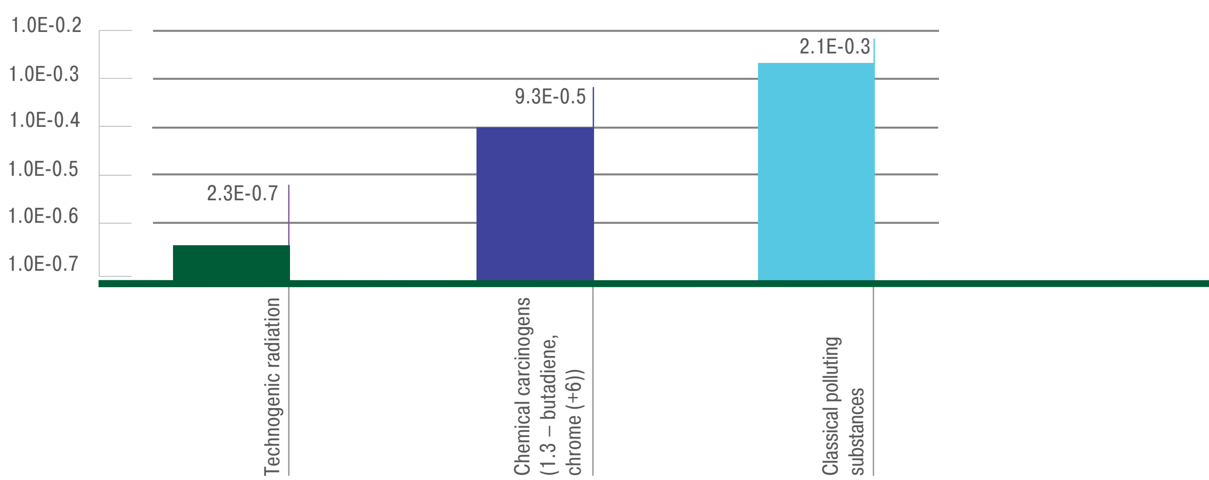
15__«Ecology and Sustainable Development in Regions Surrounding the Novovoronezh NPP» study conducted jointly IBRAE, A.N. Sysin State Research Institute of the Russian Academy of Medical Science and Voronezh Regional department, Rospotrebnadzor (consumer right protection agency).

The studies included the following:

- assessment of radiation risks for public health associated with operating nuclear power plants and a prognostic evaluation of the impact of the ongoing construction of NvNPP-II;
- assessment of health risks caused by chemical pollution of atmosphere in regional and district centers;
- evaluation of the impact of the operating regional thermal (fossil fuel) power plants on the public health.

The results of the study demonstrated that the dominant contribution (over 80 %) of possible impairment of public health is associated with suspended particles. Risks of cancer diseases among public due to air pollution by chemical carcinogens, or death due to the effects caused by "classical" polluting substances were two to four orders of magnitude higher than radiation risks associated NPP operation.

Figure 3.13. Individual annual radiological and chemical risks of cancer and risk of death due to effects of non-carcinogenic air pollutants



AES-2006 Project

Further minimization of radiation impact is largely related to design and serial construction of nuclear power plants. The AES-2006 design is a generic design of Russian nuclear plants of the new generation "III+" with improved technical and economic parameters intended for serial construction of new units. Nuclear plants under construction have a number of advantages from safety standpoint in comparison to the nuclear plants of the previous generation.

The main new feature of the design is the use of additional passive safety systems in combination with traditional active systems. The design provides protection against earthquakes, tsunamis, hurricanes, airplane crashes. There are some examples of improvements: double containment around the reactor hall, a core melt trap located under the reactor vessel, and a passive residual heat removal system. These systems ensure safety in case of internal initiating events and of external natural or man-induced impacts.

The project was designed on the basis of plants equipped with VVER water-cooled, water-moderated reactors, which proved reliable over thousands of reactor-years of fault-free operation. Technological innovations implemented in the AES-2006 design allowed increasing the rated power, annual electric power generation, and design lifetime, with simultaneous decrease of specific capital costs and generation of radioactive waste.

Table 3.6. Comparative parameters of «U-87» and «AES-2006» designs

Parameter	Operational units (“U-87” design)	“NPP-2006” design (On the example of NvNPP-2)	Difference
Electric capacity, MW	1,000	1,198	+20%
Annual power output, billion KWh	7.5	9.1	+20%
Design lifetime, years	30	60	+100%
Specific metal consumption, relative units	1	0.85	-15%
Specific capital costs, relative units	1	0.8	-20%
SNF accumulation (in fuel assemblies)	5.5 tons per 1 billion kWh of generated electicity	3.5 tons per 1 billion kWh of generated electicity	-35%

At present, the NvNPP II and LNPP II with the power units of AES-2006 design are under construction. The technical solutions adopted in the NvNPP II design ensure that the annual release of gas-aerosol radioactive nuclides during NPP operation remain within allowable limits prescribed by the Russian sanitary rules (SP AS-03). The NvNPP-II design excludes release of radioactive nuclides into surface and underground water during controlled discharge of water.

Table 3.7. Assessment of annual airborne-aerosol emissions of radioactive nuclides from two power units of NvNPP II in comparison with the permissible limits according to SP AS-03

Radioactive nuclides	NvNPP II, Bq/year	AE, Bq/year	% of AE
Inert radioactive gases (any mixture)	$3.7x10^{13}$	$6.9x10^{14}$	5.4
Iodine-131 (gas and aerosol forms)	$8.3x10^{8}$	$1.8x10^{10}$	4.6
Cobalt-60	$1.8x10^{3}$	$7.4x10^{9}$	$2.4x10^{-5}$
Cesium-134	$1.6x10^{7}$	$9x10^{8}$	1.7
Cesium-137	$2.5x10^{7}$	$2x10^{9}$	1.2

Environmental safety assessment of the design has demonstrated that commissioning a power unit of this design will not lead to any significant change of environment conditions. The maximum airborne activity of any radioactive nuclide present in gas-aerosol emissions of the NvNPP II in the surface layers of atmosphere was several orders of magnitude lower than the permissible average annual airborne activity for public established by the Russian regulations (NRB-99 Radiation Safety Standards). The radiation impact of operation of two power units of NvNPP-II on the population of the region is several orders of magnitude smaller than the allowable limits established by the Russian sanitary rules (SP AS-03).

A number of new engineering solutions minimizing environmental impacts at the stage of decommissioning of NPP were implemented in the design:

- selection of materials for manufacturing equipment, systems and structures of the unit with a low susceptibility to induced radioactivity (use of alloys with low content of cobalt);
- use of the state-of-the-art methods of decontamination of the surface coating of equipment, systems and structures to minimize surface contamination by radioactive substances during operation;
- use of mobile modular facilities for autonomous decontamination (external and internal) of any radiation-contaminated equipment during an operation in order to minimize labor and personnel exposure at the decommissioning stage;
- selection of proper water chemistry of the primary circuit to minimize formation of corrosion products during plant operation and radiation hazard during decommissioning.

3.5.4 Costs of environmental protection

Total costs of environment protection, mindful use of natural resources, and minimization of radiological impact of the industry in 2009 amounted to 16,013.95 million rubles.

Investments in and expenses of Environment Protection (financing nature conservation measures)

The enterprises of the State Atomic Energy Corporation ROSATOM implement extensive measures for environment protection every year.

In 2009, total expenses for protection of the environment in the organizations of the Corporation amounted to 9,736.3 million rubles, including 5,238.6 million rubles of current expenses, 1,054.4 million rubles of expenses for major equipment maintenance and investments into capital assets, which amounted to 3,443.3 million rubles in the reporting year.

Most of the investments (2,602.59 million rubles, or 75.6 %) were aimed at protection and rational use of water resources. The largest part of investments were made at Kalinin NPP – 2,469.75 million rubles.

The environmental protection expenses of the industry are comparable to expenses of Gazprom OJSC (17.2 billion rubles in 2008) and Lukoil OJSC (more than US$700m in 2008) for similar purposes* – the expenses of the largest companies having substantial environmental impact.

* The information about expenses was obtained from annual reports of these enterprises for 2008.

Figure 3.14. Expenses for environment protection, mln RUB

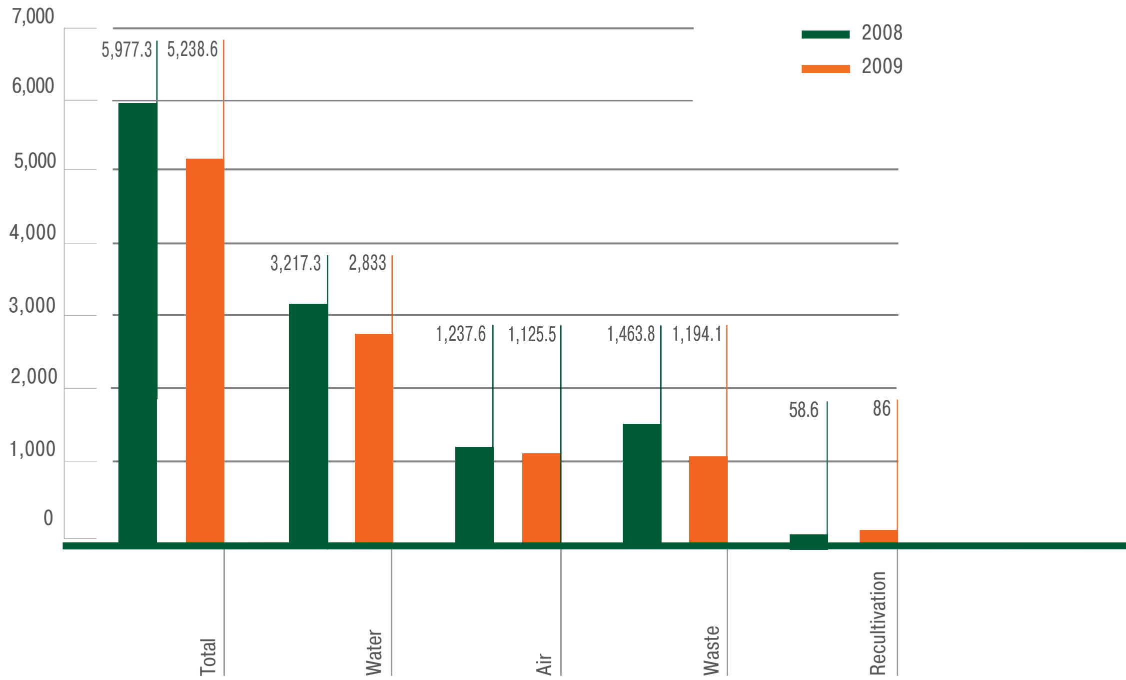
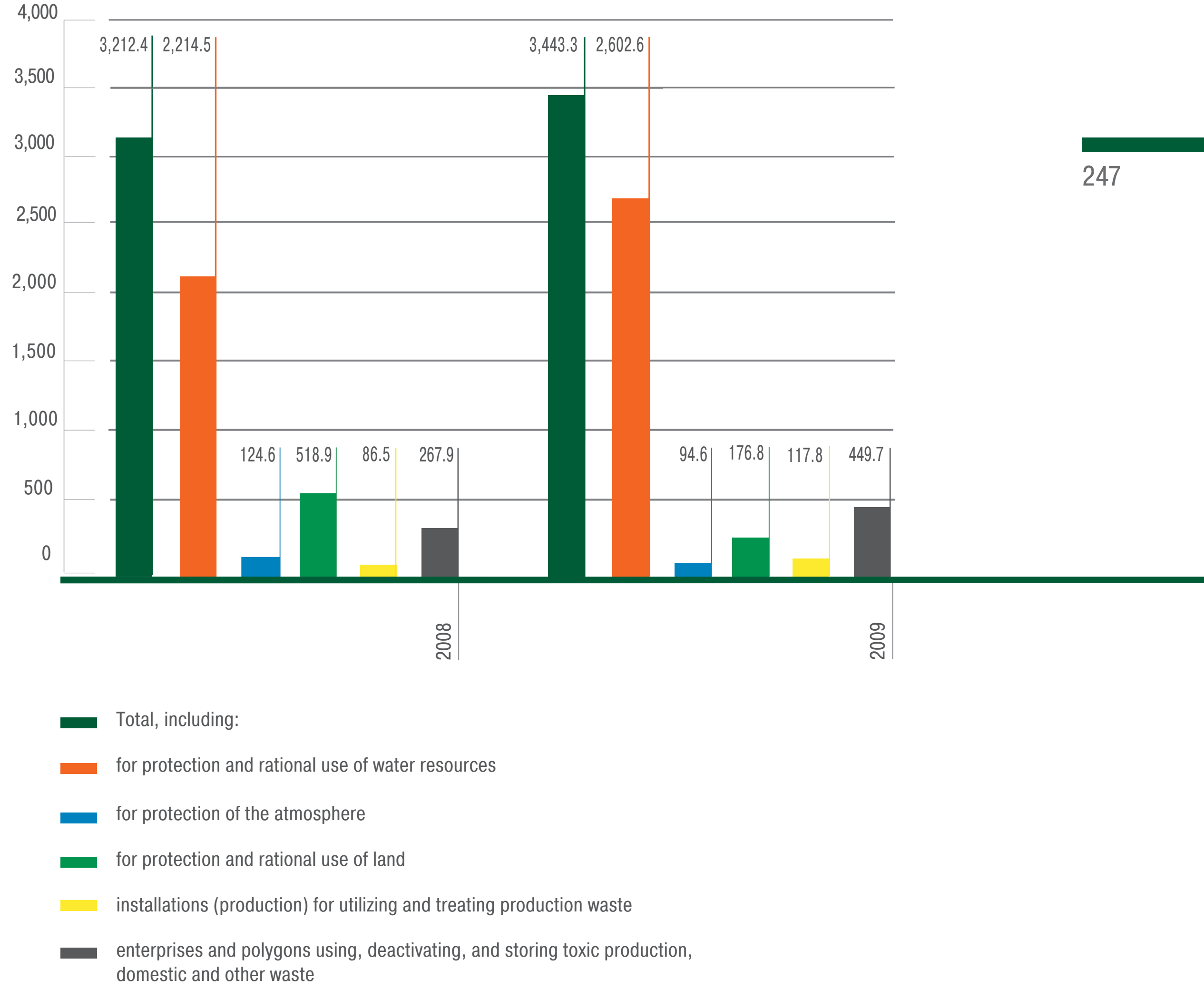


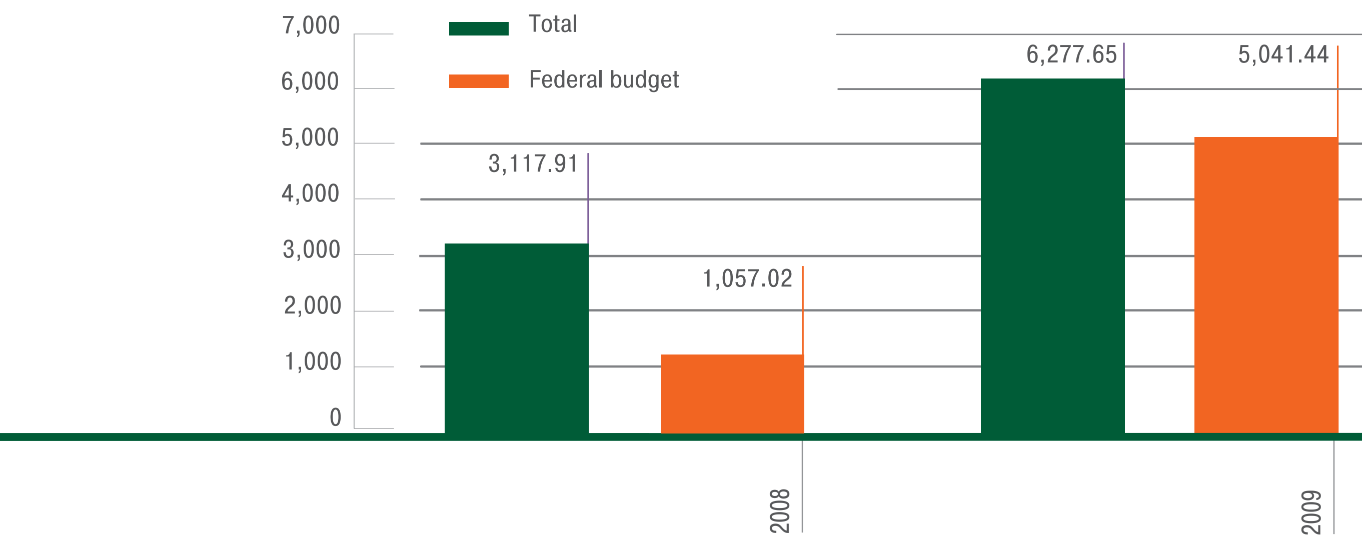
Figure 3.15. Investments in fixed capital for environment protection and mindful use of natural resources, mln RUB



In 2009, measures to reduce radiological impact on the environment were implemented at 24 sector enterprises. The funds used for these measures from all financing sources amounted to 6,277.65 million rubles, including 5,041.44 million rubles of investments into capital assets. Funding from the federal budget totaled 2,172.16 million rubles, including – 1,625.83 million rubles of investments.

The largest expenses were incurred by PA Mayak (1,879.91 million rubles, mostly aimed at improving LRW handling), by Leningrad NPP (2,348.85 million rubles) and Kursk NPP (974.14 million rubles).

Figure 3.16. Funds used for implementation of measures to reduce radiological impact, million RUB



Ecological Payments

Payments for permissible and excessive emissions and effluents of chemical pollutants and for waste disposal in 2009 amounted to 111.9 million rubles.

Table 3.8. Fees for allowable and excessive emissions and effluents of pollutants and waste disposal

Payment type	Actual payments for the year, mln RUB	
	2008	2009
1. Total payments for permissible emissions and effluents of pollutants and waste disposal, including:	46.6	38.6
– into water bodies	5.0	4.6
– into atmosphere	4.0	4.7
– for industrial and consumer's waste disposal	37.4	29.2
– into underground	0.2	0.005
2. Total payments for allowable emissions and effluents of pollutants and waste disposal, including:	24.2	73.3
– into water bodies	10.3	21.9
– into atmosphere	2.6	20.6
– for industrial and consumer's waste disposal	11.3	29.0
– into underground		1.8
TOTAL:	70.8	111.9

Table 3.9. Payments for adverse impact on the environment

Payment type	Actual annual payments, million RUB	
	2008	2009
Amounts (claims and fines) charged as compensation for damages inflicted due to violations of environment protection legislation	4.54	0.3

4 Corporate Governance

4.1 The system of corporate governance

4.1.1 Corporate structure

The State Atomic Energy Corporation ROSATOM incorporates:

- business companies where the Corporation owns stock (shares in the authorized capital);
- joint-stock companies in the federal ownership where the rights of the shareholder are exercised by the Corporation on behalf of the Russian Federation;
- federal state unitary enterprises where the Corporation acts on behalf of the Russian Federation is and enjoys the rights of the property owner;
- affiliated and subsidiary companies of the said organizations;
- institutions, that are established by the Corporation or transferred to it where the Corporation is the property owner.

As a result of nuclear industry reforming, a number of functionally ramified holding companies have been set up.

Today, when nuclear industry is going through a period of large-scale reforms, there is a strong need in making the system of its property management most efficient. Having untied the assets of 240 various companies and organizations, the State Atomic Energy Corporation ROSATOM functions as a single control center and coordinates all activities taking place within this complex system. To achieve its objectives the Corporation has undertaken a package of actions aimed at a better and more competent use of its assets, effective outsourcing policies and restructuring secondary assets including the introduction of a computerized assets management system. At the same time, administrative processes have been improved thanks to the electronic system of documents circulation and the industry archive operator. As an outcome we're expecting an increased efficiency and a sustainable development of the Corporation in the changing market conditions.

Victor Ratnikov,
Deputy Director General for Property
and Administrative Issues

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Having untied the assets of 240 various companies and organizations, the State Atomic Energy Corporation ROSATOM functions as a single control center and coordinates all activities taking place within this complex system.

Figure 4.1. **The corporate structure of the State Atomic Energy Corporation ROSATOM (business companies where the Corporation owns stock or has shares in the authorized capital)**

State Atomic Energy Corporation ROSATOM

- CDBMB JSC
- INTER RAO UES JSC
- Sangtudinskaya GES-1 JSC
- VNIIAM JSC
- International Uranium Enrichment Center JSC
- Technopark-Technology JSC
- AKME-Engineering JSC
- New Composite Materials JSC
- Atomenergoprom JSC
- Atomredmetzoloto JSC
- Atomstroyexport CJSC
- Interregional Association ISOTOPE
- NPK Khimpromengineering JSC

4.1.2 Control over corporate mechanisms in the industry

The corporate governance is executed:

1} in regard of business companies where the State Atomic Energy Corporation ROSATOM owns stock (has shares in the authorized capital) and joint-stock companies in the federal ownership where the rights of the shareholder are exercised by the Corporation on behalf of the Russian Federation:

- through exercising its rights of a shareholder (member) of such companies (the voting position of ROSATOM's representatives at general meetings of shareholders (members) or in decision-making done by the Corporation as the sole shareholder of the said business companies is determined by ROSATOM's Board of Directors);
- through participating in the boards of directors of the said companies (ROSATOM representatives' voting position is determined by the directives issued by the State Atomic Energy Corporation ROSATOM in accordance with the established procedure);
- through service contracts (with respect to Atomenergoprom);
- through interaction procedures (with respect to divisions).

2 in regard of affiliated and subsidiary companies with their stock (shares in the authorized capital) belonging to Atomenergoprom:

- through the development and agreement of the voting position of Atomenergoprom representatives at the general meetings of shareholders (members) or in decision-making realized by Atomenergoprom, the sole shareholder of an affiliate or an subsidiary, in accordance with the established procedure;
- through participation of ROSATOM's representatives in the boards of directors of the said companies (the recommendations of the State Atomic Energy Corporation ROSATOM on how to vote in the board of directors are given by the Corporation in accordance with the established procedure);
- through interaction procedures – with respect to divisions.

3 in regard of federal state unitary enterprises – through exercising the proprietor's rights on behalf of the Russian Federation in accordance with the established procedure.

4 in regard of institutions established by the Corporation – through exercising the rights of assets owner in accordance with the established procedure.

4.1.3 Major activities in the area of corporate governance. Corporate restructuring

To improve corporate governance, a number of measures were implemented in the reporting period.

Table 4.1. Corporate governance improvement measures and their goals

Goals in the area of corporate governance improvement	Measures
Centralized management and better control over affiliated and subsidiary companies	Authorities of the boards of directors (sole shareholder) have been extended. The charters of the majority of joint stock companies in nuclear power industry have been revised and approved in new edition.
Optimized management system Unified management	A two-tier management structure (sole shareholder – sole executive body) has been introduced in the majority of joint-stock companies with the board of directors' powers transferred over to the sole shareholder.
Budgetary financing of organizations in the industry	Standard regulations on the board of directors, audit commissions and mandatory disclosure of information have been developed and introduced in the majority of joint stock companies.

Goals in the area of corporate governance improvement	Measures
Budgetary financing of organizations in the industry	Corporate incentives ensuring: ■ the use of federal budget funds to pay for the excess share of Atomenergoprom with taking into account the established quotas of budget liabilities payable to ROSATOM as an asset contribution of the Russian Federation into the implementation of the Program of ROSATOM long-range activities for an extended period (2009–2015) – the resources were subsequently assigned to JSC Concern Rosenergoatom for new nuclear construction; ■ acquisition of federal funds to be used within the framework of the specific federal programs by the following organizations: OKBM Afrikantov, SSC NIIAR, SCC, NIITFA, Atomspetstrans, OKB Gidropress, VNIINM, and NIKIET.
Harmonized management of nuclear power facilities	In 2009, following the order of the Russian President “On restructuring nuclear power industry complex of the Russian Federation” No. 556 of April 27, 2007, in accordance with the decrees of Rosimuschestvo (Russian Federal Property Management Agency) and endorsement instructions No. PR-GK-42 – PR-GK-51 by the Corporation, the Russian Federation acting in the person of ROSATOM and willing to pay for an additional issue of Atomenergoprom shares contributed the stock of the following federal unitary enterprises, that had been reorganized into open joint stock companies: ■ Scientific and Production Center for Conversion ■ N. A. Dollezhal Order of Lenin Research and Development Institute of Power Engineering ■ Atomspetskomservis ■ Leading Design and Scientific Research Institute of Industrial Technology ■ State Specialized Design Institute ■ High-Tech Research Institute of Inorganic Materials named after Academician A. A. Bochvar ■ Atomtrans ■ Semiconducto Silicon Plant ■ Institute of Reactor Materials ■ Experimental Plant of Refractory Metals and Alloys ■ As a result of these payments and funds allocation Russian Federation acquired 7,696,092 extra shares of JSC “Nuclear Power Industry Complex” (Moscow).

Measures

Harmonized management of nuclear power and industry facilities

Following the Order of the RF President "On assignation of JSC "Nuclear power industry complex" stock to the State Atomic Energy Corporation ROSATOM No. 274, of March 13, 2009, and based on the resolution of the Russian Government No. 1841-r of December 01, 2009, the state-owned shares of JSC "Nuclear Power Industry Complex" (Moscow) have been assigned to the State Atomic Energy Corporation ROSATOM by their nominal value as an asset contribution of the Russian Federation.

Formation of "United Company "RSK", a new joint-stock company that has consolidated all enrichment and conversion business.

Formation of JSC Interregional Association ISOTOPE, which is a ROSATOM's authorized organization dealing with circulation of isotope products, radiation equipment, general-purpose and medical devices.

Finalized consolidation of maintenance organizations (two joint-stock companies – Sevatomenergoremont and Kurskturboatomenergoremont became affiliated with JSC Atmenergoremont)

Joint-stock company "Center of nuclear industry secondary assets management" has been established to consolidate non-specialized assets in the industry with its authorized capital paid by the shares of the following companies: ▪ Atomspetskomservis ▪ Zhilkomservis ▪ Nuclear Industry Media Center ▪ for Information and Exhibition Center of Nuclear Industry ▪ Baikal Hotel Complex and OLenKur Sports and Recreation Center.

The administration of International Uranium Enrichment Center (IUEC) has been centralized at ROSATOM level.
Additional issue of Atomenergomash shares was paid for by the stock of the following companies: ▪ Atomenergomash ▪ Kaluga Turbine Plant ▪ Central Research Institute Kontrolpribor ▪ Nizhneturinsk Machine

	Measures
Harmonized management of nuclear power and industry facilities	Building Plant Venta ▪ Protvino Experimental Production Progres ▪ Signal Instrument Building Plant ▪ Power Equipment Plant ▪ SverdNIIKhimmash ▪ E4-Tsentrenergomontazh ▪ Sevkavenergomontazh and the Central Machine Building Design Bureau, which has continued the formation of the machine engineering division. Industry service pool – Grenatom closed joint stock company – has been set up. Within the framework of Fuel Company formation the following actions took place (2010 ongoing projects): VNIINM's stock was used as payment of TVEL authorized capital; the stocks of such companies as Vladimir Production Association Tochmash; Centrotech-SPB, OKB-Nizhniy Novgorod Design Bureau, as well as the interests of Novouralsk Research and Design Center; Urals Gas Centrifuge Plant and Uralpribor have been contributed to the authorized capital of the open joint-stock company EC RGC; 100% shares of the EC RGC have been consolidated in the ownership of Atomenergoprom; the stock of "United Company "RSK" has been transferred to pay off TVEL charted capital. The initiative to establish an organization specializing in design support of nuclear weapon and nuclear fuel sectors, nuclear and radiation safety projects and sectoral science (2010 ongoing project).

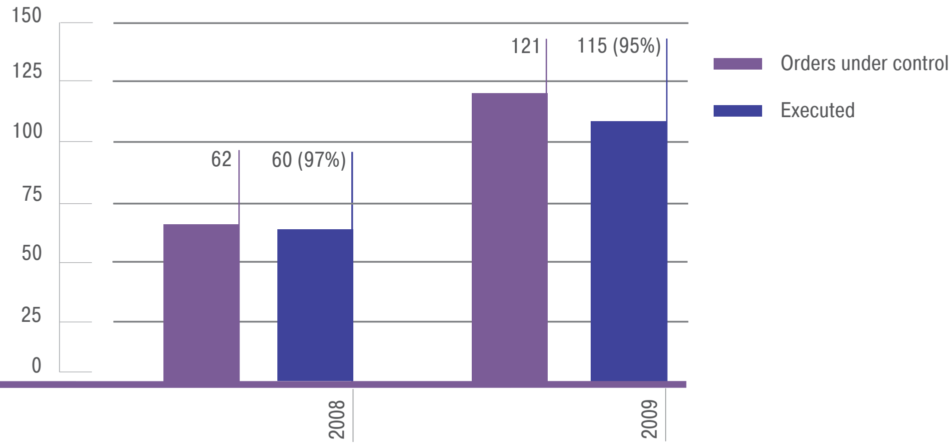
4.2 Internal Control and Audit System

A better system of internal control and audit is a way to increase efficiency of ROSATOM performance.

In 2009 the system of internal control has been improved by means of:

- establishing (or restructuring) internal control and audit departments in all key companies according to international standards;
- establishing the institution of internal inspectors in all key federal unitary enterprises (Order No. 79 of February 16, 2009 “On improvements of internal controls in the State Atomic Energy Corporation ROSATOM”);
- the Program of professional education for the employees of internal control and audit departments in nuclear industry (for the period 2009–2010) adopted in May 2009;
- a number of measures enhancing procurement controls in ROSATOM. In October 2009, the Central Arbitration Commission in the procurement area was established in the Corporation. Its task is to ensure legality and pre-trial settlement of disputes arising in the process of placing orders for goods delivery, works or services for the needs of the Corporation, its joint-stock companies with their affiliate and subsidiary organizations, subordinate federal unitary enterprises and corporate institutions;
- internal control standards developed in the following areas: “Social Expenses”, “R&D and Intellectual Property”, “Capital Projects”, “Assets Management”;
- Integrated plan of counter-theft measures in the State Atomic Energy Corporation ROSATOM and its managed organizations. The plan, that is scheduled for 2010–2011, should eventually yield a public control system in the format of Russia nation-wide hot-line (http://www.rosatom.ru/ru/about/protivodejstvie/).

Figure 4.2 Director General's orders resulting from inspection data



In the reporting period, the Department of Internal Control and Audit conducted 66 inspections, including 32 field audits and 34 office examinations (127% of the target). Resulting from the inspection data, 121 commission orders of Director General were given to the Corporation executives and organization managers in 2009; 52 of them demanded to remedy incompliances, 69 required to improve the performance of the Corporation departments and organizations, to develop and optimize corporate relations (see Fig. 4.2). About 95% orders have been executed; 5% are still in their implementation stage and controlled by the Department of Internal Control and Audit.

In the reporting period, 23 people from the Corporation administration were disciplined and 11 were fired as a consequence of the inspections. In three cases the auditors' findings were communicated to the competent authorities.

Consistent execution of the commissions that have arisen from inspection outcomes, preventive measures realized in different forms, including the Surveys of incompliances, that are circulated among the Corporate organizations, have brought to a notable decrease in breaches and a significant reduction in their reoccurrences: for example, the number of cases where subsidiary federal unitary enterprises made interest transactions or concluded major deals without the Corporation's consent has dropped to a minimum.

4.3 Procurement management system

In 2009, the Corporation set up its Procurement Center. Governmental procurements and contracts (in the open part of the budget) have been 100% centralized. In 2009, they were made in accordance with the Federal Law "On placing orders for procurement of goods, works and services to meet government and municipal needs" No. 94-FZ of July 21, 2005.

These activities resulted in:

- obtaining governmental contracts equal 100% of the funds allocated in the open part of the budget for the amount of 20,436,817,462 rubles (out of them 11,278,124,056 rubles came from the 2009 federal budget funds); the savings (in the open part of the budget) reached 1,409,583,433 rubles (including 486,946,506 rubles from the 2009 federal budget);
- finalized the 2010 procurement plan developed within the framework of federal special programs and the governmental defence order;
- formation of a unified database of governmental contractual works.

To cut down procurement expenses financed out of own or extra-budgetary funds at all nuclear industries and make procurements more effective and transparent a Uniform Procurement Standard of the State Atomic Energy Corporation ROSATOM was introduced in the industry on July 29, 2009. Owing to new procurement regulations the prices of the equipment bought through tenders decreased by 12.4% in average (compared with the initial quotations), while the prices for long-lead items dropped by 25–30%.

By the end of 2009 the Uniform Procurement Standard had been embedded in about 100 organizations of the Corporation and that helped to:

- centralize all procurements made for the needs of the Corporation central administration and to centralize major procurements for the enterprises and affiliated/subsidiary companies in the Corporation;
- establish authorized bodies that are able to make centralized procurements within major holding companies;
- create a common procurement website in the industry (http://zakupki.rosatom.ru), where the user can find standard procurement documents, read tendering information, learn more about procurement procedures and protocols;
- make e-procurements on electronic trading platforms like «Фабрикант.ру» and «ООО Аукционный Конкурсный Дом».

Training in the new procurement regulations is organized in the Non-governmental educational institution Moscow Advanced Training Institute. In September-December 2009, about 400 people from various nuclear industries and supplying organizations were trained there, the same number of trainees is to be educated in 2010.

DIRECTORATE OF ECONOMICS AND FINANCE

In 2009 we were pro-actively changing the configuration of corporation financial and economic component, its IT services; reforming our purchasing arrangements and risk management system.

World leaders in nuclear industry are competing on the global market not only in safety, reactor or nuclear fuel characteristics, but also in economics and production costs. Because of this, we are to make the Corporation governance the most effective. In 2009 we were pro-actively changing the configuration of corporation financial and economic component, its IT services; reforming our purchasing arrangements and risk management system. We have also started to introduce a system of key performance indicators (KPI) that will embrace all administrative layers in the organization from the very top down to bottom lines. This will help us to follow the progress in achieving company goals and find incentive for the employees to fulfill their tasks much better. As a result, we expect to reach a fundamentally new level of system control over all managerial processes, which should support the Corporation in exercising effectively its powers delegated by the Government while being a successful business organization.

Nikolai Solomon,
Deputy Director General
for Economics and Finance

4.4 Financial and Economic Management

The main goals of the Financial and Economics bloc (FEC) of the Corporation are to place ROSATOM among the global leaders in financial and economic activities, risk management and IT services.

During 2009, the organizational structures of all incorporated enterprises were unified in terms of their financial and economic activities in order to put the existing administrative principles under common requirements. All enterprises got the positions of deputy general directors responsible for financial and economic issues with the department managers like Chief accountants, Chief economists and Paymasters general subordinated to them. In the reporting period, the Interaction Procedure was passed and put into practice. The document regulates the division of functions between the Corporation and centers of financial responsibility (CFR) of the second level.

In 2009, the "Policy in the area of financial and economic planning and performance assessment of the State Atomic Energy Corporation ROSATOM was adopted in the Corporation. This document defines basic principles and subjects of planning; planning horizons and their interaction; types of administrative accounts needed for performance assessment; key performance indicators to review planning processes and assess activities.

Within the framework of this Policy a number of significant changes was made in the management of financial and economic activities in the Corporation, which permitted to define major targets for 2010 budget. For the first time in the history of the Corporation a tree of Corporate goals has been formed with key performance indicators (KPI) characterizing these goals.

At the same time a detailed responsibility matrix has been developed showing the accountability of individual organizations for the fulfillment of performance indicators. Also, a system of the centers of financial responsibility has been worked out in detail down to the level of individual organizations (the system comprises linear, functional and project responsibility centers). The hierarchy of responsibility centers is described by the specific model of the Corporation assets management and is made stable to any changes in the legal ownership type.

A quarterly procedure of tracking down the progress in key performance indicators with their forecasting up to the end of the year enabled to monitor the achievements in key tasks (such as income growth, export growth, reduction of overheads, increased share of hi-tech products) continuously.

In 2009, the Financial and Economics Bloc in ROSATOM changed functionally and obtained its new content never seen at the centralized level. If earlier the accounting service used to responsible only for accounting and preparing statements for the Corporation and budgets, now it is supporting all enterprises in the industry in developing and maintaining uniform accounting principles and makes statements for Atomenergoprom in accordance with international standards of financial accounting.

In 2009 the Department of Economics was established; for the first time, the 2010 budget for the Corporation and its constituting organizations was made as consolidated; likewise a consolidated financial model of the civil part of the industry was formed. The model covers the period up to 2030 and is meant to improve long-term financial planning.

In order to improve general performance a multi-functional shared service center (MSC) has been set up. It will render business and tax accounting, provide IT services and manage projects. Such centralization of supporting functions should yield good savings for the industry on the whole and individual enterprises, facilitate transition to unified principles and standards, relieve the dependency of organizations from local labor market conditions and guarantee availability of qualified staff. It is expected that by 2012 owing to MSC work the efficiency of accounting operations may increase twofold and that of IT-service by 3 times. As a result, a size of accounting personnel may decrease by 30% and of IT-staff by 45%, which will give about RUB1.7bn of savings per year.


ROSATOM
ENERGY OF FUTURE GENERATION

4.4.1 The Program of Financial and Economics Bloc Transformation

The program of transforming financial and economics component in the State Atomic Energy Corporation ROSATOM and its organizations is scheduled for 2009–2011 and comprises 48 projects. In 2009, nineteen projects were put into practice, namely formation of a consolidated budget; introduction of a Uniform Card of Accounts and a Standardized Accounting Policy; establishment of the multi-functional shared service center etc. Other novelties are the financial calendar that has been developed to reflect major changes in the requirements for keeping books and preparing statements, and a standard investment strategy that defines the fundamentals of investment decision-making at the Corporate and linear levels. Special investment commissions have been formed at all major enterprises.

Consolidated budget

In 2009, a first consolidated budget was generated in the Corporation. Prior to that, corporate standards regulating budget formation, consolidations principles and budgeting structure had been adopted. The typical budget model developed on the basis of uniform card of accounts meets the requirements of the standard accounting policy approved for 2010. This should ensure good comparability of planned and actual data, which is important for plan-fact analysis. Specific attention has been paid to the accounting operations at restricted access enterprises. The finalized Corporation budget agrees with targets and is able to impart the necessary momentum provided that it will be kept within financing limits.

Budget execution is monitored in two ways: in the course of the administration of the budget (budget preventive control) and at the end of each quarter by means of standard plan-fact analytical procedures and forecasting budget execution process, which results in the reports on budget execution, on progress in key performance indicators and on budget outlooks.

Standard accounting policy and introduction of “prompt closing” principle

In order to get information about the current financial state of the Corporation and individual companies fast and make it more accurate, several new methods have been introduced including the Uniform Card of Accounts and Standard Accounting Policy. In November 2009, twenty organizations on pilot scale were switched to the “prompt closing” system when accounts are closed on the seventh working day. If the system proves to be efficient it is planned that about 150 organizations in the industry will adopt this “prompt closing” mode in 2010, which should increase administrative value of the accounting data.

Centralization of loan policy and intra-group financing

A comparative analysis of the loans taken by some organizations and bank deposits made by other companies has revealed a need in new management mechanisms to handle liquidity at a consolidated plane. For this purpose the functions of the Treasury have been extended and the management of cash assets and credit portfolio has been centralized so, that to reduce the costs of loans made by new contracts from 15–17% down to 8.5–10.5% interest per annum. The task to ensure the best preservation of cash assets through their deposition in the most reliable financial institutions has been carried out by selecting a few strong banks for the industry to cooperate with on priority terms. Generally the borrowing conditions for the companies in the industry have been made much more favorable due to eliminating collateral and pledging arrangements. Owing to centralized settlement and cash services the 2009 savings amounted RUB30m.

The 2009 issue of five-year Atomenergoprom debenture bonds of a total worth of up to **RUB195bn** was a milestone for the Corporation. The issue was registered by the Federal Financial Markets Service on October 22, 2009.

The floatation of two issues of debenture bonds for **RUB50bn has increased** the long-term part of the consolidated credit portfolio **up to 40%.**

4.4.2 Risk management system

In 2009, a plan of corporate risk management system development was made together with clear goals and objectives of the risk management department (to be set up in 2010). In 2010 a project is to be implemented to shape the corporate risk management system. This system should be able to identify, analyze, monitor and reduce risks. It will incorporate the experience accumulated in the industry in the field of production risks management into an overall corporate system that will enable engineering, production, operational, financial and other risks management.

4.4.3 IT Technologies

On December 12, 2009 a Program of IT technologies transformation was adopted for the period of 2010–2014. The program is meant to upgrade the existing technologies and is expected to give about RUB14.4bn savings per year.

In 2009, all enterprises in the industry were examined in order to work out unified standards and policies in the field of IT-technologies; functional control over IT-services was put in proper order, all expenditures related with IT-technologies were taken under control and finally the pattern of a shared service center was figured out.

Three IT-projects were launched in the reporting period, namely, the system of personnel management based on SAP HCM software (the prototype system had been developed by December 2009) and a unified sectoral document management system based on Documentum product (the system was put into operation in June 2010).

The Program of IT technologies transformation and its main objectives

- to form a common information grounds to support centralized and sectoral business processes and increase speed and quality of administrative decision making;
- to develop sectoral information-and-technology systems in order to find integrated IT-solutions for production purposes covering the life-cycles of a nuclear power plant , nuclear fuel and individual operations;
- to upgrade the data transmission infrastructure and establish consolidated data processing centers;
- to ensure information security and guarantee that IT-developments comply with the Russian current legislation;
- to centralize IT-management in the industry and establish a single service center to make the IT-services more efficient and less costly.

HUMAN RESOURCES MANAGEMENT

ROSATOM needs qualified workers and intellectuals capable of meeting the most formidable challenges posed by modern nuclear power and industry.

Human capital is the most precious resource in nuclear industry. The State Atomic Energy Corporation ROSATOM needs qualified workers and intellectuals capable of meeting the most formidable challenges posed by modern nuclear power and industry. Their training and professional development demands significant investment of time and money. To meet this challenge a specific personnel management strategy was developed and put into practice in 2009. It stipulates a system of measures starting from a unified scheme of labor remuneration and a system of managers' efficiency assessment and ending with the formation of succession plans and development of the National Research Nuclear University – MEPHI. At the same time we are working for more attractive labor conditions, raising wages and salaries in the industry, improving occupational safety and creating good possibilities for career development.

Tatiana Kozhevnikova,

Deputy Director General for HR Management

4.5 HR management

4.5.1 Personnel attributes

As of the end of 2009, personnel on payroll in the State Atomic Energy Corporation ROSATOM and in its organizations were 275,000 people including 259,500 of industrial and production personnel (with reference to the 2010 budget numbers). The number of ROSATOM office employees at the end of 2009 was 629 people.

Figure 4.3 Breakdown of the number of employees in the industrial and production group according to their categories, number of people, 2009

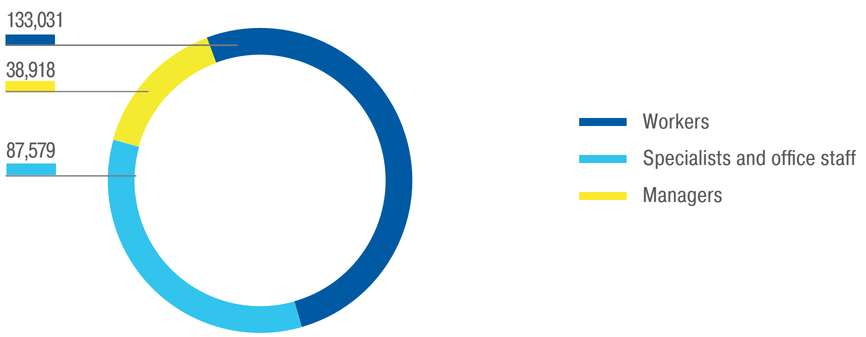
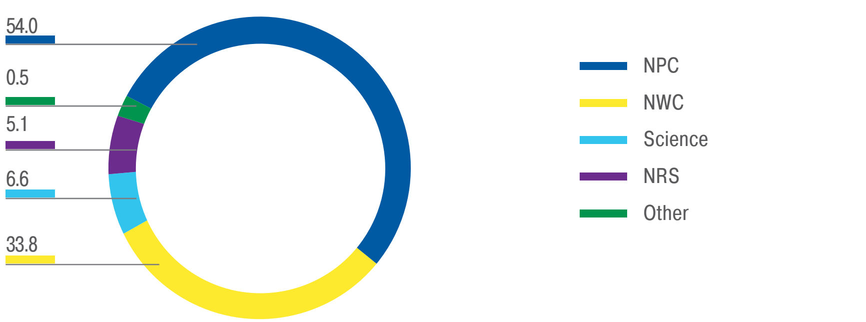


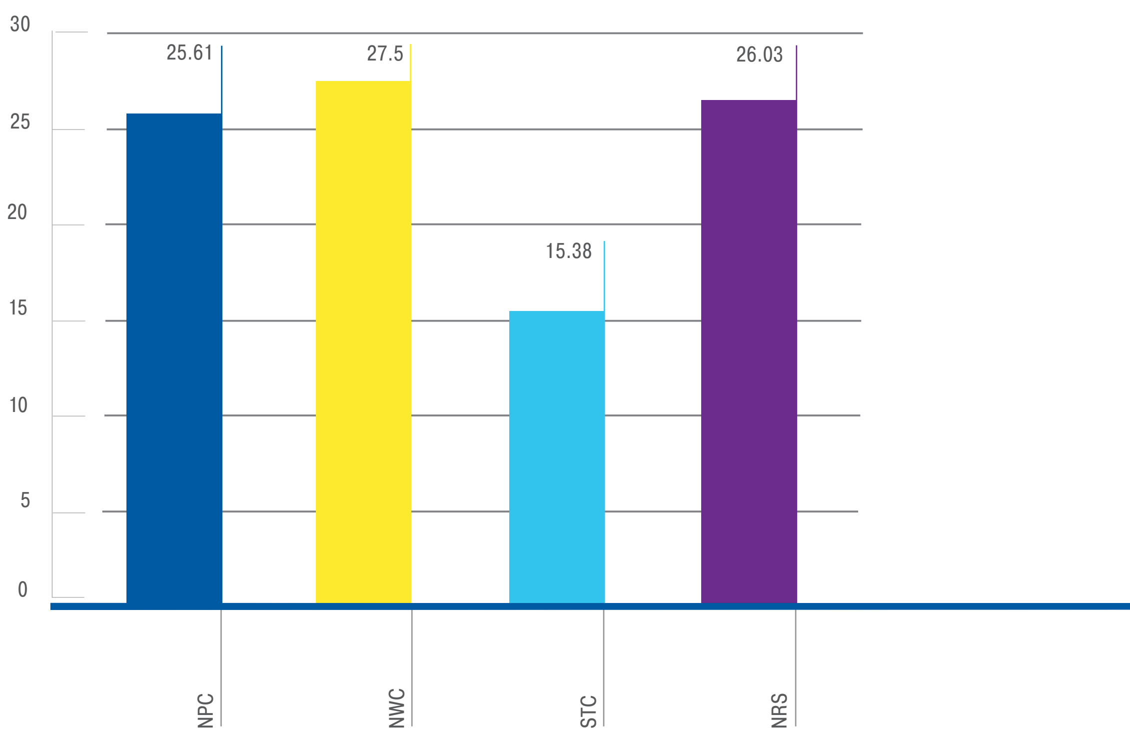
Figure 4.4 Breakdown of the number of employees according to activity areas in %, 2009



During the last three years the average age of employees decreased by 7.5 years and in 2009 was 44.5 years; on average managers' age was 49.3, while a share of specialists under 35 increased up to 26.49% (with reference to the 2009 budget data), which was 1.5% more than in 2008.

Figure 4.5

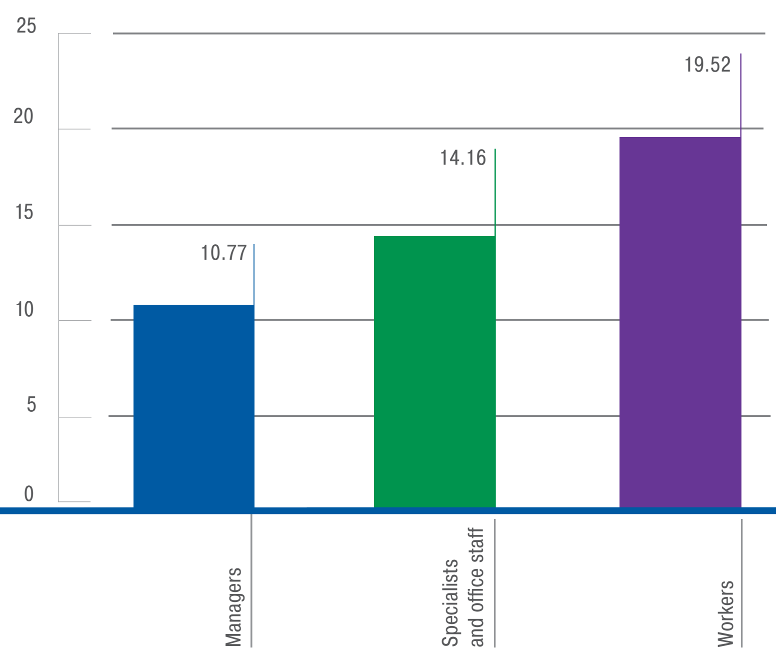
Share of specialists under 35 in 2009, with a breakdown by activity areas, in %



The ratio of employees with higher education was 42.8% of the total staff number, which was significantly bigger than Russia's average in 2009 (28.2% according to the data of the Federal Statistics Service). The number of people with Candidate of Science or Doctor of Science degrees totaled 4,500 (1.64% of all personnel).

In 2009, the rate of employee turnover was 16.54%, which can be explained by retirements and outsourcing activities.

Figure 4.6 Turnover dynamics by personnel categories in %, 2009



4.5.2 Wages, salaries and social policy

In 2009 labor cost amounted to **134.36** bn rubles.

To provide for a continuous increase in wages and salaries is a top priority of the social policy in the Corporation. In 2009, an average monthly labor cost per one employee increased by 16% and amounted to 30,730 rubles (with reference to the 2010 budget figures). Wage supplements were shaped according to specific activities of an organization. Despite the crisis, extend of social securities did not change at all. In 2009, the total cost of social programs realized in different companies and organizations amounted to 8,878.3 rubles (with the cost of social facilities excluded), which was about 32.3 thousand rubles per person per year (with reference to 2010 budget). About 21,700 pensioners, former workers of nuclear weapons sector, receive additional retirement payments; in average the sum of extra retirement payment was 11.300 rubles per month per person.

Figure 4.7 Labor costs in 2009

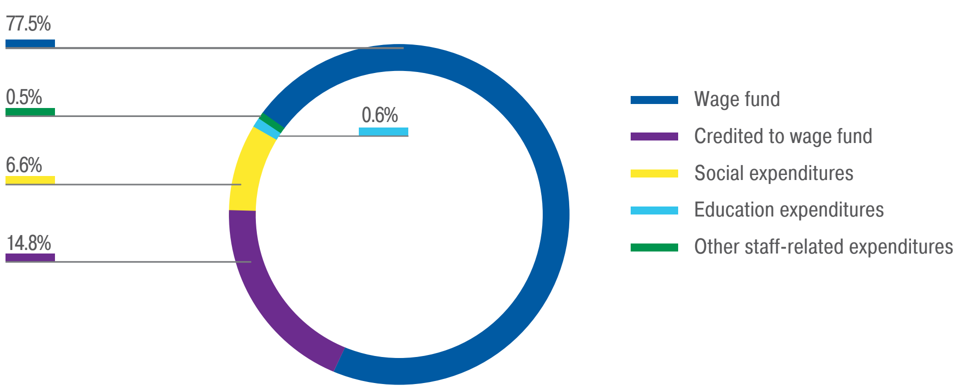


Table 4.2. Major social programs realized in the Corporation

Program	Financing, bln RUB	Outcomes
Voluntary medical insurance	1.4	The system of voluntary medical insurance covers 164,000 employees
Health care at health resorts and spas for current and former employees	1,2	47,000 nuclear workers enjoyed health care in 26 departmental health resorts and recreation facilities
Housing programs	1.6	About 1,500 employees improved their housing conditions
Retirement plans	1.16	About 120,000 employees (42% of employees of the Corporation and its organizations), and over 33,000 pensioners benefited from non-governmental retirement plans
Children's holidays	0.153	33,000 children from employees' families spent their vacations in youth camps, with 22 of them owned by the Corporation

In 2009, the Corporation adopted Standard Principles of Drafting the Social Policy to be applied in the Corporation, in its organizations, affiliated and subsidiary companies. The document describes uniform standard packages of social benefits and securities for all employees depending upon specific conditions of labor, location of enterprises and social infrastructure maturity. According to these principles, all enterprises and organizations are divided into four groups. The first group consists of enterprises, which are major employers in their host cities and those located in closed administrative territorial formations (ZATO). The second group comprises organizations and facilities that are not the only major employers but also located not far from large cities. The third group includes the enterprises situated in big cities, in Moscow or Leningrad Regions; and the fourth one contains those located either in Moscow or in St. Petersburg. A target indicator of expenses for social program has been defined for each group. This indicator is calculated as a percentage of wage fund. For enterprises located in Moscow or

St. Petersburg this figure cannot exceed 5%, for those in ZATO areas – 17%. Unification of all social programs on the basis of common principles is to be finished by 2012.

In 2009, it was decided to establish a single retirement fund, which should make the branch-wise retirement system more stable and can enable the use of pension funds in the interests of the industry. Now, pensioners' standing is graded (there are distinguished pensioners, honored pensioners and ordinary pensioners), each range group has its own benefits and securities.

In 2009, a new agreement with Federal Medical and Biological Agency of Russia was drafted. This agreement delimits financial sources, types and extend of services that are to be provided under the programs of obligatory health insurance financed from the federal budget of the FMBA and from the funds of the Corporation organizations within the framework of voluntary insurance schemes.

When on February 13, 2009, the Union of Employers of Nuclear Industry, Power and Science, Russian Trade Union of Nuclear Power and Industry Workers and the State Atomic Energy Corporation ROSATOM signed an Industry-wide Agreement on nuclear power, nuclear industry and science for 2009–2011[16] requiring that equal labor, social and economic conditions should be set for all employees in the industry; they made a big step forward on the way of social policy development. The Agreement is applied to all organizations and employees in the industry and forms the basis for labor contracts.

16_http://www.rosatom.ru/wps/wcm/connect/rosatom/rosatomsite/resources/0dcaec00439a42c48c5fbcf9a5863483/OS_2009-2011_ot_13_02_2009.pdf

4.5.3 Nonfinancial incentives

The State Atomic Energy Corporation ROSATOM has its own well-established system of nonfinancial incentives based, among onther, on special distinction awards. The awards given for recognized achievements in due time make people understand that they are a necessary part of the Corporation and arise a feeling of involvement, which increases their self-esteem and motivates better performance. The best-performing individuals, teams and organizations usually are recommended for State awards.

Awards for achievements

After summing up the results of 2009, performance of more than 2,500 people was destinguished with award pins named after prominent nuclear individuals "Academician I. Kurchatov", "E. Slavsky", "Academician A. Alexandrov"; awarded "For Outstanding Achievements in the Icebreaker Fleet Development" or Diplomas of the State Atomic Energy Corporation ROSATOM. About 11,000 people were granted the honorary title "Veteran of Nuclear Power Industry".

4.5.4 Training and professional development

Professional development and retraining of managers and key personnel is provided by dedicated educational institutions – Central Institute of Professional Development (Non-governmental educational institution CICET in Obninsk), Moscow Institute of Professional Development Atomenergo (Non-governmental Educational Institution of Atomenergo, Moscow) and Non-Governmental Educational Institution for Continuous Professional Education Atomprof (Atomprof, Saint Petersburg). In 2009, professional development institutes trained over 7,000 people. Extensive participation in training and retraining of key personnel from abroad, which is done within the framework of international strategies of the Corporation, has become a very important part in the educational activities of such institutions. There are plans to establish the International Center for training nuclear power plant managers that will be run under the auspices of the IAEA. This Center should be opened before 2012.

In 2009, the total expenditures for personnel training amounted to RUB1.793m (1% of the wage fund). This figure is three times more than the average index calculated for production facilities in other industries (according to AXES Management in the first half of 2009 this figure was 0.3%). In 2009 the training expenses per person amounted to 6,300 rubles.


atomexpo
Амфитеатрова
Сергеевна

4.5.5 Labor protection

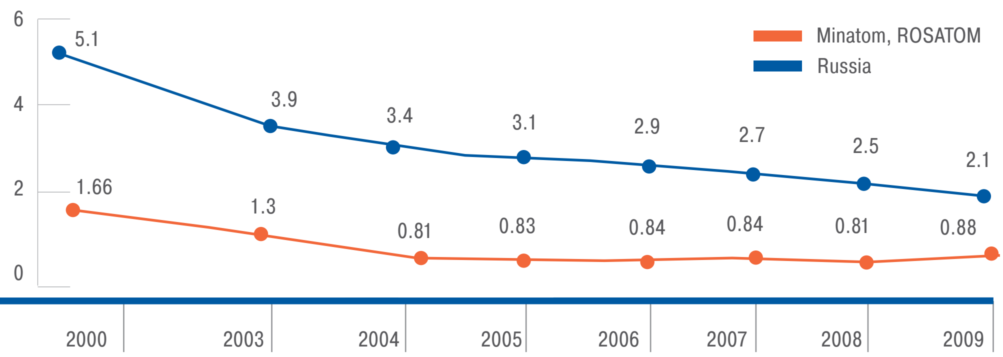
In 2009, the Corporation adopted the System of Labor Protection Management (SUOT). This system should meet labor protection challenges and provide for human health care and working capacity; ensure safety of production processes and equipment; prevent occupational injuries or diseases and create better working conditions.

In terms of occupational injuries rate, the nuclear branch ranks among the safest industries in Russia. Frequency of occupational injuries (Kf ratio – the number of injuries per 1,000 employees) is 2.5 times less than the Russian average[17].

An increase in the number of injuries in 2009 can be explained by two traffic accidents that occurred at PA Mayak, where 32 people were affected (all of them sustained minor injuries). Later, the investigation showed no fault of the enterprise management. The number of fatal accidents in 2009 decreased twofold as compared with the previous year (four cases against eight in 2008).

17_Data from the Federal State Statistics Service.
http://www.gks.ru/free_doc/new_site/population/trud/pr_travma.xls

Figure 4.8. Occupational injuries: comparative data for the State Atomic Energy Corporation ROSATOM (Minatom) and Russia's average, Kf



The rate of occupational disease in the nuclear industry is about two times less than in Russian industry in average[19]. About 80% of occupational diseases are chronic lung diseases and disorders developed as a result of vibration or noise effects. In 2009, occupational diseases were found in 25 cases (compared with 47 in 2008).

In the reporting period the personnel exposure rates were steadily going down. There were no cases where the maximum permissible dose (50 mSv per year) was exceeded. In 2009 the dose metering monitoring covered 70,286 people, compared with 72,980 in 2007, and 71,508 in 2008. The reduction in numbers is related with reforms that took place in the organizations within the Corporation and outsourcing activities that resulted in the formation of affiliate or affiliated companies.

18_Data from the Federal State Statistics Service. (http://www.gks.ru/free_doc/new_site/population/trud/pr_travma.xls)

19_According to data from the Federal State Statistics Service.

In 2009, the Corporation continued to implement the individual risk assessment workstation IRAW. With the help of IRAW it is possible to assess the individual radiological risk of chronic occupational exposure against international standards immediately at the enterprise premises; to make personnel radiation protection more efficient; to make risk-minimizing decisions and inform personnel about risks. For the first time in the world such system (IRAW) embraces 72% of the total employee number who are covered by individual dose monitoring in the industry. The overwhelming majority of these workers (84%) are in the negligible risk range (less than 10^{-4} per year^{-1}). The group of people with increased individual lifelong risk, as compared with reference figures of 10^{-3} per year^{-1} stipulated in the Radiation Protection Regulations (NRB-99/2009), makes only 1.4% of the total number. Half of them are employees of the Federal State Unitary Enterprise PA Mayak and the majority of them are veterans that received the largest share of exposure dose during the first years of nuclear power industry development.


atomexpo

4.5.6 HR management strategies

Being aware of high technological effectiveness of nuclear branch, which asks for long-time training of qualified personnel, the management of the Corporation view human resources as the most valuable asset of the industry. In 2009, a Strategy of human resources management was developed in the company. According to these policies several key activity areas have been defined like organizational planning; labor remuneration system with additional bonuses and benefits; recruiting schemes; succession plans; personnel training and professional development; social policy and effective employment administration. The strategy sets clear targets for each area.

Employment strategy is realized through vertically structured system of personnel management in which the Corporation has responsibility for dealing with division and department managers in compliance with appropriate employment procedures; for the elaboration of sectoral employment policies and standards and rendering methodological support during their implementation; and for the development of key indicators of employment efficiency. The divisions and directorates are responsible for the implementation of the approved policies and standards in their dependent organizations and for cascading all subordinate organizations into the system of efficiency indicators fulfillment with organization HR services being directly responsible for conducting all employment activities in compliance with defined standards and for meeting the efficiency targets.

In 2009, the Corporation hired a number of specialists who have experience of practical work in Russian and foreign companies to fill the positions of HR managers of corporate and line levels. At the same time, centralized sectoral commissions of experts were established to support work in the areas of personnel wages and salaries, personnel evaluation, motivation and professional development, social activities, etc.

Key HR projects of 2009 are a new system of labor remuneration and personnel motivation; a system of work with succession pool; introduction of computerized personnel management system built on SAP platform and establishment of National Research Nuclear University MEPHI.

Uniform System of Labor Remuneration

Before the Uniform System was introduced within the Corporation, wages and salaries paid to the people holding similar positions in different organizations could vary significantly. Moreover, there had been a notable disproportion in the fixed and variable parts of payment, with the fixed (guaranteed) one prevailing (mean proportion was 88/12), which showed that there had been no direct relationship between achieved results in performance and rewarding bonuses.

New motivating payment system is based on the following principles:

- an up-to-date hierarchy of jobs/grades, which permits to compare duties accurately and compensate for the labor according to the real weight of the job in the organization;
- removal of basic disproportion in the payments of the employees who have similar positions (jobs);
- paying rewarding bonuses for actual achievements assessed against key performance indicators at level of the Corporation/organization/individual job;
- defining relationship between the fixed and variable parts of payment considering the best practices.

Now, according to the Uniform System of Labor Remuneration an employee's payment consists of the fixed official salary (different in different geographical regions) and an integrated motivating bonus of four different grades. This bonus is the estimator of either the individual performance or the professional status of each employee. Furthermore, the new system provides for variable additional payments – bonuses paid as a reward for good progress in performance, which is assessed against the yearly results.

In 2009 this new system was introduced in the Corporation office and in managing companies of affiliate holdings; besides the system has become applicable to all top managers (and their deputies) of the key enterprises in the industry, all in all 4,000 people.

Personnel management by key performance indicators

In 2009 a system of personnel performance management was introduced in the Corporation. The system is based on key performance indicators (KPI) that directly link an employee's input demonstrated by performance indicators and the size of bonuses. The system is built in such a way that meeting the targets at a lower level provides for meeting the upper-level goals demonstrated in performance indicators, thus the system of performance indicators is able not only to translate goals and objectives from top corporate level down to bottom lines, but also to create incentives for the personnel to achieve these goals.

In 2009 performance indicator maps were developed for 980 top managers (directors and their deputies in 124 organizations of the Corporation).

Formation of succession pool

A unified system of performance assessment is a good foundation for identification of people with good professional potential. The employees who demonstrate best performance on a regular basis are selected for succession plans and are included into succession pools formed at three organizational levels: Corporation pool ("Golden reserve of ROSATOM"), Division pool and pools in individual organizations. For each selected pool member an individual professional development plan is developed a part of which is training and participation in key projects.

In the format of work with talent pool (young gifted people) the schools of nuclear safety and radiation protection were held as well as a number of strategic workshops for young scientists to discuss key industry development issues and a young leaders' session (about 100 participants from 30 organizations).

Computerized HR management system based on SAP platform

A project dealing with the introduction of corporate computerized personnel management system based on SAP platform was launched in 2009.

Key objectives of the Project:

- to give a tool supporting a common methodology of personnel management and wages calculation;
- to provide for a consolidated employment statements;
- to raise the efficiency of line managers in terms of personnel management (annual assessment of their performance).

Development of National Research Nuclear University

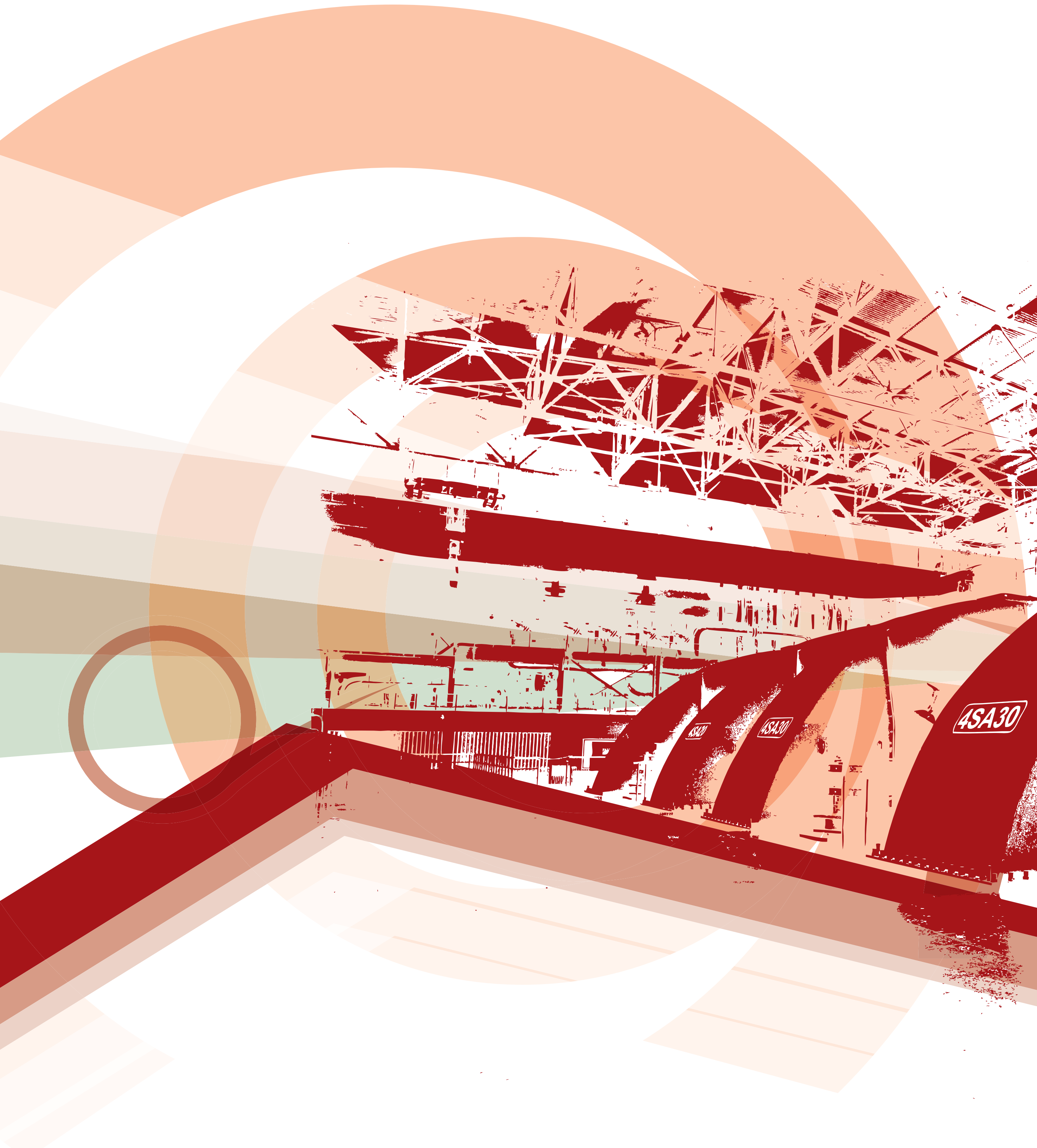
In 2009, the State Atomic Energy Corporation ROSATOM together with the Ministry of Science and Education of the Russian Federation initiated the reorganization of the Moscow Engineering and Physics Institute into the National Research Nuclear University. This new university united dedicated institutions of high and higher educational level (10 universities and 15 colleges) that conduct training in the areas specific for nuclear industry.

In 2009 about 800 MEPHI graduates were employed by different organizations in the industry. One of MEPHI standing targets in 2010–2015 is to train more young people (up to 2,000 every year) to be employed in the industry.

MEPHI development in 2009–2017 is to be co-financed by ROSATOM and the Ministry of Science and Education of the Russian Federation at parity. In 2009, a Rosatom's share amounted RUB300m.

In 2009 in order to popularize "nuclear" education the State Atomic Energy Corporation ROSATOM instituted 150 monthly grants, 5,000 rubles each. By doing so the Corporation hopes to attract the most gifted students who have already made serious progress in studies or have scientific achievements, have become the winners in competitions or participated in core conferences.

For the purpose of educational base strengthening and seeking to increase the quality of teaching aids the Corporation conducts yearly contests of handwritten versions of textbooks and reference books in nuclear field. In 2009 the prizes (500,000 rubles each) were awarded to five winners.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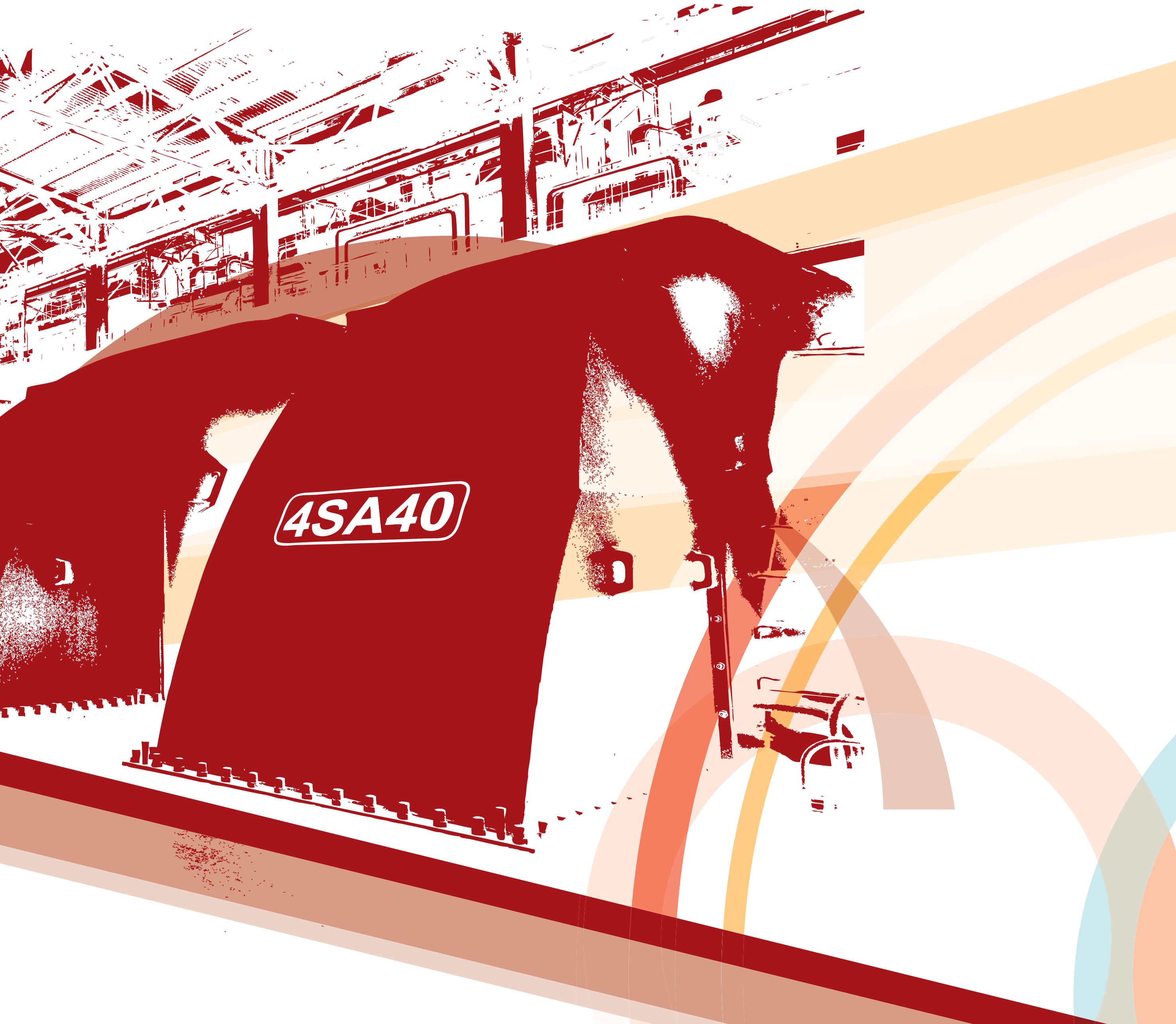
ROSATOM

5 stakeholders engagement in drafting the report

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5.1 Joint actions

Public assurance of the Report and discussions with stakeholders are the procedures recommended by international standards (Standard Series AA1000 of the Institute of Social and Ethical Accountability; Global Reporting Initiative (GRI, version G3)) and required by corporate regulations regarding the openness for the public (the Policy of the Sate Corporation in the area of public statements).

In the process of drafting this Report consultations on the issues arising public concern were held with stakeholders as well as public hearings.

The discussions covered the following topics: “Disclosure of personnel management data in the Annual Report of the State Atomic Energy Corporation ROSATOM” (May 14, 2010, 32 participants) and “Disclosure of radioactive waste handling information in the Annual Report of the State Atomic Energy Corporation ROSATOM” (May 18, 2010, 27 participants). Public consultations on the draft of the annual report were held within the framework of “ATOMEXPO” International Forum on June 9, 2010 with 58 participants.

In the discussions and public consultations the Corporation was represented by the deputies of Director General, department directors, project managers, key executives and experts. The participants from the stakeholders’ side came from major ROSATOM’s enterprises, other industries and big companies, international nuclear organizations, Federal service for environmental, technological and nuclear supervision, regional authorities, public and non-profit organizations, universities, green organizations and research institutes, business associations and rating agencies, experts in corporate management and the Public Council of the State Atomic Energy Corporation ROSATOM.

The participants welcomed the initiative of the State Atomic Energy Corporation ROSATOM to make annual public reports and involve stakeholders into their production.

During the discussions the stakeholders' representatives made some comments and recommendations as to what information should be included in the report, besides they made suggestions regarding the public statements that are to be systematically issued by the State Atomic Energy Corporation ROSATOM (the minutes of meetings and discussions are available in the Communications Department the Corporation).

From interviews with participants

S. Baranovsky,
President of Inter-Regional Non-governmental Environmental Organization "Green Cross", a member of the Public Council of the State Corporation "Rosatom":

"I'm deeply satisfied with the fact that Rosatom started open dialogues with stakeholders on the most pending issues like today's one – what to do with radioactive waste and how? These hearings have collected representatives of different green organizations, such as Social and Environmental Union, Russian Green Cross, Russian Environmental Congress, "Plantain", "Chernobyl" Union and the Center of Environmental Policy. This is an unprecedented event which should make an excellent example of openness for other industries and first of all for other state corporations".

The first report produced by the Corporation has value in itself, but the most important thing is that the report is being developed with strong involvement of civil society representatives. This is a serious move of the Corporation quite often accused of being too closed."

I. Fomichov,
The Chairman of the Russian Trade Union of Nuclear Power and Industry Workers:

"I believe that the first report of the Corporation is important not only for external readers, but has special in-company meaning. When reading it, any employee can feel strong involvement in everything done in the Corporation and become inspired by its ambitious goals. A vital role it can play in the life of those young people who would like to work in the industry, because it gives a good chance to assess personal career opportunities, to learn more about modern scientific problems and how they are solved in the Corporation, to know about corporate achievements and new challenges it has to meet."

V. Yakimets,
Leading scientific officer of the Institute of System Analysis of Russian Academy of Science:

"In my view all of us, who are taking part in public discussions of ROSATOM Annual Report, have become participants of a history-making event. The meaning of this statement for the society, local communities of nuclear regions, nuclear industry workers and their families can hardly be overestimated.

I have read a lot of reports, but, unfortunately, many of them were difficult to understand for outsiders this document seems to be the first one where specialist information about complicated activities in nuclear industry is presented in plain words.

Particularly important is the fact that this report is a free-will initiative of the Corporation. This is a new evidence of our progress in democracy."

5.2 Account of stakeholders' recommendations

About 157 proposals and recommendations were made during those meetings. The majority of them (60%) were related with the requests to publish particular information. The Corporation, willing to consider all recommendations, made necessary arrangements. As a result of that work, out of 136 suggestions concerning the structure, content or format of the report 85 (62.5%), suggestions were adopted, 32 (23.5%) were rejected; the Corporation undertook to adopt the suggestions in its future reports in 14 cases (10.3%) and in 5 cases made references to other information sources. The 21 suggestions concerned the reporting system itself, five (23.8%) of them were adopted, six (28.6%) were rejected and 10 (47.6%) were postponed for 2010. Rejected suggestions either dealt with classified information or were considered inexpedient.

Table 5.1. Stakeholder's major suggestions

Suggestions by Stakeholders	Response of the Corporation
1. Suggestions on changes in the draft report	
Describe the hierarchy of responsibilities distribution in the personnel management system (Corporation – divisions – enterprises).	Adopted. See Section "HR Management".
Disclose key performance indicators used to asses performance of Personnel Management Departments.	Rejected; the information is for internal use only.
Present criteria used in the Corporation to form succession pools and recruit top executives.	Adopted. See Section "HR Management".
Present Corporation practices in the area of new mechanisms and approaches applied in personnel management.	Rejected; information is more appropriate to be disclosed in the statements of cooperative organizations.
Describe what is done to attract young people and production workers.	Adopted. See Sections "HR Management" and "Stakeholders' Engagement".
Outline the concept and describe how the ethical practice project is implemented.	Adopted. See Section "Documents Regulating Stakeholders Engagement".
Provide more information on the key project of the year: formation of the state unified system for radioactive waste management (SUS RWM).	Adopted. See Section "Nuclear and Radiation Safety Complex".
Focus on likely consumer needs in goods or services of the Corporation and cooperative organizations by describing: – the outcomes of organizational reforms in the nuclear industry; – the distribution of responsibilities and authorities between different administrative levels of the Corporation and the organizations operating in the industry.	Adopted. See Sections "Address by the Chairman of the Supervisory Board", "Address by the Director General", "General Information about ROSATOM", "Governing Bodies", "System of Corporate Governance" and "HR Management".
Disclose data on decommissioning nuclear power reactors, decommissioning funding sources and current state of the funds.	To be adopted in the 2010 Safety Report.
List the most troublesome RW sites with relation to their negative impact on people's safety. Distinguish specifically the facilities that are dangerous because of current exposure doses and those that present potential risks of exposure. Describe strategic solutions and action plans for each facility individually. Show the results achieved in the reporting period in terms of finance, exposure doses and risk reduction.	The data is presented in the 2009 Safety Report (Section "Nuclear Safety and Radiation Protection in the Industry in 2009") and in the environmental statements of enterprises.

Give data on international donations aid in the field of nuclear safety and radiation protection.	Information is given in the 2009 Safety Report (Section "Implementation of Federal Target Programs and Other Programs in the Field of Nuclear Safety and Radiation Protection).
Outline approaches to the management of radioactive waste containing man-made radioactive nuclides –very low level waste (VLLW).	To be adopted in the next reports; the approach to VLLW management can become clear after the Law on Radioactive Waste Management has been passed.
Show the progress at "RosRAO" facility and developments in the national RAW management infrastructure: key system elements should be described (example: Saida Bay facility as a prototype of the future center for RAW conditioning and management).	To be adopted in the 2010 Safety Report.
Provide data on Radon facility.	Rejected; the information is more appropriate to be disclosed in the statements of cooperative organizations. By the end of 2010 the Public Reporting Committee is to make the decision whether the federal state unitary enterprise RosRAO should be included into the list of key Corporation's organizations (in the context of public reporting).
Include data on corporate expenses for radioactive waste management into the economics section. The Corporation expenses financed from the reserves should be compared against the expenses financed from the Corporation profit.	To be adopted in the 2010 Safety Report.
Kirovochepetsky Chemical Combine is the major employer and there is a strong need to make this situation clear to everyone, therefore, the report should include: – data on the activities of Kirovochepetsky Branch of RosRAO (similarly to MCC, SCC and PA Mayak); – Corporation outlooks on Kirovocheepetsky Chemical Combine.	Rejected; the information is more appropriate to be disclosed in the statements of cooperative organizations. By the end of 2010, the Public Reporting Committee is to make the decision on whether the federal state unitary enterprise RosRAO should be included into the key Corporation organizations (in the context of public reporting).
Check the report for contradictions and disagreements in environmental data the on nuclear safety and radiation protection.	Adopted. The sections dealing with environmental issues, nuclear safety and radiation protection have been reviewed by the Public Council and the relevant department of the Corporation.

2. Suggestions concerning the reporting system		
Organize discussions of the 2010 draft report (the issues of nuclear safety, radiation protection and radwaste management) in the communities hosting nuclear facilities.	To be adopted. Before the end of 2010 the Public Reporting Committee will work out a code regulating the production of annual public reports in the Corporation.	
Involve major Russian green networks, like the Social and Environmental Union, the Green Cross, the Russian Ecological Congress, "Podorozhnik", the Chernobyl Union, and the Center of Environmental Policy into the discussions of the draft report.		
Set up rules regulating collaboration of public organizations in report drafting. The rules should also define persons responsible for their observance.		
Make public opinion polls in the communities having nuclear facilities on their territories a part of the 2010 report drafting process in order to learn more about information expectations of the local population.	To be adopted for 2010 report drafting.	

5.3 Conclusions on the Annual Report Public Assurance

Background

The State Atomic Energy Corporation ROSATOM (hereinafter referred to as Rosatom or the Corporation) asked us to assess its 2009 Annual Report (hereinafter referred to as the Report), together with the completeness and relevance of the information and the Corporation's response to the suggestions made by stakeholders. To facilitate our task we were invited to participate in public consultations on the draft Report that were held on June 6, 2010 within the framework of the international Forum ATOMEXPO and in a number of topical discussions with stakeholders ("Disclosure of personnel management data in the Report" held on May 14, 2010 and "Disclosure of information on radioactive waste management", May 18, 2010)

Our conclusions are based on the results of the comparative analysis of two draft Reports (the version submitted for public consultations and the final report draft); on the material resulting from those consultations and discussions (such as minutes and the Table of stakeholders' suggestions) and on comments made by Rosatom's executives and other employees during the public assurance of the Report.

Public assurance of the Report did not presuppose any checks of information collection and processing system in the Corporation. The adequacy of the Report data has never been an object of public verification as well.

Our work related with verifying the Report was not compensated by the Corporation and no fees were paid.

Assessments, comments and recommendations

We are all satisfied with the Report format and the scope of the presented information. Exceptionally important is the fact that this Report is ROSATOM's free-will initiative, which shows that the Corporation has become more open and transparent.

In the process of Report drafting the Corporation has demonstrated a strong tendency to increase public acceptance of new nuclear technologies and make them environment friendly. It has also shown its willingness to have an open dialogue with all stakeholders in different activity areas. We can see that the management of the Corporation is conscious that interaction with stakeholders has constructive character with good outlooks and is ready to adopt many of the recommendations.

An absolutely positive feature of the Report is that it has been made in accordance with international standards (Global Reporting Initiative (GRI, edition G3) and a Series of Standards AA1000 of the Institute of Social and Ethical Accountability). Its another merit is integration, which has helped to disclose the information on the principal activity of the Corporation in every aspect in order to demonstrate its effectiveness.

We do not have any facts that might prejudice the trustworthiness of the Report data.

Considering that the Report is the first public document of this type, we can assess the disclosed information as sufficient both in terms of international standards application and in response to the stakeholders suggestions made within report drafting process.

However we would like to note and recommend that the Corporation

- should engage stakeholders into report drafting at an earlier stage, and
- the members of the Corporation Board of Directors should participate in public consultations and other actions with stakeholders in person;
- should meet its commitments that have been proclaimed in the Report. We believe that the organization that keeps its small promises to the public can win much more trust than the organization which promises much, but then treat then with negligence;
- should agree the content of the Annual Report and coordinate its preparation process with those of other reports and statements produced in the Corpora-

tion like specialized statements of the Corporation; yearly reports of key (in terms of public accountability) and other organizations and enterprises and environmental reports made in the industry. This can help to include the data missing in the Annual Report, but being of certain interest for some stakeholders, into another report.

In our view it is a comprehensive Report that should present Corporation management's official positions in every key issue of public importance and in all activity areas of the Corporation.

We also believe that when drafting the Report the Corporation has missed some chances to use the opportunities provided by the corporate website to inform an unlimited amount of interested people and involve them into report preparation. We suggest that the topics of the planned meetings with the stakeholders should be published on the website in advance.

Information relevance

In our opinion the Corporation has covered all significant topics. The Report presents Corporation viewpoints on strategic development; informs about financial and economic results of business activities; tells about their social and environmental effects. It is important that the Report informs about the outcomes of organizational reforms in nuclear industry in 2006–2009.

Top priority issues addressed in the Report are: strategic goals of the Corporation; efficiency of its performance, including effective use of budget funds; increased competitive ability and advanced nuclear technologies; nuclear safety, radiation protection and environment preservation. The Report has also covered several important issues that traditionally raise concerns of the public, international nuclear community, green organizations, local communities and other stakeholders. We can hardly suggest any other topic to be brought up in the Report.

Information completeness

We do not believe it is reasonable to increase the Report in size, even though it has not answered all the questions asked by the stakeholders during open discussions and consultations. We have agreed with the decision to make reference in the Report to specialized reports where the sought information can be found.

We would like to recommend that the Corporation should pay close attention to the relationship between the strategic goals and the results achieved in the reporting period in its Report.

In our view, the information about sustainable development activities including accounting indicators should be accompanied by the description of the general line adopted by the Corporation management, and first of all be supported by clear and measurable targets. We also think that in the next integrated (or specialized) report the Corporation's attitudes towards the territories that lie beyond its responsibility, but have been affected by previous economic or military nuclear activities should be discussed separately.

Corporation's response to suggestions and wishes made by the stakeholders

The State Atomic Energy Corporation ROSATOM responded to the suggestions of the stakeholders first of all by introducing clarity into report data and extending them, which is demonstrated in the final draft of the Report. Moreover, the Corporation assumed obligations to disclose certain information in the following reports and improve its public reporting system. In particular, revised and supplemented were such sections as "Environmental Protection", "Nuclear and Radiation Safety Complex", "HR Management", "General Issues of Sustainable Development" and some other. The Corporation also promised to disclose some data requested by the stakeholders in the next reporting period, for instance in the 2010 Safety Report.

We are absolutely convinced that the Corporation has made a big step forward in its cooperation with stakeholders and developing public reporting practices in nuclear industry. It is worth mentioning that though it was the first public report made by the Corporation, ROSATOM had held many meetings with stakeholders. They got an opportunity to make their comments and recommendations concerning the presentation of the information or the development of the reporting system in the industry on the whole. Partially those suggestions were adopted in the final version of the Report, as for the rest of them, the Corporation either undertook to disclose the sought information in the next statements or gave reasoned explanations why it was impossible to do.

ROSATOM has also undertook to consider all suggestions concerning the changes in the developing system of public reporting before the end of 2010, for example, to include the federal unitary enterprise “RosRAO” into ROSATOM key organizations (in he context of public accountability); to involve a wider range of stakeholders into report drafting; to develop regulations in the area of annual reporting, etc.

The Corporation corrected technical errors and misprints that had drawn reviewer’s attention.

Thus the Corporation has demonstrated its willingness to respond to stakeholders’ requests and recommendations in a constructive way.

We expect that the Sate Atomic Energy Corporation ROSATOM will be persistently introducing the principles of responsible corporate behavior into its regular activities by developing the system of public reports and interaction with stakeholders.

S. Baranovsky
President of the Interregional Public Environmental Organization «Green Cross»

E. Velikhov
Secretary of the Civic Chamber of Russian Federation

V. Glazychev
Member of the Board of the Civic Chamber of Russian Federation

K. Zaitsev
Deputy Chairman of the State Duma Energy Committee

V. Mezhevich
First Deputy Chairman of the Council of the Federation Commission on Natural Monopolies

E. Tugolukov
State Duma Deputy, Chairman of the State Duma Committee on Natural Resources, Environment and Ecology

E. Feoktistova
Head of the Center of corporate social responsibility and nonfinancial reporting of the Russian Union of Industrialists and Entrepreneurs

I. Fomichev
Chairman of the Russian Trade Union of Nuclear Power and Industry Workers

appendices

Appendix 1. LIST OF ACRONYMS

Appendix 2. GLOSSARY

Appendix 1. List of Acronyms

APEC	Asia Pacific Economic Cooperation
ARMS	automated radiation monitoring system
ASEAN	Association of South East Asian Nations
CAC	Central Arbitration Committee
CATF	closed administrative territorial formation
CERN	Conseil Européen pour la Recherche Nucléaire
CF	capacity factor
CIS	Commonwealth of Independent States
CJSC	closed joint stock company
CMB	coastal maintenance base
CTBT	Comprehensive Nuclear Test Ban Treaty
DDG	Deputy Director General
ESR	Unified System of Remuneration
EurAsEC	Eurasian Economic Community
FA	fuel assembly
FEU	Financial and Economic Bloc
FFMS	Federal Financial Markets Service
FMBA	Federal Medical and Biological Agency
FR	fuel rod
FRC	Financial Responsibility Center
FSUE	federal state unitary enterprise
FTP	Federal Target Program
GNEP	Global Nuclear Energy Partnership
HLW	high-level radioactive waste
IAEA	International Atomic Energy Agency
IAS	International Accounting Standards
ILW	Intermediate-level radioactive waste
INES	International Nuclear Event Scale
INPRO	International Project on Innovative Nuclear and Fuel Cycles

IRAW	individual risk assessment workstation
IRG	inert radioactive gases
ISTC	International Science and Technology Center
ITER	International Thermonuclear Experimental Reactor
IUEC	International Uranium Enrichment Center
JV	joint venture
KPI	key performance indicator
LB	light beacon
LLC	limited liability company
LLW	low-level radioactive waste
LRW	liquid radioactive waste
LTAP	ROSATOM's Long-term Activity Program
NF	nuclear facilities
NFC	nuclear fuel cycle
NIBC	nuclear ice-breaker and support complex
NM	nuclear materials
NPC	nuclear power complex
NPI	nuclear power installation
NPP	nuclear power plant
NRF	nuclear research facilities
NRHF	nuclear and radiation-hazardous facility
NRS	nuclear and radiation security
NS	nuclear-powered submarine
NSG	Nuclear Suppliers' Group
NWC	nuclear weapons complex
OJSC	open joint-stock company
PDC	Pilot Demonstration Center
R&D	research and development
RBMK	high power channel-type reactor

RF	Russian Federation
ROSATOM, Corporation	State Atomic Energy Corporation ROSATOM
Rostechnadzor	Federal Environmental, Industrial and Nuclear Supervision Service
RS	radioactive substances
RTG	Radioisotope Thermoelectric Generator
RTU NPIW	Russian Trade Union of Nuclear Power and Industry Workers
RUIE	Russian Union of Industrialists and Entrepreneurs
RW	radioactive waste
S&A	subsidiaries and affiliates
SCO	Shanghai Cooperation Organization
SFA	spent fuel assembly
SNF	spent nuclear fuel
SRW	solid radioactive waste
STC	science and technology complex
TCS	toxic chemical substances
UNO	United Nations Organization
USS RAW	Unified State System for Radioactive Waste Management
USS SNF	Unified State System for Spent Nuclear Fuel Management
VLLW	very low-level radioactive waste
VVER	water-cooled water-moderated power reactor
WANO	World Association of Nuclear Operators

Appendix 2. Glossary

Becquerel (Bq)	a unit of activity of a nuclide in the radioactive source equal to one transformation per second.
Closed nuclear fuel cycle	a nuclear fuel cycle where spent nuclear fuel is recycled to extract uranium and plutonium for reuse in new nuclear fuel.
Depleted uranium	uranium where uranium isotope U-235 content is lower than in natural uranium (e.g., uranium in spent fuel of nuclear reactors fueled with natural uranium).
Discharge of radioactive substances	controlled ingress of radionuclides into reservoirs containing liquid waste of a nuclear installation (e.g., a nuclear power plant).
Disposal of radioactive waste	safe placement of radioactive waste in storage facilities or any other places, which makes impossible the waste retrieval and release of radioactive substances into the environment.
Dose burden	a sum of individual exposure doses received or anticipated during operation, maintenance, repair, replacement or dismantling of equipment at a nuclear installation, e.g. nuclear power plant.
Enrichment (with redard to an isotope)	a) a content of atoms in a specific isotope mixed with isotopes of the same element if it exceeds a share of the same isotope in naturally-occurring mixtures (expressed in percent); b) a process, whereby the content of a specific isotope increases in the isotope mix.

Fast neutrons	neutrons which kinetic energy exceeds a specified value. This value can change over a wide range and depends on its actual use (reactor physics, shielding or dose monitoring). This value is often set at 0.1 MeV in reactor physics.
First criticality	a stage of commissioning of a nuclear power plant that includes loading of nuclear fuel into the reactor, achieving criticality, and conduct of required physical experiments at a power level where heat is removed due to natural heat loss.
First power	a co mmissioning stage of a nuclear power plant where the plant starts generating power and the plant performance at different power levels up to commercial power levels is checked.
Fuel assembly	a set of fuel rods (rods, bars, plates, etc.) held together by spacer grids and other structural components and undetached during transportation and irradiation in a nuclear reactor. Fuel assemblies are loaded into the core of a nuclear reactor.
Fuel pellet	a pellet of compacted uranium dioxide, which is the base for nuclear fuel; it is placed in fuel rods.
Global Reporting Initiative (GRI)	an internationally adopted reporting system with regard to economic, ecological and social performance, which is based on the Sustainability Reporting Guidelines, Protocols and Sector Supplements.

HEU Agreement	the agreement concluded between the Government of the Russian Federation and the Government of the United States of America concerning utilization of enriched uranium extracted from nuclear weapons. Under this agreement Russia undertakes to deliver over 20 years (until the end of 2013) to the USA low enriched uranium (LEU) produced from 500 tons of highly enriched uranium (HEU), extracted from nuclear weapons and designated by the Russian side as no longer required for defense purposes.
IAEA Safeguards	a system of verification applicable to peaceful uses of atomic energy, which is established within the framework of the global nonproliferation policy; the International Atomic Energy Agency is entitled to implement this system.
International Standard on Assurance Engagements ISAE 3000	the international standard for auditing non-financial reports.
Natural background	ionizing radiation consisting of cosmic radiation and ionizing radiation of naturally distributed naturally-occurring radionuclides (on surface of the Earth, in air, food products, water, human bodies, etc.)
NPP Safety	NPP ability to ensure radiation safety of the personnel, general public and environment within the established limits during normal operation and in case of accident

Nuclear fuel	a material containing fissionable nuclides which, if placed in a nuclear reactor, allows for nuclear chain reaction.
Nuclear fuel cycle	a sequence of production processes aimed at maintaining nuclear reactors operation; it starts from extraction of uranium and ends with disposal of radioactive waste.
Nuclear Non-Proliferation Treaty (NPT)	an international treaty on limitation of the arms race and aimed at preventing emergence of new nuclear-weapon states. The agreement stipulates that states possessing nuclear weapons shall not transfer nuclear weapons or control thereof to other parties, while non-nuclear weapons states shall refrain from production and acquisition of nuclear weapons or other nuclear explosive devices.
Nuclear power engineering	a sector of power engineering where atomic energy is used for electrification and district heating.
Nuclear safety	a general term describing capability of a nuclear installation to limit radiation effects on personnel, general public and environment to acceptable limits during normal operation and accidents.
Operating organization	an organization authorized by a regulatory authority to operate a nuclear power plant or other nuclear installation.
Pilot operation	a commissioning stage of a nuclear power which begins from the start of the first power program and ends with the plant commissioning for commercial operation.

Radiation monitoring	obtaining information on the radiation situation in an organization, environment, and on exposure of people (includes health physics and radiometry surveillance).
Radiation safety	a set of measures aimed at limiting exposure of personnel and general public to the lowest radiation dose values, which is achieved by publicly acceptable means, and at preventing early consequences of exposure and limiting delayed radiation effects to an acceptable level.
Radioactive waste	nuclear materials and radioactive substances which future use is not anticipated.
Recycling of spent nuclear fuel	a set of chemical processes intended to remove fission products from spent nuclear fuel and recover fissionable material for reuse.
Release of radioactive substances	ingress of radionuclides into the atmosphere due to a nuclear installation operation (e.g., nuclear power plant).
Research reactor	a nuclear reactor intended as an object of research to acquire data on reactor physics and technologies required for design and development of similar reactors or their components.
Treatment of radioactive waste	process operations aimed at changing the state of aggregation and (or) physical and chemical properties of radioactive waste, and carried out to convert it is forms acceptable for transportation, storage and (or) disposal.

Uranium conversion	a chemical process for transformation of uranium-containing materials into uranium hexafluoride.
Uranium hexafluoride	a chemical compound of uranium and fluorine (UF6). It is the only volatile uranium compound (when uranium hexafluoride is heated to 53°C, it changes directly from a solid to a gaseous state). UF6 is used as input feed for separation of isotopes uranium-238 and uranium-235 by means of gas diffusion or gas centrifuge technology to produce enriched uranium.
Uranium ore enrichment	a set of processes for primary processing of uranium-containing feed to separate uranium from other minerals which are part of the ore. This does not lead to changes in the composition of minerals but mechanically separates them to produce ore concentrate.
VVER	water-water power reactor where water is used as the coolant and the moderator. This reactor type is the most widely used in Russia in two versions: VVER-440 and VVER-1000.
AA1000 Stakeholders Engagement Standard AA1000 SES	a generally applicable and accessible normative base for planning, execution, evaluation, informing and conducting of non-financial audit of quality of engagement with stakeholders in the course of reporting and accountability of organizations in the field of effective management.

Appendix 3. TABLE OF GRI (G3) STANDARD DISCLOSURES AND PERFORMANCE INDICATORS

Appendix 3. Table of GRI (G3) standard disclosures and performance indicators

Standards disclosure	Report section	Report page
1. Strategy and Analysis		
1.1 Statement from the most senior decision-maker of the organization (e.g., CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy.	Statement by the Chairman of the Supervisory Council. Statement by the Director General.	p. 19–23
2. Organization Profile		
2.1. Name of organization.	General Information about ROSATOM.	p. 29
2.2. Primary brands, products, and/or services.	General Information about ROSATOM. Main areas of activity.	p. 30
2.3 Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures.	General Information about ROSATOM.	p. 30–31
2.4. Location of organization's headquarters.	General Information about ROSATOM. Contact Information.	p. 33, 372
2.5. Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report.	General Information about ROSATOM. International Cooperation.	p. 32, 64
2.6. Nature of ownership and legal form.	General Information about ROSATOM.	p. 29
2.7. Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries).	General Information about ROSATOM. Main areas of activity.	p. 30, p. 51–175
2.8. Scale of the reporting organization.	Key Results in 2009. Main areas of activity. HR Management.	p. 17, 51, 284

2.9. Significant changes during the reporting period regarding size, structure, or ownership.	System of Corporate Management.	p. 259–262
2.10. Awards received in the reporting period.	General Information about ROSATOM.	p. 33
3. Report Parameters		
3.1. Reporting period for information provided.	Annual Report.	p. 10
3.2. Date of most recent previous report (if any).	Annual Report.	p. 10
3.3. Reporting cycle.	Annual Report.	p. 10
3.4. Contact point for questions regarding the report or its contents.	Contact Information. Feedback Questionnaire.	p. 369, 372
3.5. Process for defining report content.	Annual Report.	p. 11
3.6. Boundary of the report.	Annual Report.	p. 11
3.7. State any specific limitations on the scope or boundary of the report.	Annual Report.	p. 12
3.8. Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations.	Annual Report.	p. 11
3.10. Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g., mergers/acquisitions, change of base years/periods, nature of business, measurement methods).	Annual Report.	p. 10
3.11. Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	Annual Report.	p. 10
3.12. Table identifying the location of the Standard Disclosures in the report.	Table of GRI Standard Disclosures and Performance Indicators (G3).	p. 332–336

3.13. Policy and current practice with regard to seeking external assurance for the report.	Annual Report. Conclusions on the Annual Report public assurance. Audit Report on Non-Financial Reporting. Audit Report on Consolidated Financial Reporting.	p. 12, 314–319, 337–341, 342–344	
4. Governance, Commitments, and Engagement			
4.1. Governance structure of the organization	Governing Bodies.	p. 33–43	
4.2. Indicate whether the Chair of the highest governance body is also an executive officer.	Governing Bodies.	p. 34	
4.3 For organizations that have a unitary board structure, state the number of members of the highest governance body that are independent and/or non-executive members.	Governing Bodies.	p. 34	
4.4. Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	Governing Bodies. Engagement with Stakeholders. Internal Control and Audit System.	p. 40–41, 186, 263	
4.14 List of stakeholder groups engaged by the organization.	Annual Report. Engagement with Stakeholders.	p. 11, 182–183	
4.15. Basis for identification and selection of stakeholders with whom to engage.	Annual Report. Engagement with Stakeholders.	p. 11, 182–183	

Sustainable Development Performance Indicator	Section	Disclosure degree*	Page
Sustainable Development Performance Indicator			
EC1. Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	Contribution to Economic Development.	●	p. 199
EC4. Significant financial assistance received from government.	Contribution to Economic Development.	●	p. 199
EC6. Policy, practices, and proportion of spendingon locally-based suppliers at significant locations of operation.	Contribution to Economic Development.	●	p. 203–204
Environmental Performance Indicators			
EN8. Total water withdrawal by source.	Environmental Safety.	◐	p. 219
EN10. Percentage and total volume of water recycled and reused.	Environmental Safety.	●	p. 219
EN20. NO, SO, and other significant air emissions bytype and weight.	Environmental Safety.	●	p. 226
EN21. Total water discharge by quality and destination.	Environmental Safety.	◐	p. 221
EN22. Total weight of waste by type and disposal method.	Environmental Safety.	●	p. 230
EN26. Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.	Science and Technology Complex. Environmental Safety.	●	p. 128, 240–241
EN28. Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.	Environmental Safety.	●	c.249
EN30. Total environmental protection expenditures and investments by type.	Environmental Safety.	●	p. 245–248

Social Performance Indicators			
LA1. Total workforce by employment type, employment contract, and region.	HR Management.	◐	p. 284
LA2. Total number and rate of employee turnover by age group, gender, and region.	HR Management.	◐	p. 284–286
LA4. Percentage of employees covered by collective bargaining agreements.	HR Management.	●	p. 289
LA7. Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region.	HR Management.	◐	p. 293–294
Society Performance Indicators			
SO4. Actions taken in response to incidents of corruption.	Internal Control and Audit System.	◐	p. 265
Product Responsibility Performance Indicators			
PR1. Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures.	Environmental Safety.	●	p. 240–243

* ◐ – partially disclosed
● – fully disclosed

Appendix 4

NEXIA PACIOLI LLC: AUDIT REPORT

Appendix 5

ZAO PRICEWATERHOUSECOOPERS AUDIT: AUDIT REPORT

Audit Report by Nexia Pacioli LLC on Consolidated Financial Statements of the State Atomic Energy Corporation ROSATOM in 2009

Audited entity	**State Atomic Energy Corporation ROSATOM (Corporation)**
Location	Moscow, Russian Federation
Mailing address	24/26 Bolshaya Ordynka st., Moscow 119017, Russia
Contact information	Phone: +7 (499) 949-4254; E-mail: rosatom@skc.ru
State Registration	State registration certificate series 77 No. 011300424 dated 18.12.2007, issued by the Department of the Federal Tax Service for Moscow; entered in the Unified State Register of Legal Entities under Primary State Registration Number 1077799032926
Auditor	**Nexia Pacioli Limited Liability Company (Nexia Pacioli LLC)**
Location	2 Malaya Polyanka st., Moscow 119180, Russia
Mailing address	2 Malaya Polyanka st., Moscow 119180, Russia
Contact information	Phone: +7 (495) 785-9476; Fax : +7 (495) 785-9461; E-mail: pacioli@pacioli.ru
State Registration	State registration certificate No. 856.235 dated June 23, 1995, issued by the Moscow Registration Chamber; State registration certificate series 77 No. 005390060 dated October 22, 2002, issued by the Inter-District Inspectorate of the Ministry of Taxes and Levies of the Russian Federation No. 39 for Moscow; Entered in the Unified State Register of Legal Entities under Primary State Registration Number 1027739428716

Membership in self-regulatory organization of auditors

Member of the self-regulatory organization of auditors – Non-Profit Partnership "Institute of Professional Auditors";

Entered in the Register of Auditors and Auditing Organizations of the above self-regulatory organization of auditors on October 30, 2009 under Primary Registration Number 10202000073

Auditing services quality certificate

No. 172, issued by the Non-Profit Partnership "Institute of Professional Auditors", Valid from September 16, 2008, until September 16, 2011

We conducted the audit of the attached consolidated financial statements of the Corporation, Corporation joint-stock companies and their affiliated and subsidiary enterprises (hereinafter, the Group) covering the period from January 1, 2009, to December 31, 2009, both dates inclusive. The consolidated financial statements of the Corporation comprise the following documents:

- Consolidated balance-sheet as of December 31, 2009;
- Consolidated profit and loss account for 2009;
- Consolidated statement of changes in equity for 2009;
- Consolidated statement of cash flow for 2009;
- Appendices to the consolidated balance-sheet for 2009;
- Explanatory Notes.

These consolidated financial statements were prepared in accordance with the legislation of the Russian Federation on preparation of consolidated accounting reports.

The Corporation Director General is responsible for preparation and submission of the consolidated financial statements pursuant to Federal Law No. 317-FZ dated 01.12.2007 “On the State Atomic Energy Corporation ROSATOM”.

Whereas, we are responsible for expressing our opinion on the credibility of the financial statements in all material respects based on the audit we conducted.

We conducted our audit pursuant to the following:

1. Federal Law “Concerning Auditing Activities”;
2. Federal Law No. 317-FZ dated 01.12.2007 “On the State Atomic Energy Corporation ROSATOM;
3. Federal Auditing Regulations (standards).

The audit was planned and conducted so as to provide reasonable assurance that the consolidated financial statements do not contain any material misstatements. The audit was conducted on a sample basis and included testing of evidence confirming numerical values presented in the consolidated financial statements and disclosure therein of information on financial and economic activities, assessment of how the accounting principles and regulations, which apply to the preparation of consolidated financial statements, are met, consideration of key evaluation indicators achieved by the Corporation management, and evaluation of consolidated financial statements presentation. We believe that our audit provides reasonable grounds to express our opinion that the consolidated financial statements are credible.

In our opinion, the consolidated financial statements of the Group constitute a credible reflection of its financial status as of December 31, 2009 and of the results of its financial and economic activities over a period from January 1, 2009, and December 31, 2009, (both dates inclusive) in all material aspects and in accordance with the legislation of the Russian Federation concerning the preparation of consolidated accounting reports.

27 April 2010

S. I. Romanova
Director General Nexia Pacioli LLC

T. D. Pavlova
Audit Administrator (General audit qualification certificate No. 044587 dated April 25, 2002, concerning general audit, (permanent). Included in the Register of Auditors and Audit Organizations NP IPAR on October 30, 2009 under Primary Registration Number 20202001716)

Appendix 5. Audit Report by ZAO PricewaterhouseCoopers Audit on Non-Financial Reporting of the State Atomic Energy Corporation ROSATOM in 2009. An Independent Auditor's Report

Audited entity

State Atomic Energy Corporation ROSATOM (hereinafter referred to as the Corporation)

Subject

We conducted an audit to provide independent assurance of the aspects associated with drawing up the Annual Report for 2009 of the Corporation as below.

Data and numerical values disclosed in the Annual Report 2009 of the Corporation regarding aspects as follows:

- activity indicators and data of the 2009 activity given in the Table of the Use of Standard Disclosures and Performance Indicators of GRI (G3) related to environmental protection, personnel, safety and socioeconomic issues.

Our audit was conducted regarding the 2009 data only.

Criteria

- Certain procedures and internal processes of sustainability reporting according to which the Corporation collects, processes and summarizes information;
- Sustainability Reporting Guidelines of Generation 3 issued by the Global Reporting Initiative (hereinafter referred to as GRI G3) in October 2006.

Ответственность и методология

Accuracy and completeness of sustainability activity indicators are limited to features and methods of determining, calculation and assessment of such data initially inherent therein. In this context, our report of an independent auditor should be considered together with internal sustainability reporting provisions, definitions and procedures of the Corporation.

Responsibility for the subject and application of criteria rests with the Corporation management.

Our responsibility is provide a statement on the subject basing on our procedures for obtaining evidence in accordance with the International Standard on Assurance Engagements (ISAE) 3000 “Assurance Engagements Other Than Audits or Reviews of Historical Financial Information” approved in December 2003 by the International Auditing and Assurance Standards Board (IAASB) and with standard AA1000AS issued by the AccountAbility in 2003.

Main audit procedures

Our audit procedures included as follows:

Site visits:

- interviews of employees of the Corporation responsible for collection of information and preparation of the Annual Report aimed at assurance of understanding and application correctness of the Corporation’s internal documents which regulate sustainability reporting;
- visits to the Priargunsky Industrial Mining and Chemical Union (JSC PIMCU), Khiagda Ore Field (JSC Khiagda) and headquarters of JSC ARMZ in Moscow, Russia;
- visit to headquarters of JSC Concern Rosenergoatom in Moscow, Russia;
- participation in dialogues and public consultations with stakeholders on May 14, May 18 and June 9, 2010.

Evaluation of key numerical indicators:

- sample testing of evidence confirming the data in the Table of the Use of Standard Disclosures and Performance Indicators of GRI (G3) of the Annual Report of the Corporation to check on their completeness, accuracy, relevance and consistency.

Review of documentation and analysis of related policy and basic principles:

- sample check of related documentation, including internal policies, management structure and sustainability reporting structure of the Corporation.

Review of the Annual Report 2009 of the Corporation:

- check of the content of the Annual Report 2009 of the Corporation for conformance with the application levels of GRI G3.

Statement

Basing on results of our work described in this report and evaluation of criteria:

- we noted no any of facts, which could be a ground to presume that the activity indicators and data mentioned in the Subject and disclosed in the Annual Report of the Corporation (Table of the Use of Standard Disclosures and Performance Indicators of GRI (G3)) incredibly reflect sustainability-related activities of the Corporation;
- we noted no any of facts, which could lead to a conclusion that the Annual Report 2009 of the Corporation does not correspond to Application Level C+ of GRI Guidelines G3.

ZAO PricewaterhouseCoopers Audit

Moscow, Russia
September 2010

Appendix 6

OPEN CONSOLIDATED FINANCIAL STATEMENT OF THE STATE ATOMIC ENERGY CORPORATION ROSATOM FOR 2009

Appendix 6. Balance-Sheet of Open Consolidated Financial Statements as of 31.12.2009, million RUB

ASSETS	Line code	Beginning of the accounting period	End of the accounting period
1	2	3	4
I. NONCURRENT ASSETS			
Intangible assets	110	3,668	10,616
including:			
goodwill	115	2,196	7,115
fixed assets	120	331,418	362,443
Construction in progress	130	221,997	315,865
Income yielding investments into tangible assets	135	1,247	254
Long-term financial investments	140	61,006	116,455
Deferred tax assets	145		
Other noncurrent assets	150	2,146	5,151
TOTAL under Section I	190	621,482	810,784
II. CURRENT ASSETS			
Inventories	210	152,227	153 476
including:			
– raw materials, materials and similar assets	211	48,458	46,747
– rearers and fatteners	212	302	300
– costs related to production in progress	213	66,835	77,765
– finished products and goods for resale	214	28,760	19,210
– shipped goods	215	1,520	3,791
– unexpired costs	216	5,828	5,659
– other inventories and expenses	217	524	4
Input value-added tax	220	17,315	24,660

Accounts receivable (that are due beyond 12 months)	230	18,126	38,828	
including:				
– buyers and customers	231	6,398	2,071	
– advances made	232		13,035	
Accounts receivable (due beyond 12 months)	240	118,847	169,457	
including:				
– buyers and customers	241	28,192	46,727	
– unpaid dividends of participation in other organizations	242	11,192	125	
– advances made	243		68,948	
Short-term financial investments	250	24,146	64,995	
Cash assetsства	260	46,646	88,088	
Other current assets	270	6,198	7,293	
TOTAL under Section II	290	383,505	546,797	
BALANCE	300	1,004,987	1,357,581	

LIABILITIES	Line code	Beginning of the accounting period	End of the accounting period
1	2	3	4
III. CAPITAL AND RESERVES			
Target financing	410	986	2,815
Authorized capital (fund) of organizations whose property is subject to transfer to the Corporation according to legislation	415	459,888	19,207
Capital surplus	420	88,603	695,828
including:			
– asset contribution by the Russian Federation	421	45,952	650,379
Capital reserve	430	23,917	84,232
including:			
– reserves formed according to legislation	431	23,384	83,204
– reserves formed according to constituent documents	432	533	1,028
Retained profit (loss)	470	103,225	116,089
For reference:			
– profit (loss) in accounting year	471	15,179	37,725
Profit (loss) received from INTER RAO UES OJSC before entry into the group	475	(181,929)	
TOTAL under Section III	490	494,690	918,171
MINORITY INTEREST	480	118,013	39,908
GOODWILL	499	107,601	13,287
IV. LONG-TERM LIABILITIES			
Borrowings	510	43,307	111,527
Deferred tax liabilities	515	3,200	3,332
Other long-term liabilities	520	6,841	28,988
TOTAL under Section IV	590	53,348	143,847
V. SHORT-TERM LIABILITIES			
Borrowings	610	64,731	49,061
Accounts payable	620	100,251	114,432

including:			
– suppliers and contractors	621	44,571	46,060
– accounts due to personnel of the organization	622	4,193	4,373
– accounts due to state extra-budgetary funds	623	1,063	827
– taxes and fees payable	624	11,653	12,485
– other creditors	625	38,771	23,054
– advances received	626		27,633
Dividends payable	630	30	389
Deferred income	640	61,201	71,701
Expenses and provisions	650	4,605	5,421
including:			
Reserves generated according to Government Resolutions No. 68 and No. 576 (except specified on p. 431)	651	4,108	4,762
Other short-term liabilities	660	517	1,364
TOTAL under Section V	690	231,335	242,368
BALANCE	700	1,004,987	1,357,581
Statement of value charged on off-balance accounts			
Rented fixed assets	910	42,824	94,961
including leased assets	911	5,898	7,445
Goods and materials accepted for custody	920	13,456	14,447
Goods accepted on commission	930	1,409	2,007
Indebtedness of insolvent debtors written off to losses	940	4,386	3,659
Securities received for obligations and payments	950	21,631	38,856
Securities given for obligations and payments	960	44,315	70,782
Housing stock depreciation	970	103	100
Depreciation of land improvement facilities and similar sites	980	93	97
Intangible assets received for use	990	1,706	2,115

Director General
S. V. Kirienko

Chief Accountant
V. A. Andrienko

Profit and Loss Statement of Open Consolidated Financial Statements in 2009, mil. RUB

Indicators	Line code	For accounting period	For similar period in the previous year
1	2	3	4
General income and expenses			
Proceeds (net) from sale of goods, products, work operations, and services (exclusive of VAT, excises and similar mandatory payments)	010	458 200	361 503
Prime cost of sold goods, production, work operations, and services	020	(261 071)	(220 724)
Gross profit	029	197 129	140 779
Commercial expenses	030	(10 928)	(6 302)
Management expenses	040	(44 076)	(40 311)
Profit (loss) from sales	050	142 125	94 166
Other income and expenses			
Interest receivable	060	7 478	3 102
Interest payable	070	(13 823)	(6 763)
Participation capital	080	645	221
Other income	090	173 935	123 851
Other expenses	100	(252 338)	(182 636)
Profit (loss) before taxes	140	58 022	31 941
Deferred tax assets	141	2 139	1 136
Deferred tax liabilities	142	(1 555)	(470)
Current profit tax	150	(19 979)	(16 286)
Other compulsory payments		(177)	136
Net profit (loss) in accounting period without minority interest		38 450	16 457
Minority interest	165	(725)	(1 278)
Net profit (loss) in accounting period	190	37 725	15 179
For reference			
Constant tax liabilities (assets)	200	(12)	(7 954)

Director General
S. V. Kirienko

Chief Accountant
V. A. Andrienko

Appendix 7. LIST OF ROSATOM ORGANIZATIONS

Legend

- **Atomenergoprom, JSC** – an organization which data are included in the disclosed consolidated financial statement for 2009.
- Expedition No. 2, FSUE – an organization within the budget perimeter adopted for 2010.
- Bazalt, FSUE – an environment significant organization.

STATE ATOMIC ENERGY CORPORATION ROSATOM

Nuclear Power Complex

- **A.A. Bochvar High Technology Research Institute of Inorganic Materials, JSC**
- AEM-invest, CJSC
- AEM-leasing, CJSC
- **Afrikantov Experimental Design Bureau for Mechanical Engineering, JSC**
- Alliancetransatom, JSC
- All-Russian Production Association Zarubezhatomenergostroy, JSC
- All-Russian Research and Development Institute of Nuclear Power Engineering, JSC
- **Angarsk Electrolysis and Chemical Complex, JSC**
- ARAKO spol. s r.o.
- Argon, LLC
- Armenian-Russian Mining Company, CJSC
- ASE-TPE, LLC
- ATOMENERGOMASH CYPRUS LIMITED
- **Atomenergomash, JSC**
- **Atomenergoproekt, JSC**
- **Atomenergoprom, JSC**
- **Atomenergoremont, JSC**
- Atomenergosbyt, LLC
- Atomnasos, CJSC
- **Atomredmetzoloto, JSC**
- Atom-Service, JSCOAO “Атом-Сервис”
- Atomspetskomservis, JSC
- Atomspetstrans, JSC

- **Atomstroyexport, CJSC**
- Atomstroyexport-Finance, LLC
- Atomstroyfinance, LLC
- Atomstroyinvest, LLC
- **Atomtechenergo nuclear power plants commissioning, operation improvement and management, JSC**
- Atom-Trans Service, CJSC
- Atomtrans, JSC”
- Atomtruboprovodmontazh, CJSC
- ATOM-TRUST, LLC
- Automotive Transport Directorate, LLC
- Baikal Hotel Complex, JSC
- Beloyarsk NPP-2, JSC
- Biryuza-M, LLC
- Capital Projects Directorate, JSC
- Capital projects Directorate, LLC
- Carbon and Composite Material Plant, LLC
- **Central Design Bureau of Machine Building, JSC**
- Centrotech-SPb, CJSC
- Chemical and Metallurgical Plant, JSC
- **Chepetsky Mechanical Plant, JSC**
- Commercial center 100, JSC
- Compan, LLC
- Construction and Installation Directorate No. 1, LLC
- Construction and Installation Directorate No. 2, LLC
- Construction Economics Directorate, JSC
- Conversion NIKIET, CJSC
- Crown, LLC
- **Dalur, CJSC**
- Dedal Scientific and Production Complex, JSC
- Design and Engineering Service, CJSC
- Design-Prospecting and Scientific-Research Institute of Industrial Technology, JSC
- Desna-TV Broadcasting Company, LLC
- Direct Investment Company RusAtom-Stroy-Invest, CJSC
- Eastern Energy Company, JSC
- East-European Leading Scientific Research and Design Institute for Energy Technologies, JSC
- Effective Energy N.V
- EFKON, JSC
- EGMK Proekt, JSC
- Ekibastuz Station GRES-2, JSC
- Electrogorsk Research and Engineering Center on Nuclear Power Plant Safety, JSC
- Electroluch, CJSC
- Elektrostal Water Treatment Facilities, LLC
- ELEMASH MAGNIT, LLC
- ELEMASH SPETSTRUBOPROKAT, LLC
- ELEMASH-AVTO, LLC
- ELEMASH-OTIS, LLC
- ELEMASHSPETSTRANS, LLC
- ELEMASH-TEK, LLC
- Elkonsky Mining and Metallurgical Combine, CJSC
- Elvaks Factory, FSUE
- Energoatominvest, LLC
- Energocomplex, LLC
- ENERGOFINANSCONSULT, LLC

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- Energomash Trading House, CJSC
- Energomashinostroyenie, CJSC
- Energoremont, LLC
- **Energospetsmontazh, JSC**
- Engineering Center for Safety and Diagnostics Techatomservice, CJSC
- **Engineering Center Russian Gas Centrifuge, JSC**
- Engineering Centre for Diagnostics of NPP Components at NIKIET, LLC
- Engineering Centre of Nuclear Equipment Strength and Research in Material Behavior, LLC
- Engineering Company AEM-Technologies, CJSC
- **Engineering Company ZIOMAR, JSC**
- **Experimental & Design Organization OKB Gidropress, JSC**
- Experimental Bureau for Process Design and Production of Glass Articles, FSUE
- Experimental Refractory Metals and Hard Alloys Plant, JSC
- Federal State Research and Design Institute of Rare Metal Industry – Giredmet, JSC
- Freecom Trading Limited
- Gornoye Uranium Mining Company, CJSC
- Health Resort and Rehabilitation Center Cheptsa, LLC
- Hotel Complex Glazov, LLC
- Hotel Sosnovy Bor, CJSC
- Housing Utility DOM, LLC
- I&C Subsidiary OKSAT NIKIET, LLC
- Industrial Energy Company, CJSC
- Information Technology Specialized Company, LLC
- Institute for Physical and Technical Problems, JSC
- **Intellectual Energy Engineering, JSC**
- INTER RAO HOLDING B.V.
- INTER RAO UES Baltic, JSC
- INTER RAO UES Central Asia, LLP
- INTER RAO UES FINANCE, LLC
- **INTER RAO UES, JSC**
- International Uranium Enrichment Center, JSC
- INTERNEXCO GmbH
- Invest-Service, LLC
- Isotope, JSC (Khabarovsk)
- Ispytatelny Stend of Ivanovskaya GRES, CJSC
- Itmanovo Agriculture Firm, LLC
- KABUSHIKI KAISHA TENEX-JAPAN (TENEX-Japan Co.)
- Karkhy Geologiya, LLC
- Kazakhstan-Russian Nuclear Stations, JSC
- **Khiagda, JSC**
- **Kovrov Mechanical Plant, JSC**
- Krasnaya Zvezda, FSUE
- Krasnoyarsk Design and Survey Institute VNIPIET, JSC
- Leading Research Institute of Chemical Technology, JSC
- Lunnoye, CJSC
- Machine Engineering Facility CMP, LLC
- **Machine-Building Plant ZiO-Podolsk, CJSC**

- Management Center for Nuclear Industry Non-Core Assets, JSC
- **Mashinostroitelny Zavod, JSC**
- Media Center of Nuclear Industry, JSC
- Moldavskaya GRES, CJSC
- Molniya Machine-Building Plant Production Association, FSUE
- **Moscow Polymetal Plant, JSC**
- MSZ-MEKHANIKA, LLC
- **N.A. Dollezhal Research and Development Institute of Power Engineering, JSC**
- Nalim, LLC
- **National Technical Physics and Automation Research Institute, JSC**
- NCCP Catering, LLC
- NCCP Motor Transport Directorate, CJSC
- NCCP-Energy, LLC
- NCCP-Engineering, CJSC
- NCCP-Instrument, LLC
- New Composite Materials Company, GSC
- Nina Trading House, LLC
- **Nizhniy Novgorod Engineering Company Atomenergoproekt, JSC**
- Nizhnyaya Tura Machine Engineering Plant Venta, JSC
- Non-public Educational Establishment – Central Advanced Training Institute
- Non-public Educational Establishment – Moscow Advanced Training Institute Atomenergo
- Non-public Educational Establishment – Supplementary Vocational Education Institute ATOMPROF
- **Northern Construction Directorate, JSC**
- Novosibirsk VNIPIET, JSC
- **Novosibirsk Chemical Concentrates Plant, JSC**
- Novouralsk Instrumentation Plant, LLC
- Novouralsk Research and Design Center, LLC
- NPK Khimpromengineering, JSC
- Nuclear Industry Information and Exhibition Center, JSC
- Nuclear Physics Research – Science and Technology Center
- Nuclear Power Financial and Production Company, CJSC
- Nukem Technologies GmbH
- OKB-Nizhniy Novgorod, CJSC
- Oktyabrsky, LLC
- Orbita-Invest, LLC
- Orlovskaya Mining and Chemical Company, CJSC
- Otdykh, CJSC
- **Priargunsky Industrial Mining and Chemical Union, JSC**
- Pribor-Service, LLC
- **Production Association Electrochemical Plant, JSC**
- PSKh Fryazevo, LLC
- Public Catering Organization, LLC
- Public Catering, LLC
- RAO Nordic Oy
- Real Estate Directorate Estate, LLC
- Recreation and Sports Center OLenKur, JSC

Nuclear Power Complex

- Recreation Facility Bylina, CJSC
- Recreation Facility Siniy Utes
- **Research and Design Institute of Installation Technology – Atomstroy, JSC**
- Runex Uranium RTY LTD
- Rusburmash, CJSC
- Ruskorp Sung Won UEIP Co. Ltd.
- **Russian Concern for Production of Electrical and Thermal Energy at Nuclear Power Plants, JSC (Rosenergoatom)**
- **Russian Energy Machine Building Company, CJSC**
- Russian Gas Centrifuge, LLC
- Saint Petersburg ISOTOPE, JSC
- **Saint Petersburg Research and Design Institute ATOMENERGOPROEKT, JSC**
- Sangtudinskaya Hydro-1, JSC
- Scientific and Production Association – Central Research Institute of Engineering Technology, JSC
- Scientific and Production Association Atomenergotekhnika, LLC
- Scientific and Production Center for Conversion, JSC
- Scientific and Production Enterprise VNIIKhT GEOTEP, LLC
- Scientific and Testing Center for NPP Equipment, JSC
- Semiconductor Silicon Plant, JSC
- Shchokotovo, LLC
- **Siberian Chemical Combine, JSC**
- Sibirian Design and Survey Institute Orgstroyproekt, JSC
- SNV, LLC
- Sovlax-Batareya, CJSC
- Specialized Construction and Installation Directorate Lenatomenergostroy, JSC
- Specialized Scientific Research Institute for Instrumentation Engineering, JSC
- Společnost s ručením omezeným Liges
- St. Petersburg Research and Survey Institute Energoizyskaniya, JSC
- Stalenergoproekt, LLC
- State Specialized Design Institute, JSC
- SVERD Engineering and Fabrication, Inc.
- SverdNIIkhimmash-SPK, CJSC
- SverdNIIkhmmash-RAO, CJSC
- Technology Center TENEX, CJSC
- **Techsnabexport, JSC**
- TENEX-Complect, LLC
- TENEX-Korea Co., Ltd.
- TENEX-Logistics, CJSC
- TENEX-Service, CJSC
- Teplovodokanal, LLC
- TGR Enerji Electrik Toptan Ticaret A.S.
- Tochmash, LLC
- TRADEWILL LIMITED
- Transport and Handling Machine Engineering, CJSC
- Treatment and Recreation Complex – Resort Kolontayevo, JSC
- Turbine Machine Building, LLC
- **TVEL, JSC**
- **TVEL-INVEST, CJSC**
- TVEL-INVEST-Technology, CJSC

- TVEL-LEASING, CJSC
- **TVEL-STROY, CJSC**
- United Company Enrichment and Sublimation Complex, JSC
- **United Service Company ARMZ, LLC**
- Urals Design and Survey Institute VNIPIET, JSC
- **Urals Electrochemical Combine, JSC**
- **Urals Gas Centrifuge Plant, LLC**
- Uranium Enrichment Center, CJSC
- Uranium Mining Company, JSC
- Ventilation Systems, CJSC
- **Vladimir Production Amalgamation "Tochmash", JSC**
- VNIPIET, JSC
- Volgodonsk Installation Directorate, LLC
- VOSTOK POWER RESOURCES LIMITED
- Zhilkomservis, JSC

Nuclear Weapons Complex

- **A.P. Aleksandrov Research and Technology Institute, FSUE**
- All-Russian Research Institute for Experimental Physics, Russian Federal Nuclear Center, FSUE
- Atombezopasnost, Coordinating Center for Design of Safety and Control Systems, FSUE
- Atomzashchitainform, Scientific, Technical and Certification Center for Comprehensive Information Security, FSUE
- Bazalt State Research and Production Enterprise, FSUE
- Central Research Laboratory for Innovative Technologies in the Nuclear Sector, FSUE
- Design Bureau of Automotive Transport Equipment, FSUE
- **Elektrokhimpribor Combine, FSUE**
- **Eleron, Specialized Research and Production Complex, FSUE**
- EnergoAvtorans, LLC
- Expedition No. 2, FSUE
- Housing management Company, LLC
- Institute of Strategic Stability, FSUE
- **Instrumentation Factory, FSUE**
- **Mayak Production Association, FSUE**
- **N.L. Dukhov All-Russian Research Institute of Automatics, FSUE**
- **Obespecheniye RFNC-VNIIEF, JSC**
- Research Institute of Instrumentation, FSUE

Nuclear Weapons Complex

- Sarov Electric Grid Company, JSC
- Sarov Gas Supply Company, JSC
- Sarov Generating Company, CJSC
- Sarov Heating Grid Company, JSC
- **Sever, Production Complex, FSUE**
- **Start, Production Complex (PC Start named after M.V. Protsenko), FSUE**
- **Ural Electromechanical Integrated Plant, FSUE**
- **Ye.I. Zababakhin All-Russian Research Institute of Industrial Physics, Russian Federal Nuclear Center, FSUE**
- **Yu.Ye. Sedakov Research Institute of Measuring Systems, Federal Research and Production Center, FSUE**

Nuclear and Radiation Safety Complex

- Epron, Center of Salvage and Underwater Operations, FSUE
- Far-Eastern Federal Enterprise for Radioactive Waste Management, FSUE
- Federal Center for Nuclear and Radiation Safety (SEC NRC), FSUE
- **Izotop, Trans-Regional Association, JSC**
- Izotope, JSC (Yekaterinburg)
- **Mining and Chemical Combine, FSUE**
- Northern Federal Enterprise for Radioactive Waste Management, FSUE
- RosRAO, Radioactive Waste Management Company, FSUE
- Scientific and Technical Complex – Emergency Technical Center of Minatom of Russia, FSUE (St. Petersburg)
- Situation and Crisis Center of ROSATOM, FSUE
- V.G. Khlopin Radium Institute, Research and Production Complex, FSUE

Nuclear Icebreaker Fleet

- **Atomflot, FSUE**

Scientific and Technical Complex

- **A. I. Alikhanov Institute of Theoretical and Experimental Physics, State Scientific Center of the Russian Federation, FSUE**
- **A. I. Leipunsky Institute of Physics and Power Engineering, State Scientific Center of the Russian Federation, FSUE**
- AKME-Engineering, JSC
- Central Research Institute for Management, Economy and Information of ROSATOM, FSUE
- **D. Efremov Research Institute of Electrophysical Instrumentation, FSUE**
- **Institute of High-Energy Physics, State Scientific Center of the Russian Federation, FSUE**
- Institute of Reactor Materials, JSC OAO
- Interdepartmental Coordinating Scientific and Technical Center of Nuclide Technology, FSUE
- Joint Venture Beijing CAEI-RIAR Radioisotope Co. Ltd.
- L. Ya. Karpov Physical-Chemical Research Institute, FSUE
- Luch, Research Institute – Research and Production Complex, FSUE
- Russian-Belarus Joint Venture Isotope technologies, CJSC
- **State Research Center – Research Institute of Atomic Reactors, JSC**
- State Research Institute of Graphite-Based Structural Materials, FSUE
- Tekhnopark-Tekhnology, JSC
- Troitsk Institute of Innovative and Thermonuclear Research, State Scientific Center of the Russian Federation, FSUE

Auxiliary Infrastructure

- Administrative Building Management Company, FSUE
- **Atom-okhrana, Departmental Security Agency of Rosatom, FSUE**
- **Child Development Center – Kindergarten Doshkolenok, SUEE**
- **Federal Property Management Center, FSUE**
- **Interdepartmental Specialized Training Center, Federal State Institution (FSI MSUS)**
- **Public Catering Combine, FSUE**

Appendix 8

INDICATOR CHART OF PUBLIC REPORTING OF ROSATOM

Appendix 8. Indicator Chart of Public Reporting of ROSATOM

For reference: in 2009, in frames of the project "Development and Introduction of the Public Reporting System of ROSATON and its Organizations" the work was started to produce a system of public reporting indicators. The methodology focuses on the use of indicators for preparation of integrated reports of the Corporation and its key organizations, on features of the nuclear industry and its governance system (a combination of public and corporate approach to governance).

The indicators disclose performance in two domains: the industry-wide strategy and performance for sustainable development. The system incorporates both financial and non-financial indicators.

The work on building up the system of indicators will continue in 2010–2011.

The Table contains indicators used in this Annual Report.

Indicators	Chapter	Page
1. Financial and Economic Performance		
Net profit of ROSATOM, its organizations, and subordinate enterprises	Key Results of 2009	17
Net assets of the organizations and subordinate enterprises	Key Results of 2009	17
Profit of ROSATOM, its organizations and subordinate enterprises	Key Results of 2009	17
2. Market Provisions		
Share of electricity produced by nuclear power plants in the total power output in Russia	Nuclear Power Complex	78
Share of the global uranium mining market	Nuclear Power Complex	85
Share of the global uranium enrichment market	Nuclear Power Complex	90
Share of the global nuclear fuel fabrication market	Nuclear Power Complex	92
Uranium mining output	Key Results of 2009	17
Uranium resources	Key Results of 2009	17
Power output by nuclear power plants	Key Results of 2009	17
Number of power units under construction in Russia	Nuclear Power Complex	76, 102
Number of power units under construction abroad	Nuclear Power Complex	76, 106
Number of fabricated fuel assemblies	Nuclear Power Complex	76
Export proceeds (excluding the HEU Deal)	Key Results of 2009	17

3. Management and Production Performance		
Capacity factor of NPPs	Nuclear Power Complex	17, 78
Reduction in fixed costs	Key Results of 2009	17
Labor efficiency in organizations and subordinate enterprises	Key Results of 2009	17
Implementation of IT-projects	Information Technologies	279–280
4. International Cooperation		
Number of intergovernmental and interdepartmental agreements	Development of an International Legal Infrastructure for Promoting Russian Companies on the World Markets of Nuclear Technologies and Services and for Supporting International Projects	64
Number of countries where legal basis for cooperation is available	Development of an International Legal Infrastructure for Promoting Russian Companies on the World Markets of Nuclear Technologies and Services and for Supporting International Projects	64
5. Execution of Functions Assigned by the State		
Budgetary appropriations	Budgetary Appropriations	55
Execution of the government defense order	Key Results of 2009	17
Number of inspections by state regulatory bodies	Budgetary Appropriations	55
Results of inspections by state regulatory bodies	Budgetary Appropriations	55

6. Competitiveness of Technologies		
Share of high-tech production in proceeds	Key Results of 2009	17
Number of patents	Science and Technology Complex	120
Number of developed technologies and pilot samples	Science and Technology Complex	120
Research and Development allocations by ROSATOM	Science and Technology Complex	116
7. Radiation Impact on the Environment		
Total activity of radionuclides released into the atmosphere	Environmental Impact	228
Total activity of radionuclide discharges into water bodies	Environmental Impact	223
Volume of effluents containing radionuclides	Environmental Impact	223
Area of contaminated territory	Environmental Impact	231
Area of rehabilitated territory	Environmental Impact	231
Costs of radiation impact reduction measures	Environmental Protection Costs	248
8. Nuclear and Radiation Safety		
8.1. Safety of Nuclear and Radiation-Hazardous Facilities		
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Accumulated SRW	Nuclear and Radiation Safety Complex	156	
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Feedback Questionnaire

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You have read the first annual public report of the State Atomic Energy Corporation ROSATOM. Your opinion of the report is extremely important to us. We would appreciate your contribution to improving quality of the report by filling out the Questionnaire.

You can send the filled out questionnaire to the following address: 24 Bolshaya Ordynka Street, 119017, Moscow; Care of the Communications Department and/or Care of the Responsible Secretary of the Committee on Public Reporting (MVGalushkina@rosatom.ru).

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Were you personally influenced by conclusions made by the independent auditor and by public assurance?

Yes ☐ No ☐

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Excellent ☐ Good ☐ Satisfactory ☐ Unsatisfactory ☐

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