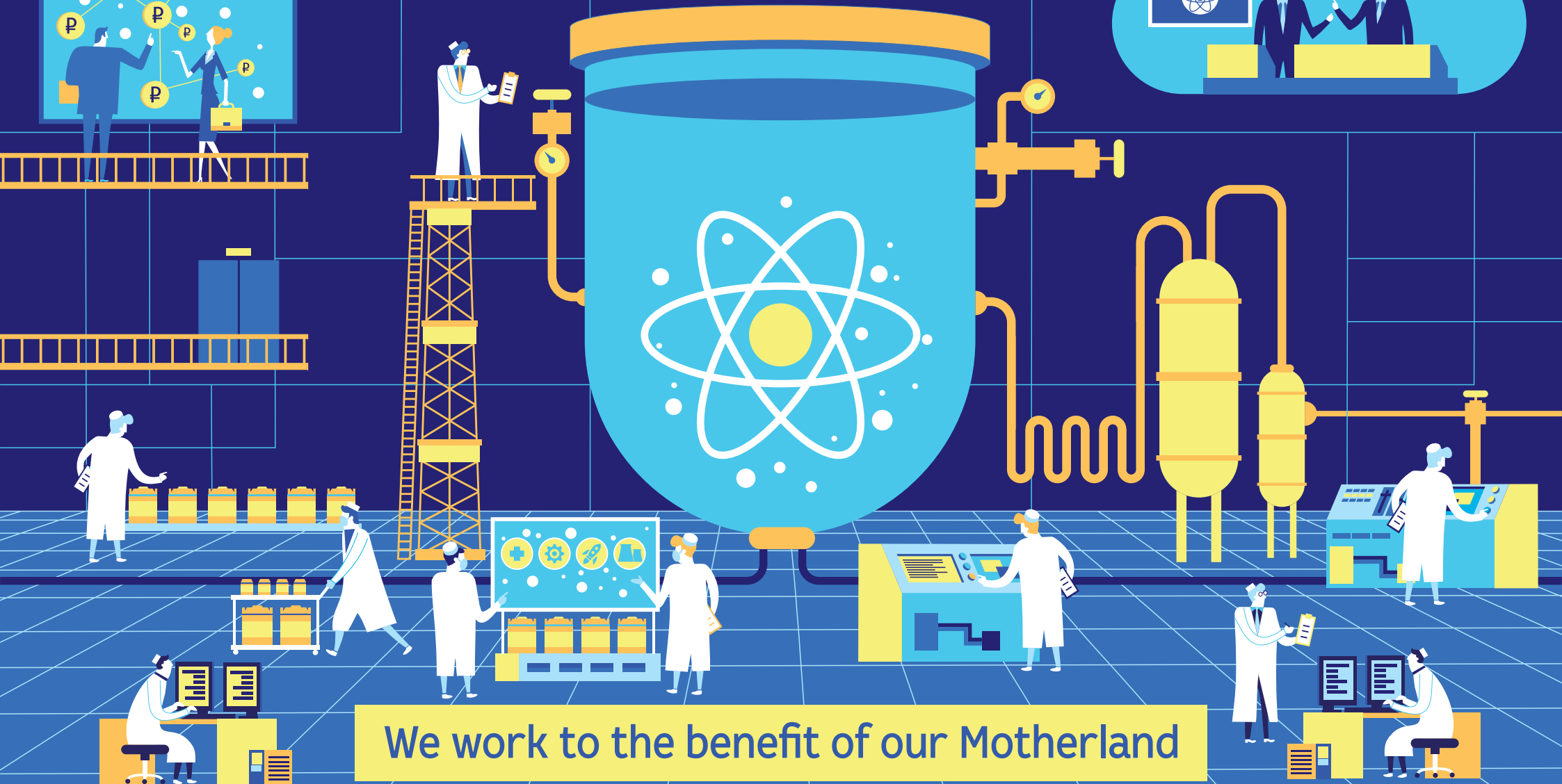


Annual Report 2018



We work to the benefit of our Motherland



**Joint Stock Company
«State Scientific Center –
Research Institute
of Atomic Reactors»**

Annual Report of 2018

Approved by the Resolution of Board
of Directors, JSC "SSC RIAR" (Protocol # 550 as of May 24, 2019)

Director of JSC "SSC RIAR"

A.A. Tuzov

Dimitrovgrad
2019

UDC 621.039=161.1
SRSTI 58.33.01
LBC 31.4

Annual Report JSC "SSC RIAR" 2018 [Electronic resource]. – E-text data (~ 8 MB). – Dimitrovgrad: JSC "SSC RIAR", 2019. – 176 pages – 1 RAM disk (CD-ROM); 12 cm – System requirements: Pentium III or better; 512 MB RAM; 35 MB of available hard disk space; Windows 95/98/XP/7/8; Adobe Acrobat Reader; CD-ROM 2x or higher; mouse. – Heading from the title screen.

GRI
102-54
103-1

The Report covers the key financial, economic and production results of JSC "SSC RIAR" activities for the reporting period as well as the results of the sustainability-related activities (economic, ecological and social impact on the world around us). The Report has been prepared in conformity with the GRI Standards. The Report focuses on the strategy and perspectives of JSC "SSC RIAR" as well as on the activities targeted at enhancing the effectiveness of corporate management and nuclear and radiation safety. The Report has been issued on a voluntary basis and is addressed to a wide audience.

ISBN 978-5-94831-185-2

© Joint Stock Company
"State Scientific Center –
Research Institute of Atomic Reactors"
(JSC "SSC RIAR"), 2019

Improvement of efficiency, extension of international cooperation and growth of industry-specific cooperation are priorities of RIAR's sustainable development



29
partner countries

28
foreign delegations

More than 15
long-term international R&D contracts



Russia's Leader
in the radionuclides production

**IAEA
ICERR**

Base Organization
of the CIS Member States on Intergovernmental Scientific-Technical Information Exchange



0
borrowed funds

5 339
mln rub –
transfers from buyers and customers

4 145
mln rub –
transfers to suppliers and sub-contractors (accounting investments)

For the Report to be more useful and laconic, we have included links to additional sources of information, including the RIAR's website. This integrated report has been prepared in accordance with the Guidelines for Sustainable Development Reporting (GRI Standards) and regulatory documents in the field of corporate and financial reporting

GRI
102-54

The report uses the following public reporting indicators:



JSC "SSC RIAR" indicator



ROSATOM indicator



GRI Standards



UN sustainable development indicator

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Key Performance Indicators

GRI
102-7
102-10
6
8
2.5.10
2.10.2
3.1.2
3.1.8

Difference between indicators in 2018 and in 2017

Sales revenue, M RUB

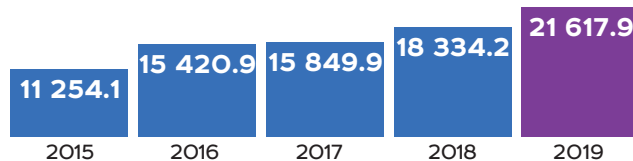
+779.3

* Accounting the experimental base financing



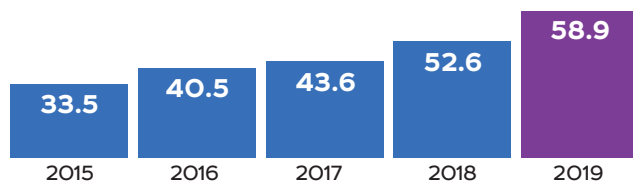
Net assets, M RUB

+2 484.3



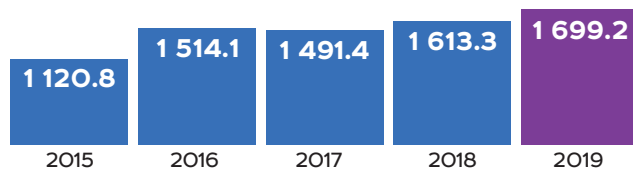
Average monthly salary budget, K RUB / month per person

+9.0



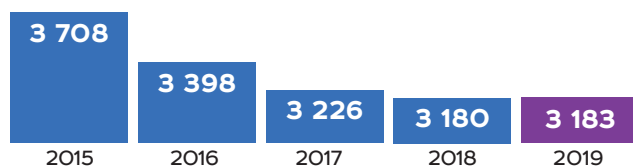
Labor capacity, K RUB / person

+121.9



Average staffing number, persons

-46

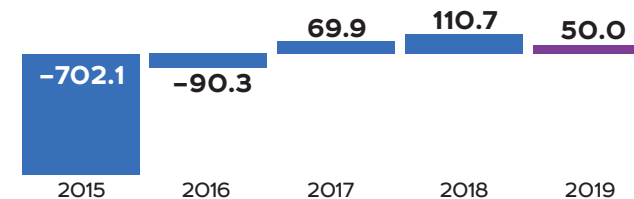


■ – Actual value

■ – Estimates

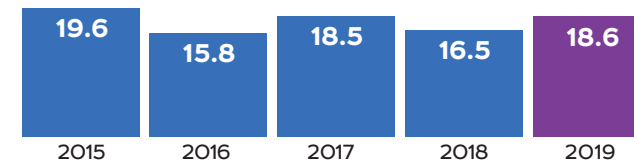
Net profit (loss), M RUB

+40.8



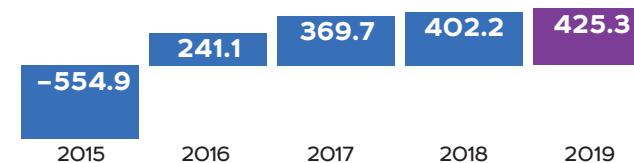
Share of the administrative expenses in the revenue, %

-2.0



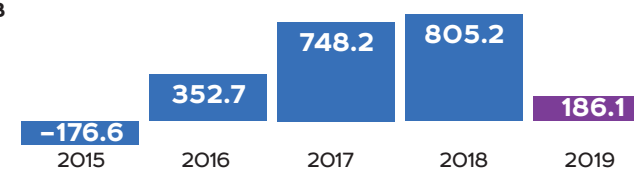
EBITDA, M RUB

+32.5



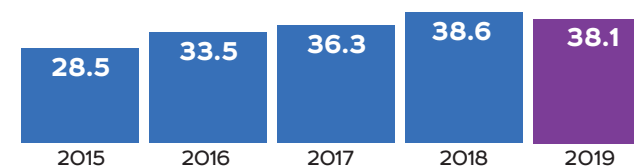
Adjusted free cash flow, M RUB

+57.0



Foreign receipts, M \$

+2.3



The dynamics of key performance indicators of JSC "SSC RIAR" is presented in details in Sub-section 4.1 «Financial Capital» and 4.4 «Human Capital» herein

Appeal of Directors



Pavel ZAITSEV

Director General
of JSC "Science and Innovations"

GRI
102-14 Dear Colleagues!

JSC "SSC RIAR" is the anchor enterprise of the ROSATOM's Scientific Division being of the key importance for both domestic nuclear industry and development of international business.

To strengthen its technological, production and financial potential, RIAR successfully provides high-tech services and sells radioisotope products.

According to the reporting period results, JSC "SSC RIAR" has demonstrated high-quality implementation of the production plan. The institute has fully achieved the established key performance indicators, some of which are at the top level. The company has exceeded its revenue plan. Over the past years, RIAR's management and personnel have done tremendous work to improve operational efficiency, and RIAR's development program approved in 2018 will ensure its long-term development.

The reporting year of the Russia's nuclear industry was a Year of Science. These are the scientific achievements that determine the ROSATOM's world's leadership for the coming decades. JSC "SSC RIAR" is actively involved in the implementation of advanced projects included in a unified industry roadmap.

In 2018, a macrocontract was signed to design and construct a research reactor for the Nuclear Research and Technology Center in Bolivia. RIAR will implement the project in close cooperation with a number of industry enterprises.

As in previous years, JSC "SSC RIAR" did not have a single nuclear safety violation case classified according to the International Scale of Nuclear Events. Reliable and safe operation of nuclear facilities is still an absolute priority for RIAR, Division and industry as a whole.

RIAR demonstrates a forward movement, which makes it possible to predict the consistent achievement of strategic goals while obligatory maintaining safety principles and following the priorities of sustainable development. The basis of this is the commitment of the RIAR's personnel to such corporate-wide values as safety, efficiency, responsibility for the result, work in a consolidated team, respect, and aim to be always one step ahead. I want to thank RIAR's management and personnel for their diligent and result-oriented work and to express confidence that RIAR's ability to mobilize resources to face new challenges will allow it to successfully cope with any large-scale tasks.



Alexander TUZOV

Director
of JSC "SSC RIAR"

GRI 102-14 Dear Colleagues and Partners!



The Annual Report JSC "SSC RIAR" 2018 is addressed to a wide range of stakeholders and contains detailed information on the RIAR performance in the light of sustainable development.

Speaking about the reporting year results, I would like to start with the successful completion of the three-year financial rehabilitation program, fulfillment of all the commitments undertaken, and achievement of the established indicators in full. As a result of a systematic improvement of efficiency and reduction of costs and time of production processes, we managed to increase the revenues by 3.7 billion rubles and to optimize costs by 1.3 billion rubles. The next key result to be achieved by the RIAR's team is the approval of Development Program until 2022, which includes a set of measures aimed at achieving even more ambitious goals. The total revenue from sales of products and services in 2018 exceeded five billion rubles and again, as in the previous year, the task of obtaining net profit was completed. All contractual obligations and orders are 100 % complete and with guaranteed high quality. The export being a half of the RIAR's revenue, high requirements to the quality management system remain unchanged when working with our foreign customers. And in this regard, once again, it is worth mentioning efforts of relevant RIAR's departments to expand the international cooperation.

The priority of JSC "SSC RIAR" has always been and is the provision of nuclear, radiation,

industrial, and fire safety, labor protection, environmental protection, and trouble-free operation of equipment. In 2018, there were no accidents and occupational incidents.

In the reporting year, RIAR continued work on upgrading the main and auxiliary process equipment in order to increase its efficiency and sustainability. The associated largest project we are implementing now is the refurbishment of the SM reactor core; the project involves specialists from various departments. An important point is that the work is carried out in full accordance with the approved schedule.

We continue paying great attention to the health and well-being of our employees, development of RIAR's habitat; we support industrial-level initiatives related to social, cultural, sports, and environmental aspects. Competent social policy is the most important component of our work. In the reporting year, a new collective labor agreement was concluded providing even more benefits for the RIAR's employees and retired persons; funding for the voluntary medical insurance was increased. The most significant indicator for each employee is the average monthly salary level; over the past three years it has been increased by 1.5 times thus exceeding the amount of 52 thousand rubles. The gained competences and experience, as well as RIAR's business reputation, allow us to look confidently into the future, guarantee the necessary level of capacity utilization, and also make a significant contribution to the development of the Russia's nuclear industry and prosperity of the region and our city.

Key Events

8
17

Rostekhnadzor accepted for consideration a set of documents justifying the operating safety of the SM reactor

The program of financial rehabilitation has been completed

Under the contract with the China Institute of Atomic Energy we have started research in the performance of an experimental PWR fuel assembly in MIR reactor in the boron-lithium water chemistry

Five institute employees were recognized winners of the Industry-level competition "A Person of the Year"

A collective labor agreement for 2018–2021 has been concluded between the employer and employees

JSC "SSC RIAR" is recognized as an organization able to operate nuclear facilities and carry out activities in this field

Long-term contract signed with the EDF Research Center (France) for research in zirconium alloys

JSC "SSC RIAR" has successfully passed through the recertification audit of the integrated management system (quality management system and ecology) for compliance with the requirements of international standards

A RIAR's employee became the winner of the Rosatom State Corporation Contest on awarding prizes to young scientists in the nomination "Defended dissertation"

The AST-1 facility was decommissioned to arrange a temporary storage facility for highly active solid radioactive waste



3.10.1

Awards

Regional-level Awards



23 Certificates of Merit
26 Recognition Letters

Municipal-level Awards



29 Certificates of Merit
38 Recognition Letters and Appreciations
1 person distinguished at the Board of Honor

Institute-level Awards



10 persons awarded with an "Honored Employee" rank
41 Appreciations and Diplomas
48 Certificates of Merit
44 persons distinguished at the Board of Honor

Industry-level Awards



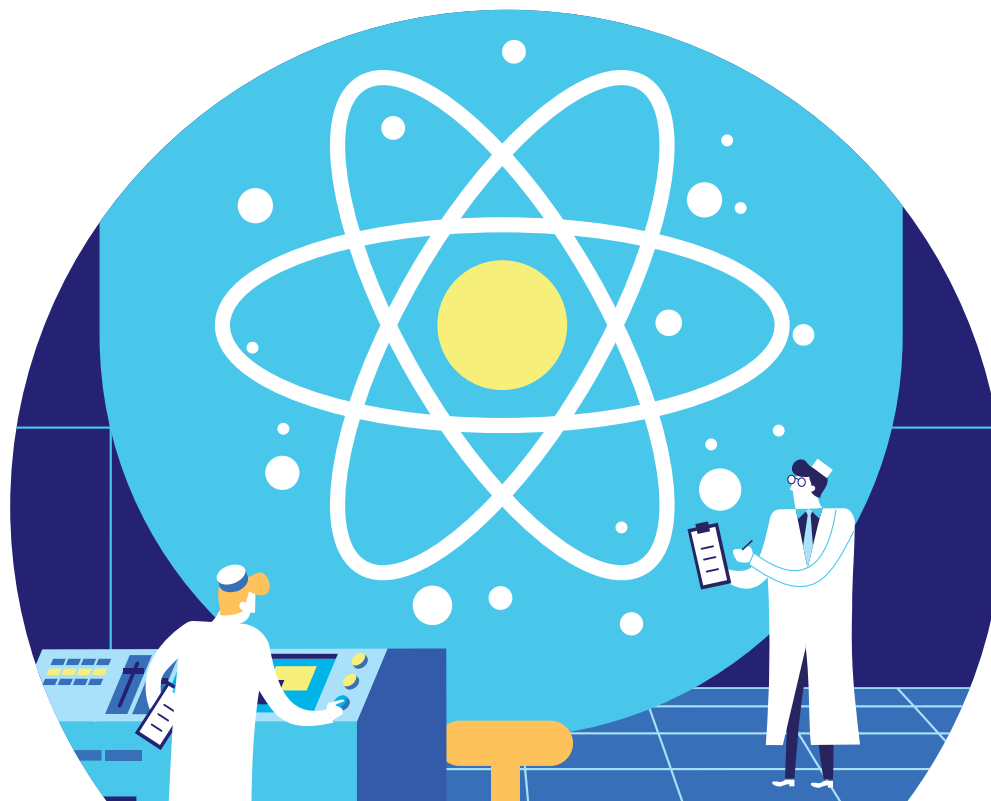
7 Certificates of Merit
10 honorable distinctions
78 Recognition Letters, Appreciations and Diplomas
22 ranks "Veteran of Nuclear Industry"

Public Reporting-related Awards

II place as the Best Public Annual Report among the ROSATOM Divisions

5 Stars for the higher quality of Annual Report (according to the "Expert-RA" Agency ranking)

1



We actively interact

General Information

1.1.

General Information

Company details

Brand name	
Full	Short
Акционерное общество «Государственный научный центр – Научно-исследовательский институт атомных реакторов»*	АО «ГНЦ НИИАР»
Joint Stock Company «State Scientific Center – Research Institute of Atomic Reactors»	JSC «SSC RIAR»
Contact details	
Location and postal address	433510, Russian Federation, Ulyanovsk region, Dimitrovgrad, Zapadnoye Shosse, 9
E-mail	niiar@niiar.ru
Website	http://www.niiar.ru
Phone	+7 (84-235) 9-83-83
Fax	+7 (84-235) 9-83-84

* Hereinafter referred to as JSC "SSC RIAR" or RIAR

Information about Registrar

Brand name	
Full	Short
Joint Stock Company "R.O.S.T. Registrar"	JSC "R.O.S.T. Registrar"
Documents giving the right to conduct business	
Decision of the Board of Directors of JSC "SSC RIAR" as of 30.12.2008 # 4	License of the Federal Commission for the Securities Market as of 03.12.2002 # 10-000-1-00264
Registrar details	
OGRN 1027739216757	TIN 7726030449
Contact details	
Postal address	107996, Russian Federation, Moscow, Stromynka St., 18/13
E-mail	info@rrost.ru
Phone / Fax	+7 (495) 780-73-63 +7 (495) 780-73-67
The date since the Registrar has maintained the register of issuer's inscribed stock	January 11, 2009



Key information about JSC "SSC RIAR" stakeholders

Stakeholders	Legal / postal address	Number of shares by		Share in the charter capital, % by	
		31.12.2017	31.12.2018	31.12.2017	31.12.2018
Joint Stock Company "Atomic Energy Power Corporation"	119017, Moscow, Bolshaya Ordynka St., 24	9 115 605 675	9 503 495 675	53.0235	49.0927
Russian Federation represented by ROSATOM State Atomic Energy Corporation	119017, Moscow, Bolshaya Ordynka St., 24	1 710 732 800	3 489 479 400	9.9510	18.0258
ROSATOM State Atomic Energy Corporation	119017, Moscow, Bolshaya Ordynka St., 24	6 365 286 800	6 365 286 800	37.0255	32.8815

Subsidiary companies and joint ventures of JSC "SSC RIAR"

Company	Activities	Stake, %
NIIAR – GENERATSIYA Ltd.	Generation and supply of energy: electricity, heat, steam, hot water, drinking and general-use water, water discharge	100
Belorussian-Russian Joint Stock Company "Isotope Technologies"	Production, storage, receipt, usage, transportation of radioactive materials and products; design engineering, fabrication, assembling, adjustment, failure assessment, operation, repair and maintenance of radioisotope-based devices and facilities	51
Beijing CIAE-RIAR Radioisotope Technology Co., Ltd	Production of Californium-252 neutron sources and other sources, their integration in devices and equipment, selling at the territory of the People's Republic of China, promotion of Californium-252 sources and other sources for their use in the industry of the People's Republic of China, rendering services for consumers, export of products to other countries of South-East Asia and some Asian countries (Japan, South Korea, Australia)	50

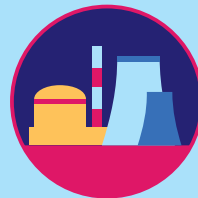
1.2.

Key Competencies. Products and Rendered Services

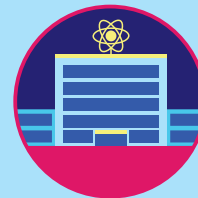
JSC "SSC RIAR" today is the largest R&D center in Russia and the world providing high-tech, science-based services for a wide range of in-pile tests and post-irradiation assays; it is also a key scientific, technological and research-and-production center of the Rosatom State Corporation for the development and production of high-tech innovative products that are in demand in various industries.



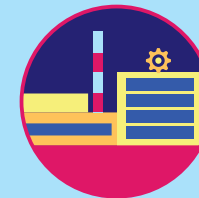
R&D and engineering activities



NPPs



Research Institutes



SPEs

Reactor tests and research
Materials testing
Radionuclide sources and radiochemicals
Radiochemistry and fuel cycles

Radionuclides production and sale



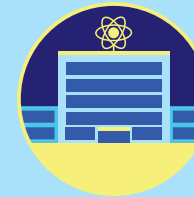
Medicine



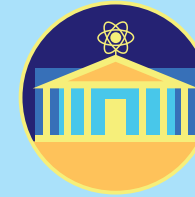
Space



Industry

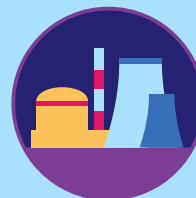


Research Institutes



Universities

Manufacture of FAs containing mixed uranium-plutonium fuel



NPPs

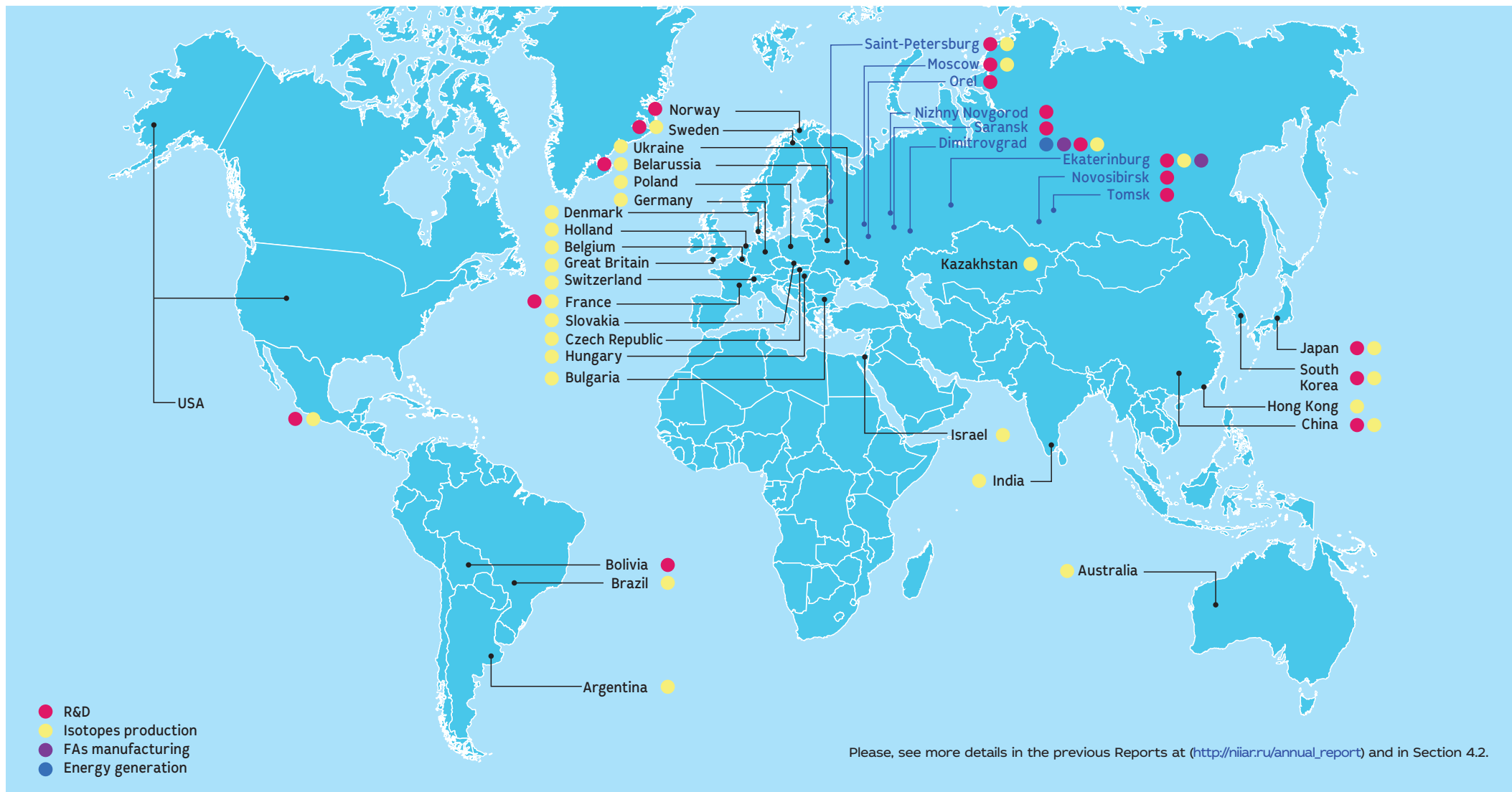
Generation, transfer and sale of energy resources at the regional market



Population

1.3.

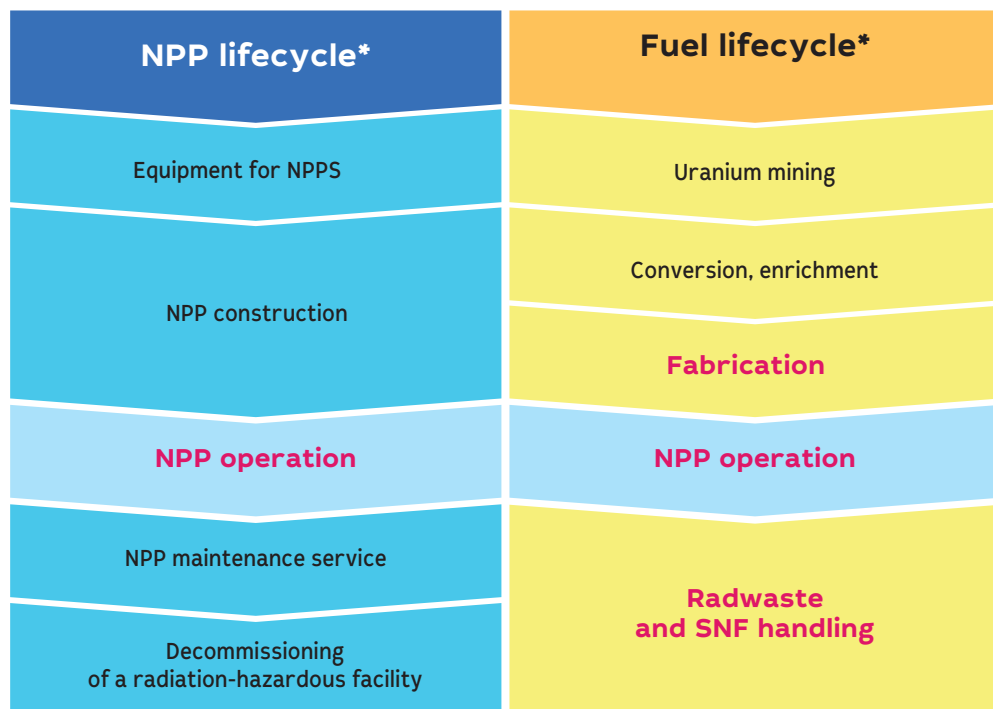
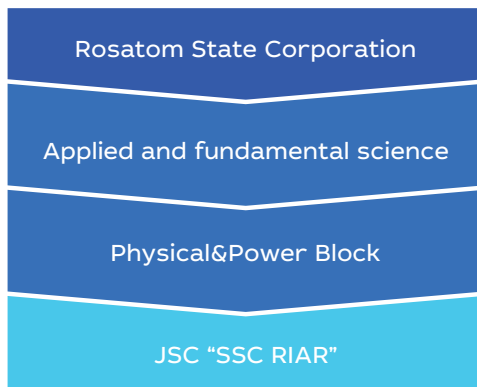
Position in the Industry



Please, see more details in the previous Reports at (http://niar.ru/annual_report) and in Section 4.2.

1.3.1
1.3.2 The key activities of JSC "SSC RIAR" are focused on the R&D provision of the ROSATOM's enterprises in the field of the NPP fuel lifecycle at the stages of its development, fabrication, operation and handling of SNF and radwaste. The ROSATOM's enterprises are known to implement two full process runs that are related to NPPs and nuclear fuel.

Position in the ROSATOM' s system



* In red are stages at which JSC "SSC RIAR" services are in demand

1.2.11
3.2.1
3.18.9
3.24.1 In 2018, JSC "SSC RIAR" demonstrated a consistently positive development dynamics, firmly occupying its niche in the industry. Against the backdrop in the scope of government-level orders compared to last year, RIAR increased deliveries of radionuclide products by 858 million rubles. (+ 55 %), including for foreign customers in the amount of 612 million rubles (+ 47 %). Also, a landmark event of 2018 was the conclusion of a contract to supply non-standard reactor equipment to the Center for Nuclear Research and Technology being built in Bolivia, which made it possible to open a new business in the RIAR's activities.

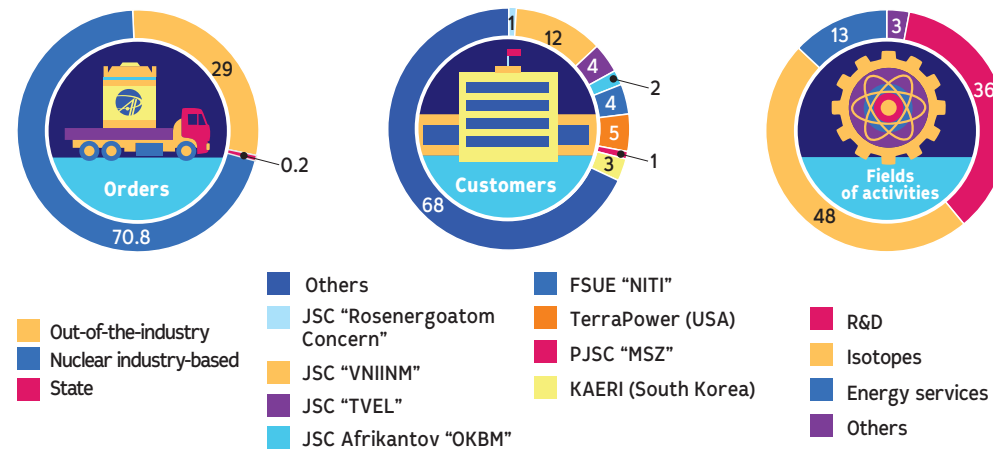
2018 – A Year of Science in the Rosatom State Corporation

Human life is not eternal, but science and knowledge go through centuries. **I. Kurchatov**

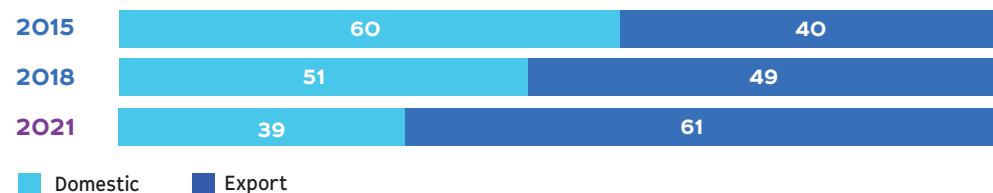
Science is not and will never be a closed book. Every important success evokes new questions... **A. Einstein**

Only science teaches how to extract the truth from its only original source – from reality. **K. Timiryazev**

GRI 102-6 Structure of JSC "SSC RIAR" supplies in 2018, %

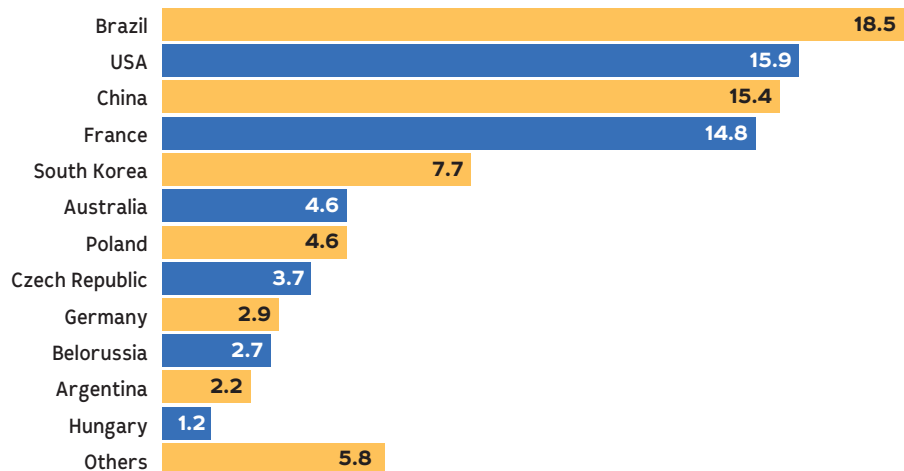


JSC "SSC RIAR" revenue distribution, %

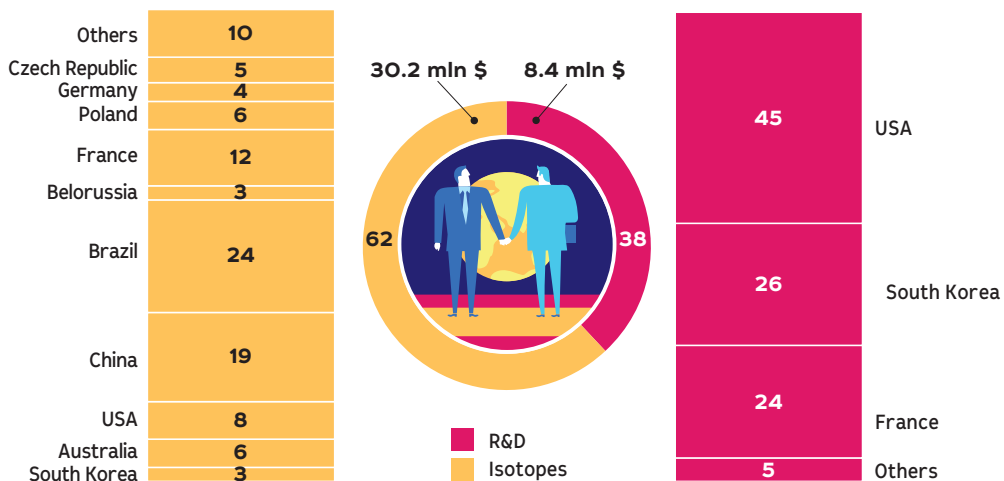


GRI 102-6
3.24.1

Export of products and services in 2018, %



Structure of export in 2018, %



Others – Japan, the Netherlands, India, GB, Belgium, Bulgaria, Slovakia, etc.

RIAR's Background

1956 Decree of the Council of Ministers of the USSR on construction of a pilot nuclear power plant	1961 Startup of the SM reactor	1964 Establishment of the Radiochemical and Reactor Materials Testing Divisions	1965 Startup of the VK-50 reactor
1967 Startup of the MIR reactor	1969 Startup of the BOR-60 reactor	1975 Startup of the RBT-6 reactor	1984 Startup of the RBT-10/2 reactor
1991 Establishment of the Radioisotopes and Radiochemicals Division	1994 RIAR was assigned a status of the state scientific center	2010 Resolution on construction of the MBIR reactor	2011 Resolution on construction of the Polyfunctional Radiochemical Complex
2014 Supply of Molybdenum-99 on a regular basis	2015 Decommissioning of RBT-10/1 reactor	2016 RIAR was assigned the ICERR status	2017 Star of the cobalt production line

3.23.3

More details about RIAR's background can be found at <http://niar.ru/history>

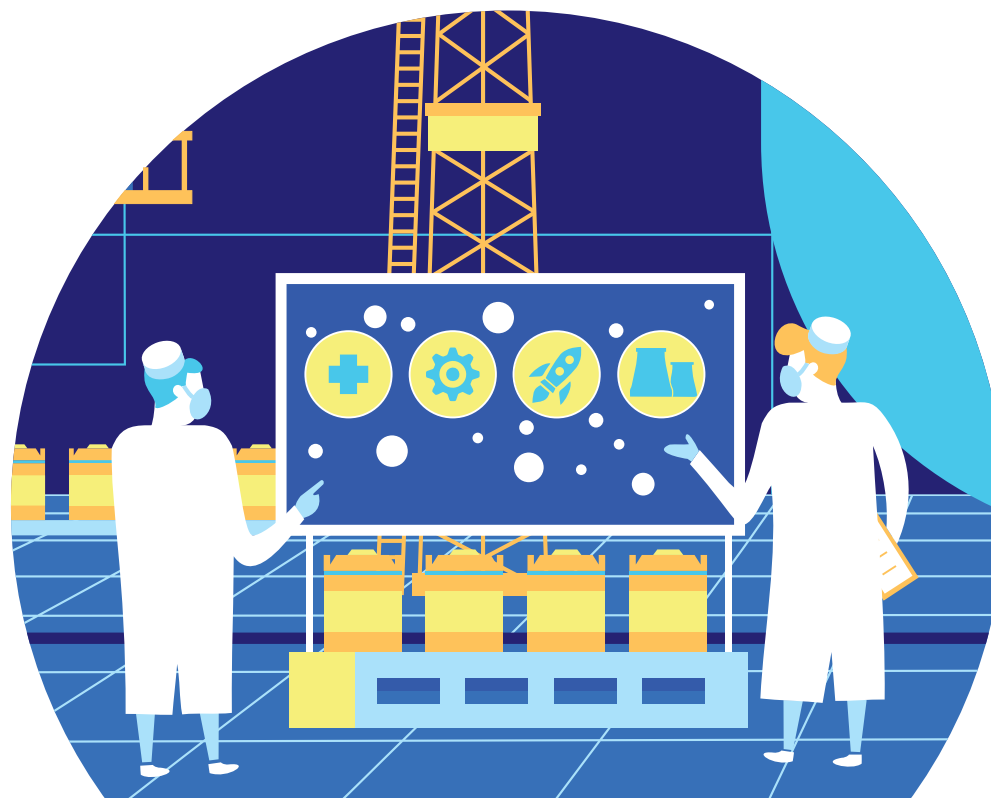


2018 – A Year of Science in the Rosatom State Corporation

Science is the most important, the most beautiful and necessary thing in a human life.

A. Chekhov

2



We plan our future







Strategy

2.1.

GRI 102-16

Mission and Values

Mission of JSC "SSC RIAR" is to solve current issues of both Russia's and world's nuclear science, engineering and medicine by rendering science-intensive high-tech services on the experimental justification of the performance of materials and core components of operational and promising reactors, by developing innovative fuel cycle technologies, and by producing radionuclides.

 SAFETY	 EFFICIENCY
 RESPONSIBILITY FOR THE RESULT	 OUR TEAM
 ONE STEP AHEAD	 RESPECT



2018 – A Year of Science in the Rosatom State Corporation

Science is boundless since new and new tasks appear every day...

D. Mendeleev

Please, find more details in Section 3 and Section 4

2.2.

GRI 102-15

3.4.5
3.14.1
3.20.1

Strategic Tasks and Goals

Strategic goals	Tasks to solve	Contribution to the goals achieved
Improving the competitiveness and safety of various types of nuclear reactors to ensure the long-term sustainable development of Russia's nuclear power industry	Development of the experimental potential of the RR fleet, facilities and research infrastructure	Technological and experimental justification of materials and design components of various reactors, their performance and lifetime; new technical decisions aimed at the improvement of their characteristics important for the NPP effective operation
Ensuring the implementation of state-level order	Enhancement of the production culture level and labor efficiency	Technological and experimental justification of options for low-power reactors; generation of experimental data on the properties of structural materials for innovative power conversion facilities
Enhancing nuclear and radiation safety of nuclear facilities	Provision of nuclear and radiation safety at all facilities	Scientific and experimental justification of technological and design decisions for the refurbishment, upgrading, lifetime management and decommissioning of nuclear facilities, including the development of conventional technologies for handling generated waste and reprocessing spent nuclear fuel from nuclear ice-breakers; standards for monitoring and interpretation of facility conditions values at all stages of its lifetime
Efficient management of spent nuclear fuel and radioactive waste	Development of the production infrastructure for a full fuel supply cycle, SNF and radwaste management	Scientific, technical and experimental substantiation of technical solutions, development and testing of technologies for the closed fuel cycle; creation of technologies for the production of fuel for fast neutron reactors, typical technologies for the management of radioactive waste generated in this process and technologies for the treatment and reprocessing of spent nuclear fuel from an atomic ice-breaking fleet
Creation of a pilot industrial production of science-based, high-tech and unique innovative products	Development of the production infrastructure to provide the innovative high-tech output	Scientific-technical and experimental-technological support, development of technologies and creation of production of radioisotope products for scientific, technical and medical purposes
Development and strengthening of core competencies, increasing the economic result of the current activities in the global market, ensuring sustainable long-term development	Provision of financial stability and efficiency of the enterprise activities; development of the scientific, marketing, financial-economical and production potential to increase the high value-added output	Development of personnel potential for ensuring promising scientific and technical tasks facing the nuclear industry in Russia, assisting in the development of the region and creating the necessary conditions for attracting and retention of highly qualified employees

RIAR, being an important experimental base, contributes to the achievement of the strategic goals such as: effective provision of the national economy with electrical energy; strengthening of the national geological interests and achievement of the leading positions at the world's market of nuclear technologies

and services; maintenance of national nuclear arsenal; provision of nuclear and radiation safety of nuclear facilities, personnel, population and environment; development of innovative nuclear technologies and broadening their application areas in different industries.

2.3.

Business Model and Capitals

GRI 102-8
102-9
102-10
401-1

6

1.2.11
1.3.2
1.6.1
1.7.3
2.5.10
2.8.1
2.10.2
3.1.2
3.2.1
3.2.3
3.6.1
3.7.1
3.24.1

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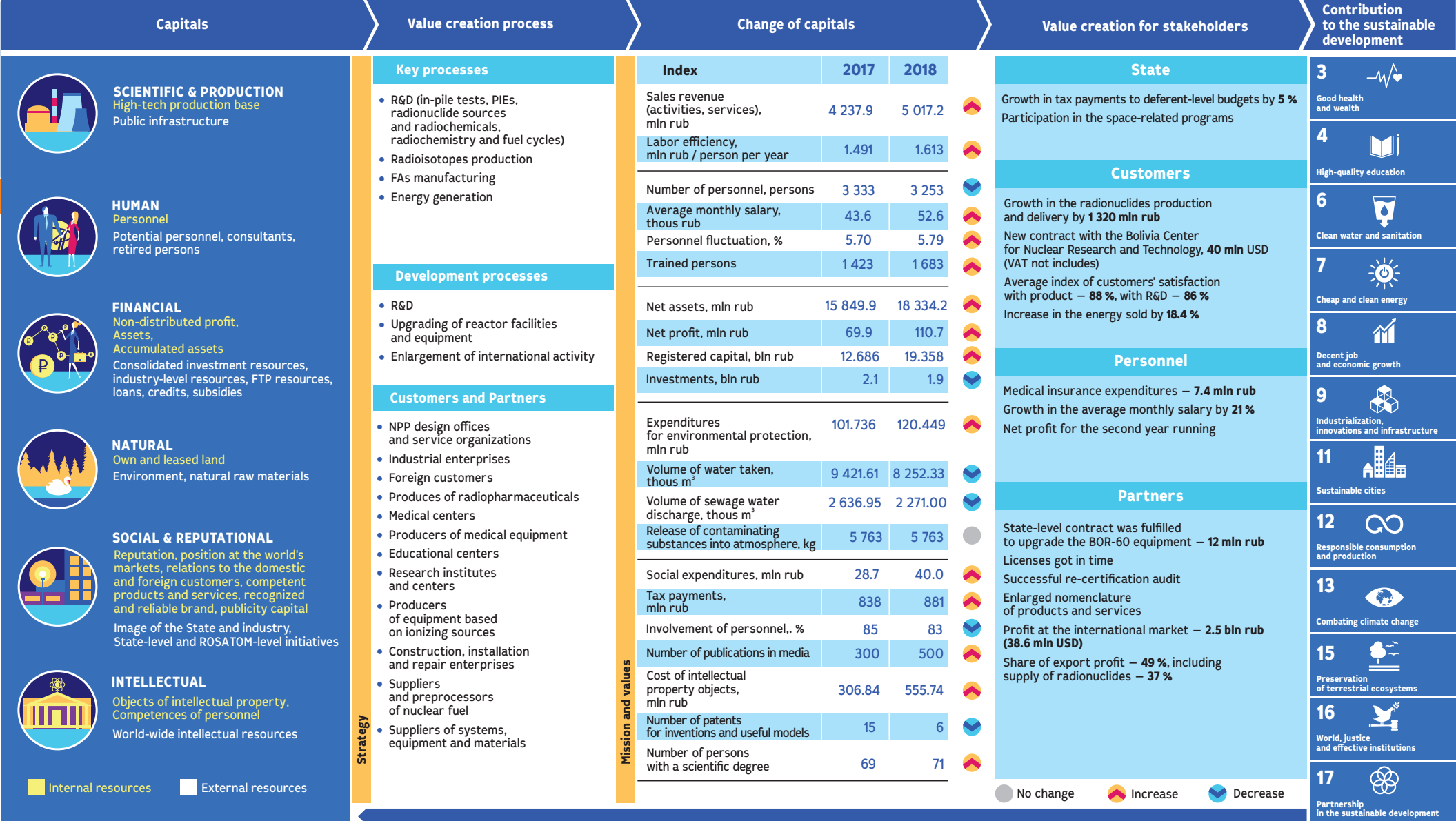
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Strategy

Mission and values

● No change ● Increase ● Decrease

GRI 201-4

Contribution to the sustainable development

- 3** Good health and health
- 4** High-quality education
- 6** Clean water and sanitation
- 7** Cheap and clean energy
- 8** Decent job and economic growth
- 9** Industrialization, innovations and infrastructure
- 11** Sustainable cities
- 12** Responsible consumption and production
- 13** Combating climate change
- 15** Preservation of terrestrial ecosystems
- 16** World, justice and effective institutions
- 17** Partnership in the sustainable development

2.4.

Risk Management

The risk management policy of RIAR is governed by relevant regulatory documents of the Rosatom State Atomic Energy Corporation. They are used as a basis to put in place unified requirements for analysis of risks affecting achievement of financial and business performance indicators. The primary goals and objectives of the risk management process are as follows:

- Identification of risks and their mitigation, provision of information and reporting about risks to make managerial decisions with a view to responding the strategic objectives;
- Promotion of process continuity (stability) through identification, assessment and mitigation of threats which can affect the performance;
- Allocation of risk management responsibility area for Institute's employees at an appropriate level of management.

The RIAR's risk management policy includes the identification and assessment of risk, the definition of control procedures covering risk factors, the development and implementation of control procedures to minimize risks, their testing and monitoring

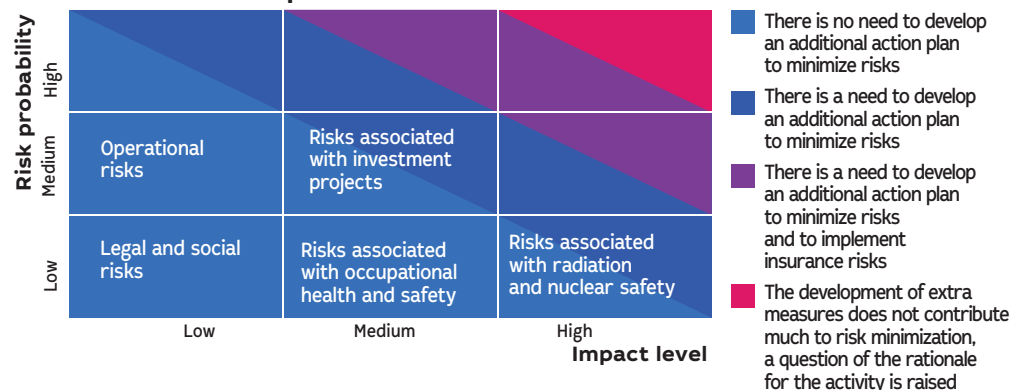
and aimed at the timely identification of events that could adversely affect the achievement of goals, and application of adequate response measures. For each of the identified risks, an assessment is made of existing measures to minimize it, including internal control procedures and their adequacy to maintain the residual risk level. In order to neutralize part of the risks, protective measures have been taken to a greater extent associated with the implementation of the production program, and possible algorithms have been developed how to act in the event of a particular risk. Risk management is carried out and monitored at the institute's departments in each area of responsibility. The objects of operational risk are internal business processes that affect the stability of enterprise development. In 2018, in order to minimize risks and in accordance with the financial recovery program, responsible persons for its implementation were identified. Risk management measures are consistent with the strategic development goals and the main directions of the institute's financial policy.

The risks were classified according to their significance and likelihood with a view to take

decisions on necessary risk management activities. The risks attributable to business activities of RIAR mostly do not require

elaboration of additional measures to mitigate them.

Risk assessment map



Our plans:

- Risk assessment in the framework of production program 2018–2022;
- Development of the risk management system and its integration into the existing management processes;
- Monitoring of risks in groups of processes "Budgeting" and "Medium-Term Planning" to analyze their impact on the budget indicators;
- Control over the implementation of risks management activities.

Risk management at JSC SSC RIAR"

Risk	Risk factor	Risk management activities	Results achieved
Operational risk	<ul style="list-style-type: none"> • Uncertain and unforeseen sticking points appearing during the production process 	<ul style="list-style-type: none"> • Introduction of the state-of-the-art production methods. • Modernization and technical retrofitting of radiation hazardous facilities. • Mitigation (elimination) of hazards 	<ul style="list-style-type: none"> • Development and implementation of improved methods to test materials and new technologies (subsection 4.2 and Scientific Annual Report)
Risk of underemployed capacities	<ul style="list-style-type: none"> • A decrease in demand leads to the risk of underemployed capacities and underemployment of the personnel 	<ul style="list-style-type: none"> • Financial and industrial support of innovative products during the market slump. • Increased production and sales of industrial grade products. • Sale of non-core property 	<ul style="list-style-type: none"> • Implementation of innovative projects (subsection 4.3). • Increase in sales of radionuclide products (subsection 4.2). • 5.1 mln rub – profit from the sale of unclaimed movable property
Risks associated with the loss of products quality	<ul style="list-style-type: none"> • Violation of technological regimes, failure to meet production deadlines, including due to untimely provision of inventory items. • Deliveries of materials, components with hidden defects. • Untimely certification of control and measuring equipment, measurement procedures, non-observance of service and repair schedules of measuring equipment 	<ul style="list-style-type: none"> • Production planning, analysis and timely correction of deviations in technological modes. • Maintenance and preventive maintenance of equipment. • Planning and monitoring of procurement activities to provide materials, equipment, components, services. • Phased inlet quality control of products (works, services) in accordance with established requirements, timely identification and tracking of defects and non-conformities. • Monitoring the timing of certification of equipment and techniques. • Monitoring the timing of maintenance and repair, procurement activities to provide components and consumables. • Continuous improvement of the quality management system. • Customer feedback and responsiveness to new customer needs; improvements based on customer satisfaction assessment 	<ul style="list-style-type: none"> • Claims and complaints from consumers of products and services – 0 (subsection 4.2)

GRI 102-11
102-15
102-29
102-30
102-33
102-34

1.2.11 2.5.7 3.2.4 3.13.2 3.15.1 3.15.3 3.23.4	Risk	Risk factor	Risk management activities	Results achieved	GRI 414-1	GRI 102-41
	Risk associated with the increase in the cost of services	<ul style="list-style-type: none"> • Setback of the worldwide / Russian financial and monetary system. • Changes in the charge rates for public utilities and services, of shipping companies etc. • Increase of the minimal subsistence wage etc. • Failures in the work processes. • Lower level of equipment capacity utilization. • Technological obsolescence 	<ul style="list-style-type: none"> • Identification of risk owners and defining areas of their responsibility. • Implementation of programs targeted at energy saving and energy efficiency enhancement. • Integration of the ROSATOM industrial system to improve processes. • Optimization of production areas. • Headcount optimization 	<ul style="list-style-type: none"> • Decrease in the number of staff for 46 and increase in the average salary (subsection 4.4). • Reducing the cost of energy resources by 6.3 mln rub (subsection 4.6). 		
	Risk associated with movements in market prices for procured materials and output products due to changes in economic situation	<ul style="list-style-type: none"> • Changes in the pricing policies of Contractors provided that the contracts concluded for input supplies enable reconsideration of prices 	<ul style="list-style-type: none"> • Invention of new market segments. • Expansion of the range of products and services rendered 	<ul style="list-style-type: none"> • Long-term contract with France, expansion of cooperation with China and South Korea, equipment supply agreement with Bolivia (subsection 4.2). • Release of a new type of source (for example, based on selenium-75), development of new technologies (for example, express accumulation of californium-252), etc. (section 4.2) 		
	Legal risks	<ul style="list-style-type: none"> • Loss of income, capital or loss in connection with violations or inconsistencies with internal and external legal norms 	<ul style="list-style-type: none"> • Implementation of activities strictly in accordance with the main local normative acts in the field of corporate governance. • Compliance and ongoing monitoring of the current legislation of the Russian Federation and the presence jurisdictions in the field of nuclear energy, marketing, export control and non-proliferation of weapons of mass destruction. • Following all recommendations of regulatory bodies of international and national level 	<ul style="list-style-type: none"> • Lack of delays in the implementation of production activities related to changes in the legislation. • Obligatory coordination of all concluded contracts with the Department for Legal Work and Corporate Relations, and in some cases, involvement of independent consultants (Section 3) 		
	Social risks	<ul style="list-style-type: none"> • Restructuring of society. • Headcount reduction. • Reduction in the enterprise income. • Personnel gap 	<ul style="list-style-type: none"> • Implementation of the ROSATOM social policy. • Implementation of corporative social programs. • Minimization of social tension, if any 	<ul style="list-style-type: none"> • Social-related expenditures made up 39 997 k rub. • A deposit agreement 2017–2018 amounting to 7.7 mln rub was concluded with the insurance company SOGAZ. • Workplace agreement for 2018–2021. • New workplaces at the newly-constructed PRC and MBIR. • 33 agreements with 21 Universities (subsections 4.4 and 4.5) 		
	Labor protection risk	<ul style="list-style-type: none"> • Violation of safety requirements and rules of internal labor regulations. • Dangerous and harmful production factors. • Violation of the regime of work and rest. • Insufficient resources to perform safety arrangements 	<ul style="list-style-type: none"> • Implementation of ROSATOM unified industrial policy in the field of labor protection. • Functioning of the enterprise's labor protection management system on the prevention of occupational injuries and occupational diseases, improvement of working conditions of the RIAR staff. • Organization of individual dosimetry control for seconded persons and employees of contractors performing work on radiation hazardous sites and objects of RIAR. • Reflection in contracts concluded by the enterprise with contract organizations responsibilities of contractors in the field of compliance with labor protection requirements. • Regular safety compliance checks together with representatives of contracting organizations. • Perfection of the labor protection and safety culture. • Implementation of measures to prevent injuries. • Provision of the staff with collective and individual protection 	<ul style="list-style-type: none"> • Accidents – 0. • Cases of professional diseases – 0 (subsection 4.4.) 		
	Nuclear and radiation safety risk	<ul style="list-style-type: none"> • Infringement of requirements in the field of nuclear and radiation safety. • Insufficient level of emergency preparedness. • Insufficient resources to perform decommissioning activities and provide safety. • Major accidents / incidents in the enterprise 	<ul style="list-style-type: none"> • Monitoring of the status and implementation of a complex of engineering activities to ensure trouble-free operation of nuclear research facilities and nuclear-hazardous areas. • Implementation of modernization programs for the technological equipment. • Compliance with current standards in production and technological processes when operating nuclear installations, store and handle radioactive materials. • Dosimetric control of external and internal exposure of personnel. • Control of coming of radioactive substances into the atmosphere 	<ul style="list-style-type: none"> • Reducing the average dose to personnel – 13%. • Compliance with the standards for the release of radioactive substances into the air. • Violations of level I and higher are INES – 0. • Implementation of the guidelines of the FMBA of Russia, federal norms and rules in the field of atomic energy use, standards of the Rosatom State Corporation 		

Risk	Risk factor	Risk management activities	Results achieved
		<ul style="list-style-type: none"> Maintaining the readiness of the special reaction forces to prevent, localize and eliminate consequences of possible accidents and emergency situations. Staff development. Conducting of comprehensive and inspection checks. Assessment of the maximal possible radiation and economical consequences of accidents the RIAR's site 	<ul style="list-style-type: none"> Justification of the sufficiency of the amount of the current insurance contract to compensate for damage to third parties in the event of potential emergencies at the RIAR's nuclear and radiation facilities. No significant radiation impact on personnel, population and the environment (subsection 4.6)
Investment projects risk	<ul style="list-style-type: none"> Failure to achieve goals, performance indicators and functionality of construction projects due to insufficient funding for the full cost of projects; lack of investment. Increased project budgets due to rising prices for goods / work / services, additional costs, etc. Deviations from the schedule, failure to meet project deadlines due to errors, design problems, untimely and/or poor-quality fulfillment of obligations by contractors/suppliers, unforeseen work, etc. Untimely and incomplete project information. Uncoordinated implementation of projects 	<ul style="list-style-type: none"> Monitoring of project risks, identifying of key deviations. Updating the list and risk assessment. Identification of risk owners and their responsibility, development and implementation of compensatory measures to minimize risks, identification of the highest priorities. Optimization of investment costs taking into account the priorities and risks of projects. Effective interaction with contractors/suppliers, control over the execution of contracts and terms. Effective interaction with Rosatom State Corporation to solve problematic issues. Private-public partnership, attraction of external investors. Advanced training of specialists, development of competencies. Creation of a single information space to provide increased safety of project documents, the convenience of their search, analysis and storage. Creation of project management working groups 	<ul style="list-style-type: none"> The project for the full cost of the MBIR construction was approved and an agreement was signed on the MBIR reactor construction (full development). The preparation of a set of licenses site has begun as well as the roadmap for creating and maintaining the MBIR reactor single information space. Implementation of the highest priority investment measures from the standpoint of ensuring the safety and reliability of the nuclear facilities operation (within the framework of the approved limits). The updated key parameters of the project "Modernization of the SM reactor core" were approved (subsection 4.1)
Ecological safety risk	<ul style="list-style-type: none"> Infringement of industrial and environmental safety with consequences for the nature. Lack of compliance with requirements in the field of environmental protection, including insufficient resources for security measures implementation. Insufficient level of emergency preparedness 	<ul style="list-style-type: none"> Implementation of the environmental policy of the institute. Implementation of measures to reduce risks in the field of environmental protection. Provision with personnel and material resources sufficient to fulfill the requirements in the field of environmental protection. Analytical control of sources of environmental impact and environmental objects. Compliance with environmental requirements. Conducting comprehensive and inspection checks, audits. Improving the integrated quality and environmental management system. Improving emergency preparedness 	<ul style="list-style-type: none"> Cases with adverse effects on the natural environment – 0, reduced risk of such violations. Environmental litigation lawsuit – 0. Current environmental costs – 120 449 thous. rub Payment for environmental services – 4 540 thous. rub Investments in environmental protection and rational use of natural resources – 4 384 thous. rub (subsection 4.6)
Reputation risk	<ul style="list-style-type: none"> Stakeholders' perceptions of the reliability and attractiveness of JSC "SSC RIAR", confidence in its activities and quality of products and services 	<ul style="list-style-type: none"> Outreach: the publication on the topics of the institute, interaction with the public and the media, participation in conferences, seminars. Analysis of the structure of stakeholders, identification of their expectations, widening of the circle of stakeholders. Compliance with the industry regulations on the information of public in abnormal situations that threaten business and public reputation. Implementation of integrated communications. Implementation of targeted communication programs. Formation of a positive public attitude to the activities of RIAR via increasing information transparency and openness and through constructive interaction with stakeholders. Continuous monitoring and analysis of reports in national and foreign media 	<ul style="list-style-type: none"> The Annual Public Report on environmental safety (http://niar.ru/annual_report), the Annual Scientific Report and this Report, including in English, Collections of Works (4 issues per year). Two monographs and an advertising catalog. Consumers consider JSC "SSC RIAR" a reliable supplier. Over 500 references to the company's activities in the Russian media (an increase in the number of publications by 66.7%). 104 specialists from 10 countries visited the institute. The number of excursionists is 1 016 people. Meeting of experts with the younger generation. Negative reviews in the media – 0 (subsections 4.2, 4.3, 4.5)
Risk of exchange losses	<ul style="list-style-type: none"> Volatility of exchange rate 	<ul style="list-style-type: none"> Analysis of contracts concluded and future possible contracts. Costs optimization 	<ul style="list-style-type: none"> +231 mln rub is an increase in foreign exchange earnings associated with the USD growth in 2018

GRI 201-2

■ Decrease

■ Increase

□ No change

3



Governance

3.1.

Corporate governance

MEMBERS AND STRUCTURE OF THE GOVERNANCE BODIES

Structure of the Corporate Governance Bodies



The Charter of JSC "SSC RIAR" and the Federal Law No. 208-FZ "On Joint Stock Companies" as of 26 December 1995 govern the powers, the procedure for convening and holding the General Shareholders Meeting that is the supreme corporate body.

The Board of Directors that is a collegial managing body acts in compliance with the scope of its competence stipulated by the Federal Law No. 208-FZ "On Joint Stock Companies" as of 26 December 1995, the Charter of JSC "SSC RIAR" and the Statute of the Board of Directors. It is in charge of overall management at RIAR, sets up a corporate development plan, exercises control over financial and economic activities and over the Sole Executive Body for JSC "SSC RIAR". The number of members for the Board of Directors is specified in the Charter of JSC "SSC RIAR". It consists of five people. There were seven members in the Board of Directors over time during the period under report. They were males over the age of 31 and under 50 and five males who are over 51 years old. Fundamental decisions regarding the RIAR's performance were taken by the Board of Directors at the meetings during the year under report. All the meetings of the Board of Directors were held with the full participation of its members. There are no committees under the Board of Directors. A collective executive board was not formed at JSC "SSC RIAR" during the year under report. There are no independent members in the Board of Directors in the meaning stipulated by the Code of Corporate Governance and recommended to be implemented by the letter of the Bank of Russia No. 06-52/2463 as of April 10, 2014 "Concerning the Code of Corporate Governance".

The annual record of the Board of Directors' performance is given in [Appendix 3 hereto](#). The information about shareholders of the Company is included in Section 1.1 "General Information".

Members of the Board of Directors and the term of its power

GRI 102-22 102-23
2.1.6

From June 28 2017 until 27 June 2018

Nikolay A. **KONDRATIEV**
(Board Chairperson)
Sergey P. **KASHLEV**
Vladimir D. **RISOVANY**
Alexander A. **TUZOV**
Il'ya V. **CHEREMUKHIN**

The ongoing activities of JSC "SSC RIAR" were managed by sole executive bodies during the period under report: by Alexander A. Tuzov, Director

From 28 June 2018 until 31 December 2018

Nikolay A. **KONDRATIEV**
(Board Chairperson)
Alexey V. **DUB**
Vladimir D. **RISOVANY**
Ivan V. **SOBOLEV**
Alexander A. **TUZOV**

of JSC "SSC RIAR" and by the managing company that is Joint Stock Company "Science and Innovations".

1 General Meeting of Shareholders

51 Meetings of the Board of Directors

100 % Attendance rate

73 Matters and topics addressed at the Meetings

Remuneration payable to the Director and to the members of the Board of Directors

GRI 102-35 102-36 102-37
2.1.4

The principle of forming remuneration for the top management is similar to the principle of forming compensation to other employees of JSC "SSC RIAR". The amount of remuneration payable to the Director of JSC "SSC RIAR" is determined in accordance with the terms and conditions of employment contract which are subject of approval by the Board of Directors. The general shareholders meeting may resolve to pay remuneration to the members

of the Board of Directors and/or reimburse for expenses arising out of discharging their duties as the members of the Board of Directors at RIAR.

The general meeting of shareholders at RIAR did not resolve to pay any remuneration during the year under report. Therefore, no remuneration was paid to the members of the Board of Directors.

For more detailed information about remuneration payable and labor remuneration see Section 3.2 "Key performance Indicators" and Section 4.4 "Staff Profile"

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Progress of science depends on the work of scientists and the value of their discoveries.

L. Paster

Board of Directors for JSC "SSC RIAR"

As at 31 December 2018



Sergey

KASHLEV

Nikolay

KONDRATIEV

Ivan

SOBOLEV

Alexey

DUB

Alexander

TUZOV

Il'ya

CHEREMUKHIN

Vladimir

RISOVANY**Date of birth:** 23.02.1960**Academic background:** higher, graduate from Novosibirsk State University (1982) majoring in economic cybernetics**Date of birth:** 19.10.1960**Academic background:** higher, graduate from Tomsk Polytechnic Institute (1982) named after S. Kirov majoring in engineering electronics**Date of birth:** 12.08.1954**Academic background:** higher, graduate from Kharkov Law University (1980) named after F.E. Dzerzhinsky majoring in jurisprudence**Date of birth:** 25.07.1960**Academic background:** higher, graduate from Moscow Institute of Steel and Alloys (1983) majoring in studying of physical and chemical properties for metallurgical processes**Date of birth:** 09.04.1971**Academic background:** higher, graduate from Nuclear Power Engineering Institute in Obninsk (1994) majoring in power generation and automatic control engineering**Date of birth:** 23.03.1975**Academic background:** higher, graduate from Yaroslavl State University (1997) majoring in jurisprudence**Date of birth:** 15.03.1955**Academic background:** higher, graduate from Ural Polytechnic Institute named after S. Kirov majoring in metal science

JSC "Science and Innovations":
From March 2012 until January 2013 – Advisor;
From January 2013 until December 2015 – Deputy Director General for Economics and Finance;
From December 2015 until November 2017 – Director General;
From November 2017 until January 2018 – Deputy Director General for Economics and Finance.
JSC "OTEK":
Since January 2018 and to the present day – Deputy Director General for Economics

JSC "Science and Innovations":
From November 2011 until October 2013 – Director General;
Since October 2013 and to the present day – Chief Executive Officer

JSC TVEL:
From September 2013 until November 2017 – Head of Corporate Governance and Property Department.
JSC "Science and Innovations":
Since November 2017 and to the present day – Advisor to director General

Moscow Institute of Steel and Alloys:
Since 2005 and to the present day – Head of Department.
JSC NPO "TSNIITMASH":
From March 2005 until October 2014 – Director General.
JSC "Science and Innovations":
From October 2013 until October 2015 – Director General
Since October 2015 and to the present day – First Director General Deputy

ROSATOM State Atomic Energy Corporation:
From November 2010 until April 2015 – Program Executive, Deputy Director of the Innovation Management Unit – Head of Department for Technological Development.
JSC "Science and Innovations":
From May 2015 and to the present day – Director.
JSC "SSC RIAR":
Since October 2015 and to the present day – Director.
JSC "Reactor Materials Institute":
From July 2017 until June 2018 – Board Chairperson

"ENERGOPROMSBYT" LLC:
From February 2013 until April 2015 – Head of Legal Office.
"ATOMENERGOSBYT" JSC:
From February 2013 until April 2015 – Chief Executive Officer, Government Relations Department.
JSC "Science and Innovations":
From July 2015 until June 2018 – Head of Agency for Legal and Corporate Performance;
Since July 2015 and to the present day – Head of the Group, Legal Support and Claims Administration

JSC "SSC RIAR":
From March 2013 until January 2014 – Research Coordinator.
JSC "Science and Innovations":
From October 2013 until April 2017 – Director General Deputy – Chief Research Officer for Physics and Power Engineering Unit;
Since April 2017 and to the present day – R&D Director, Chief Research Officer for Physics and Power Engineering

Personal details

Place of employment and positions held over the last five years

Share of members of the Board of Directors in the share capital of RIAR is 0 %.

Their equity share in the ordinary nominal shares of RIAR is 0 %. There were no transactions related to acquisition and alienation of shares in the year under report.

Information about the managing company and its Director General

Full name	Joint Stock Company "Science and Innovations" (JSC "Science and Innovations")
Head Office and Legal Address	26 Staromonetny per., Moscow, 119180
Primary State Registration Number	1117746621211
Individual Taxpayer Identification Number	7706760091
Industrial Enterprise Classification Code	770601001
Date of Registration	11 August 2011
Share in the share capital	0 %
Equity share in ordinary nominal shares	0 %



Pavel ZAITSEV Director General

Date of birth: 8 May 1981
Academic background: higher, graduate from Moscow State Technological University "STANKIN" (2005) majoring in technology of machine building
Place of employment and positions held over the last five years:
 FSUE "Luch" Scientific Production Association: from October 2014 until November 2017 – Director General;
 JSC "Science and Innovations": since November 2017 and to the present day – Director General.

There were no transactions related to acquisition and alienation of shares in the year under report

Principles of corporate governance

Protection of shareholders' rights and legitimate interests	Federal law No.208-FZ "On Joint Stock Companies" as of 26 December 1995 and the Charter of JSC "SSC RIAR" set forth the shareholders' rights. A procedure of information exchange between RIAR and a shareholder is governed by the applicable Russian Federation laws currently in force, the RIAR's Charter, industry- specific and internal documents
Effective governance on the part of the Board of Directors	The Board of Directors acts in good faith with a view to the best interests of shareholders and JSC "SSC RIAR" to ensure the fullest transparency of its activities to the shareholders
Transparency and objectivity in information disclosure	JSC "SSC RIAR" ensures timely disclosure of reliable information about its financial standing, economic performance, output including ownership and governance structures to its shareholders and parties concerned. Such information is disclosed in full compliance with the law on state and trade secrets
Rule of law and ethics	JSC "SSC RIAR" acts in full compliance with the applicable laws, generally accepted standards of business ethics, ROSATOM's Code of Conduct, Charter and its contractual commitments. Relations between the shareholders and the Board of Directors are based on mutual trust, respect, accountability and control

Plans for enhancing the corporate governance system

Enhancement of the corporate governance system at JSC "SSC RIAR" is targeted at achieving better efficiency, responsibility and liability, transparency in undertaken activities and administration and it is primarily attributable to the protection of shareholders' rights and achieving equity of opportunities in exercising their rights that is to say prevention of any actions aimed at affected redistribution

of corporate governance and control as well as to submission of the best available information regarding the matters discussed at the general meeting of shareholders. In ongoing efforts to enhance the corporate governance system, JSC "SSC RIAR" continuously keeps track of all the changes in applicable laws and advanced standards hereto

Observance of the principles and recommendations from the Corporate Governance Code

Certain provisions of the Corporate Governance Code are implemented by RIAR as it was recommended to be put in place based on the letter of the Bank of Russia No. 06-52/2463 as of 10 April 2014 but

with due consideration for the legal status of ROSATOM stipulated with the applicable laws and regulations of the Russian Federation ensuring the unity of governance for all the nuclear enterprisers.

CORPORATE GOVERNANCE SYSTEM

For the corporate governance system, JSC "SSC RIAR" adheres to the policy of observing recognized national and international standards as well as the corporate governance principles of ROSATOM State Atomic Energy Corporation.

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 Science is becoming neural network in our era.
 M. Gorky

Regulatory Framework

- Charter of JSC "SSC RIAR"
- Civil Code of the Russian Federation
- Regulation for the RIAR's Board of Directors
- Federal law No.208-FZ "On Joint Stock Companies" as of 26 December 1995

Related-party transactions

The revised Charter of JSC "SSC RIAR" was registered on the 3rd of February 2017 in the Inter-Regional Inspectorate of the Federal Tax Service of the Russian Federation No. 7 for Ulyanovsk region as it grants a waiver of Article XI of Federal Law No. 208-FZ "On Joint Stock Companies" dated 26 December 1995 (see Sub-section 3.11 of the Charter) in respect of JSC "SSC RIAR".

The list of transactions effected by RIAR and which are recognized as major transactions, and other transactions subject to the approval procedures applicable to major transactions is given in [Appendix 4](#) hereto.

Changes in the size and structure of ownership

The RIAR's share capital comprises a nominal amount of its shares purchased by its shareholders. As of 1 January 2018 the share capital amounted to RUB 12 685 792 475 (twelve billion six hundred eighty-five million seven hundred ninety-two thousand four hundred seventy-five) and was divided into 12685792475 ordinary registered shares with a par value of RUB 1 each. All the shares were issued as uncertified ones.

+ 6.672 bln rubles
is an increase
of RIAR's share capital



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in the Rosatom State Corporation

Science is the century – old endeavour to bring together by means of systematic thought the perceptible phenomena of this world into as thorough-going an association as possible.

A. Einstein

Every ordinary registered share confers on the shareholder owing it the same scope of rights secured. During the period under report the authorized share capital of RIAR increased by RUB 6 672 469 400 (six billion six hundred seventy-two million four hundred sixty-nine thousand four hundred). As of 31 December 2018 RIAR's authorized share capital amounted to RUB 19 358 261 875 (nineteen billion three hundred fifty-eight million two hundred sixty-one thousand eight hundred seventy-five) and was divided into 19 358 261 875 ordinary registered shares with a par value of RUB 1 each.

Allotment of issued shares, %

Shareholders	Allotment as of the date	
	31 December 2017	31 December 2018
Joint Stock Company "Nuclear Power Generation Complex"	53.0235	49.0927
The Russian Federation legally represented by ROSATOM State Atomic Energy Corporation	9.9510	18.0258
ROSATOM State Atomic Energy Corporation	37.0255	32.8815

There were no dividends paid or attributed to the shares of JSC "SSC RIAR" during the year under report and over the last five years

High-priority areas of RIAR's business with the focus on fulfilling the needs of the Physics and Power Engineering Unit at ROSATOM were presented in the Annual Reports for the previous years (for instance, http://www.niiar.ru/sites/default/files/riar_annual_report_2015small_o.pdf). Chapter 4 "OUTPUTS" provides an overview of RIAR's business performance for 2018.

3.2.

Governance strengthening

KEY PERFORMANCE INDICATORS

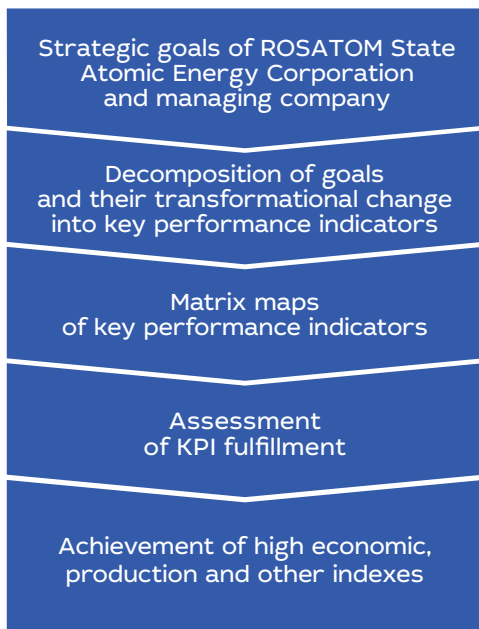


A matrix of key performance indicators (KPI) is an instrument for business administration. Its fundamental principle is to decompose strategic goals of ROSATOM State Atomic Energy Corporation and managing company into financial, economic, business performance indicators and others assigned to the top management for a year term. The key performance indicators governing economic, business, environmental and social performance are formalized into the KPI matrix of JSC "SSC RIAR" Director and cascaded down or decompose for lower level staff members in conformity with the key goals and relevant to their functional burden. The key performance indicators are defined and evaluated for compliance during the strategy-focused meeting of RIAR's managers. The SAP based personnel management system was adopted to improve effectiveness of KPI setting and to evaluate their achievement. Performance appraisal is one of the integral parts of the personnel remuneration policy. An approved KPI data record is essential for bonus payment.

Bonus payments are effected once a year upon the fulfillment of key performance indicators but within the limits of payroll budget and with due consideration for the annual business performance of the enterprise. The amount of remuneration payable and its relevance to the performance are clear and transparent. The established remuneration policy is based on the Regulation on Remuneration of Labor at JSC "SSC RIAR". The amount of remuneration depends on the position held, actual level of KPI fulfillment and hours worked. Each key performance indicator is assigned with a specific numeric value in the KPI matrix with relevance to the total amount of bonus payable. In its turn the total amount of bonus payment is based on the annual amount of fixed salaries and target amount of remuneration. Bonus payments are effected upon fulfilling the KPI threshold level. The KPI threshold levels are also specified in the appropriate matrix. When noticeable and significant achievements are made and they are beyond the target level of performance, bonus payments can be effected at a higher rate.

The performance management system has been SUCCESSFULLY IMPLEMENTED at JSC "SSCRIAR" since 2009

GRI 102-28 Performance evaluation



Linking of key performance indicators and sustainable development

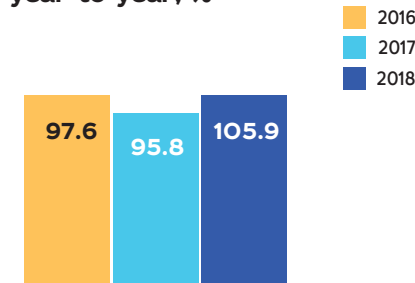
Sustainable development goals are incorporated into the key performance indicators (KPI) of the supreme governing body and the top management. Sustainable development of RIAR calls for both high financial and business performance and for high social and environmental performance. RIAR's top management was given the key performance indicators targeted at higher energy performance, further development of innovative products as well as the key performance indicators demonstrating the level of staff motivation towards higher performance with the use of different practices and methods, awareness of RIAR strategic goals and their contribution to the overall performance.

The key performance indicators are assigned to the managers at all the levels in a mandatory manner

The economic pillar of sustainable development together with optimal employment of finite natural resources and adoption of environmentally sound, energy- and- material saving technologies is formed with due consideration for key performance indicators. Priority goes to safe business performance and enhanced production efficiency of RIAR, expansion of international cooperation and geographical expansion, social benefits and guarantees for its employees (See Section 4.4 "Human Capital Management" below). The key performance indicators are defined by the relevant departments at ROSATOM and the managing company and they embrace the entire range of RIAR's activities. They are targeted at enhancing financial and production performance of both RIAR and nuclear industry. However, there are also non-financial performance indicators (for instance,

requirements to the occupational and health safety standards cannot be violated, events with severe consequences are not allowed).

Average rate of KPI fulfillment from year to year, %



GRI 102-16

Key principles of performance appraisal	Decomposition	Key performance indicators reflect an area of responsibility and management sphere for each manager
	Being focused	KPI number is limited for the staff to focus on the key priorities of work
	Periodicity	KPIs are set for a calendar year term
	Balance	KPIs do not contradict each other but agree
	Meeting SMART criteria	KPIs are definable, achievable, actual and measurable
	Ambitiousness	KPIs are targeted at the growth of financial and business performance
	Relevance	The actual level of KPI fulfillment is confirmed by the information provided as statistical, accounting and management statements and can be selectively checked as part of audit procedures and standing orders or internal control

GRI 102-28 Strategy matrix with the key performance indicators of JSC "SSC RIAR" Director for 2018

Key performance indicator	Fulfillment against the target level, %	Strategic goal
Free adjusted cash flow	358	
Labor productivity	97	Increased share on the global market
Adoption of research and technology advancement roadmap	100	
Total costs	103	Reduction of production costs
Integrated index of capital investment performance	95	Balanced and optimal use of investments
Integrated index of investment performance	103	Enhanced economic effectiveness of investment activities
Engagement rate	104	Improved staff motivation and loyalty
Timely licensing activities in the field of nuclear energy use	Accomplished	RIAR's business environment
LTIFR and nonoccurrence of incidence of falling from elevations	Accomplished	
No events with safety relevance of 2 and higher and accidents at hazardous production facilities according to the INES scale	Accomplished	
Fulfillment of government orders	Accomplished	

The environmental pillar of sustainable development is also included in the KPI matrixes of top management. They have performance indicators attributable to the environmental impact. RIAR's Director is fully in charge of environmental performance. The RIAR's top management was entrusted with responsibility to ensure minimization of adverse environmental impact. These duties are shared between the Chief Engineer and Deputy Directors. The Chief ecologist is fully liable for observing environmental laws and regulations (see Section 4.6 "Environmental safety").

The social pillar of sustainable development is described in more detail below in Sections 4.5 "Stakeholders' Engagement" and 4.4 "Human Capital Management".

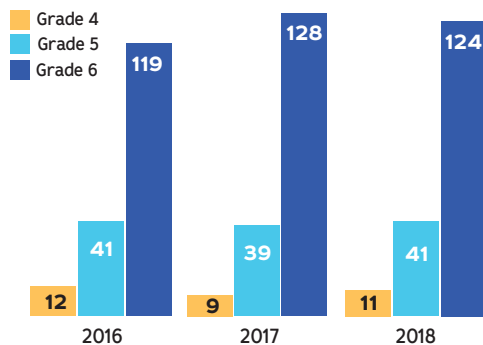
Such revenue-generating business indicators as "Free adjusted cash flow", "Net profit", "Revenue from sale of innovative products" which could bring tangible benefit for RIAR, were achieved in the year under report. The amount of internal funds which could be used for investing is estimated following the fulfillment of the aforesaid indicators. The orders RIAR booked provides for a total employment higher than 3 000 in the city, an adequate level of pay (the average

salary level achieved is higher compared to the average salary level at other enterprisers and companies in our city), social benefits and guarantees, engagement of Contractors within the framework of existing cooperation and thus contributing to further development of the regions of their residence.

Motivation of top management

A motivation system of top management oriented towards productive efforts, improved business and economic performance is based on the Unified Standard Remuneration System of ROSATOM. An annual bonus payment for the top management depends on the fulfillment of key performance indicators. The amounts of bonuses paid shall be agreed by the managing company. Bonus payments are served as a reward for the achievements. Key performance indicators provide a basis for making decisions. They are based on the RIAR's performance and targeted at pursuing both ROSATOM's and its own strategic goals.

A number of employees engaged in performance assessment, from year to year and with relevance to grades



RIAR adheres to the principle of equal opportunities and is notable for a lack gender-based discrimination: a rate of fixed salary ratio is one to one for men and women for all the categories of staff

GRI 405-2 406-1

106.097
k RUB is the remuneration amount of managing staff

2.1.4

GRI 102-16 206-1

CONTROL SYSTEM

4P 60 2.2.2

An independent auditor and Department for Internal Control and Audit at JSC "SSC RIAR" are in charge of financial and business performance supervision. Pursuant to the resolution of the general meeting of RIAR's shareholders (Protocol No. 497 dated 21 June 2018), Limited liability Company "Financial and Accounting Consultants" was designated and approved as Independent Auditor for statutory annual audit of JSC "SSC RIAR" for the time period under report.

Information about independent audit company	
The Head Office and legal address	Myasnitskaya street 44/1, Bldg. 2 AB, Moscow, 101990, Russia
Phone	8(495) 737-53-53
Official website	http://www.fbk.ru
E-mail	fbk@fbk.ru

There is no audit commission (Auditor) at JSC "SSC RIAR"

The internal control is one of the essential elements of managing risks attributable to observance of regulations imposed by applicable laws by the executive departments at JSC "SSC RIAR".

JSC "SSC RIAR" has Department for Internal Control and Audit as a structural unit to be in charge of supervision and control. It is guided in its activity by the Russian laws currently in force, international standards, industry-specific and internal regulations. The Department is directly subordinated to the Director of RIAR and undertakes its inspections and auditing in conformity with a single consolidated plan of control activities as directed and ordered by the Director.

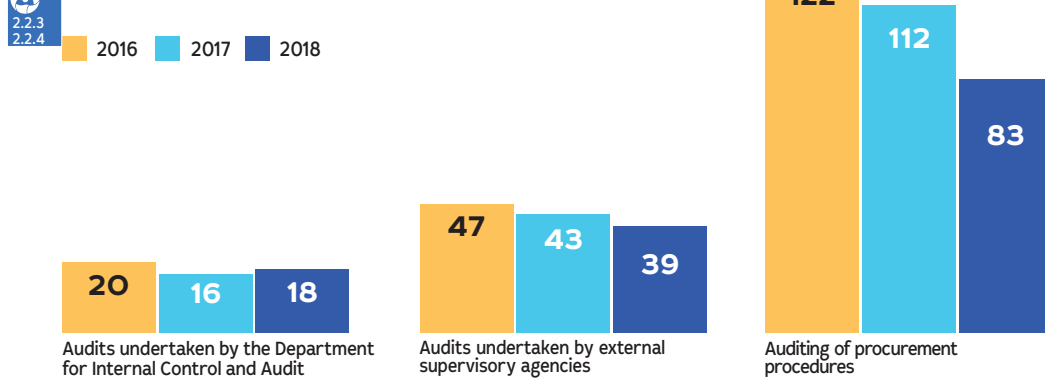
In 2018 RIAR put in place the IT-system "Internal control and Audit" to support the activities undertaken by the Department for Internal Control and Audit in order to make the processes of internal control more effective. The staff members of the Department were trained in the use of this system at the premises of Independent Non-Profit Organization "Corporate Academy of ROSATOM". The information about undertaken control activities, their outcomes as well as about audits were added in the IT-system. Findings reports were drawn up.

2.5.6

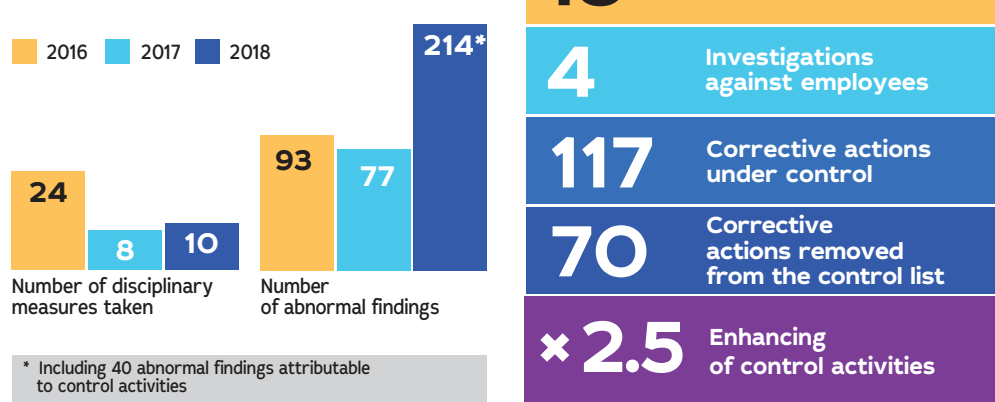
Key objectives to be fulfilled by the Department for Internal Control and Auditing

- To assist the governing bodies to pursue fulfillment objectives in their activities through a timely identification and assessment of risks associated with the business processes by means of preliminary, routine and follow-up control.
- To provide assurance regarding the compliance with the Russian laws currently in force, internal policy and applicable internal regulations.
- To enhance effectiveness of control systems with the overall aim to achieve financial targets, operational performance, to ensure efficient and careful use of resources and safeguard of assets.
- To ensure reliability and authenticity of generated reports and statements and their provision in a timely manner.
- To conduct internal audits and review sessions to ensure reliability and effectiveness of risk management system, internal control system, corporate governance system with the focus on operational performance of RIAR.
- To conduct independent assessment of internal control adequacy and effectiveness.
- To put in place and enhance continuously effectiveness of internal control system and corporate governance system to ensure the compliance with the Russian laws currently in force, requirements of regulatory authorities and international standards.

Number of audits with breakdown by year



Effectiveness of control activities



Plans

- The single consolidated plan of control activities elaborated by special Department for Internal Control under ROSATOM in respect of its subordinate companies provides for eight control activities for the 1st half of 2019:
- Two focused audits under the supervision of ROSATOM's Internal Control Department;
 - Annual internal audit of making Integrated Annual Report followed by the auditors' report;
 - Auditing of financial, business and procurement operations as well as contract-related activities;
 - Control over fulfillment of key performance indicators defined on an individual basis.

ANTI-BRIBERY AND ANTI-CORRUPTION POLICY

Enterprises and organizations subordinate to ROSATOM set up a unitary Industry-specific mechanism for combating corruption and protecting assets as well as they have in place well-defined mechanisms of functional management, a chain of command and business data intelligence. The Deputy Director for Security and Asset Security Office directed by him with a total number of staff of six people

(as of 31 December 2018) are in charge of organizing a relevant work, implementing and coordinating activities targeted at countering corruption offences.

For additional information you can visit the following websites of ROSATOM State Atomic Energy Corporation (<http://www.rosatom.ru/partnership/theft/>) and JSC "SSC RIAR" (<http://niiar.ru/>)

Promotion of economic security and protection of assets during business, financial and economic activities at RIAR

Major activities undertaken by Assets Security Office

Identification of potential economic risks affecting the corporate interests and its business standing

Elaboration and implementation of activities targeted at preventing and stopping corruption

Promotion of business confidentiality

ROSATOM's communication channel "hotline"
 For preventing corruption and fraud in nuclear industry

07-07
8-800-100-07-07
@rosatom.ru

A major part of work against corruption and its prevention is to exercise control over management of procurement activities. The staff members of the Assets Security Office are entitled to check veracity of submitted information declaring earned income, property status and liabilities

of certain categories of officials as well as they carry out an expert appraisal of trustworthiness and business reputation for some staff members involved in procurement to reveal affiliation of persons and entities as well as potential conflicts of interest because there are certain

positions where the applicants have to provide details of income, assets and liabilities both in case of job appointment and substitution. All the potential vendors and contractors are informed about anti-corruption policy in place and practices available with the help of procurement documentation and procurement terms and conditions.

All the relevant documents are available at RIAR's website in the Section entitled "Anticorruption efforts". The same Section of the website has addresses and other details of contacts for a special purpose communication channel "hotline" designated for preventing corruption and fraud in nuclear industry so that any employee or an outsider who has knowledge of fraud or theft can communicate this information even on anonymous basis. It is mandatory for all the RIAR's employees to study regulatory and procedural documents addressing corruption and fraud.

All the RIAR's divisions and departments perform analyses of business processes to identify critical control points and describe potential corruption offences. The results of analyses are used as a basis for corruption risk mapping and working out action plans targeted at minimizing risks. Awareness-rising activities are organized to ensure that the employees are intolerant towards any form of illegal actions. RIAR also takes targeted efforts to prevent, identify and document the cases of corrupt practices.

18.94 of economic loss was prevented
mIn RUB

GRI 414-2 419-1 2.5.8

2018 – A Year of Science in the Rosatom State Corporation

But science can only be created by those who are thoroughly imbued with the aspiration toward truth and understanding...
A. Einstein

The awareness of personnel is 100 %

Plans

Pursuant to the policy of ROSATOM State Atomic Energy Corporation and JSC "SSC RIAR" and based on the experience gained and identified special focus areas, the staff members of the Asset Security

Office are challenged to make efforts towards further enhancing measures and methods for combating corruption, safeguarding assets and trade secrets at JSC "SSC RIAR" in 2019.

(84-235) 7-91-00, areshin@niiar.ru are the telephone number and electronic mailbox to report about corruption at JSC "SSC RIAR"

3.2.4

RIAR's internal regulations, policies and procedures for combating unlawful actions and corruption

Unified industry-specific anticorruption policy of ROSATOM and its subordinate enterprisers and organizations

Unified industry-specific recommended practices for corruption risk assessment at ROSATOM's enterprisers and organizations

Anti-bribery and anticorruption policy of JSC "SSC RIAR"

Regulation on establishing relationships with a party to a contract during procurement-related activities

RIAR's register of corruption risks

Reporting procedure for employees of JSC "SSC RIAR" to inform their employer about the address facts for the purpose of inducement to make corruption, review and verification of such complaints and their filing

Procedure for coordination of actions between RIAR's employees and law-enforcement agencies for combating and preventing corruption

Code of professional ethics and official conduct for the RIAR's employees and other institutions fallen into the ROSATOM's governance system

Regulatory guide on record-keeping, storage and treatment of data storage devices with the information constituting trade secrets of JSC "SSC RIAR"

List of information classified as proprietary information of JSC "SSC RIAR"

Standing order of the Experts' Board regarding protection of proprietary information at JSC "SSC RIAR"

Rules and regulations on security checks of information subject to non-disclosure and restricted access (for internal use only) at JSC "SSC RIAR"

*Procedure for handling information reported via communication channel "hotline"

*Rules and regulations on proprietary information protection at JSC "SSC RIAR" (update)

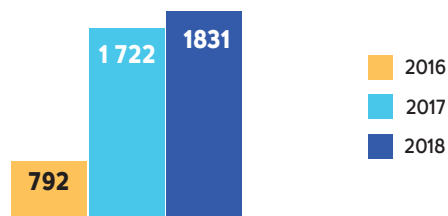
*Standing order regarding establishment of ethics commission

*List of positions at JSC "SSC RIAR" under obligation to provide details of income, assets and liabilities

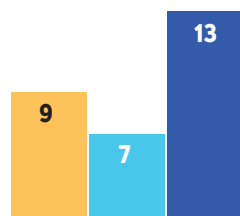
*Plan of actions against corruption for 2018 until 2010

*Worked out in the year under report

GRI 205-3
414-2
419-1
A number of audits targeted at preventing any losses including loss of assets



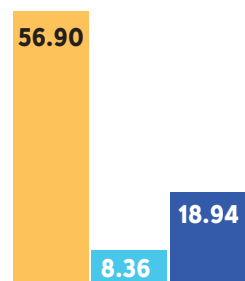
A number of staff members under disciplinary proceedings



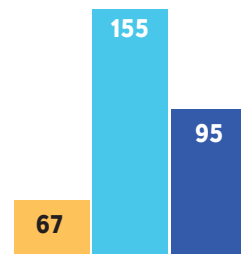
GRI 2.5.9
Number of checks aimed at verifying information about malpractices and corrupt activities reported via communication channel "hotline"



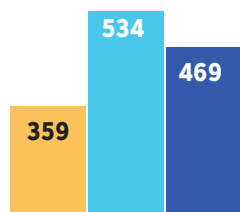
Loss prevented, mln RUB



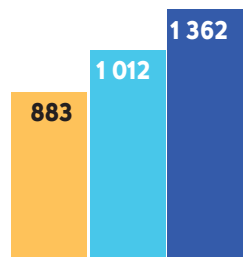
Number of checks for professional affiliation



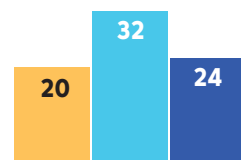
Number of conducted procurement audits



Number of contract performance audits



Number of employee investigations



Number of case reports handed over to the law-enforcement agencies



Number of criminal proceedings instituted as a result of investigations conducted



PROCUREMENT MANAGEMENT

GRI 102-16
206-1
AP 56
2.5.3
Procurement activities are undertaken by RIAR at its own costs and expense and with the use of extra-budgetary funding and they are governed pursuant to the Federal Law No.223-FZ "On Procurement of Goods, Works and Services by Certain Legal Entities"

as of 18 July 2011. ROSATOM approved Unified Industry-Specific Procurement Standard under this Federal Law. This Procurement Standard was adopted by RIAR as a regulatory document for procurement activities (see RIAR's official website <http://niiar.ru/?q=postavshikam>).

Fundamental principles of procurement activities

Transparency	Information transparency in procurement activities
Competitiveness	Equality, justice, non-discrimination and no groundless restrictions on competition as to procurement participants
Sense of purpose	Adherence to the principle of law, collegial work and record keeping with regard to decisions taken, free qualification for tendering by imposing immeasurable criteria for tenderers
Timeliness	Procurement processes are conducted so that to provide the ordering customer with a product in a timely manner and to inform the suppliers about planned procurements in advance
Efficiency	The objective is to ensure purposeful and efficient application of funds for purchasing (with due consideration for operational lifetime of purchased product) and implement a number of cost-cutting measures in favor of ordering customer
Priority to the safety	The absolute priority in conducting procurement activities is to ensure safety during work undertaken by nuclear companies in the field of atomic energy use

To promote openness and transparency of procurement process, RIAR makes the information about procurement available on the official websites on the Internet i.e. on the government website relevant to the unified procurement information system (www.zakupki.gov.ru) and on the dedicated website for placing purchase orders for goods, work and services for the ROSATOM's needs (<http://zakupki.rosatom.ru/>).

The information regarding competitive procurement procedures as well as regarding their outcomes is posted by RIAR at the electronic market place dedicated and authorized by the ROSATOM

that makes it possible to engage a maximum number of bidders.

Procurements with the participation of small and medium-sized business entities are made available on specially certified e-trade platform JSC Unified Electronic Trading Platform.

2018 – A Year of Science in the Rosatom State Corporation

People will reap the rewards of science promises.

D. Mendelev



100 %

is a share of competitive procurements made by electronic means

86.44 %

is a share of contracts made with the small and medium-sized business entities

1.95 %

is a share of expenditures incurred in procuring goods, work and services under the contracts entered with the suppliers geographically located in the administrative district of RIAR

415

contracts entered according to the results of procurement process

3 790.9

mln RUB is the total value of these Contracts

Purchased materials including their mass and volume

Product description	Quantity, volume
Filter elements, relative units	72 970
Industrial gases, m ³	4 639.63
Paper, sheets	5 735 900
Chemical agents, t	124,25
Starting materials, g	4 950.8
Ion exchange resins, m ³	3.2
Rolled steel, t	55.208
Pipes, t	13.834
Protective outfit, pcs.	335 487
Work-wear, pcs.	127 957
Diesel fuel, t	139.818
Oils and greases, kg	22 239
Petrol, liter	47 328.12

The fundamental principles of procurement activities undertaken by JSC "SSC RIAR" are available on its official website (<http://niar.ru/?q=postavshikam>)

68.909

mln RUB is the amount saved as a result of procurements made

6.64 %

of the planned purchase price

Information regarding procurement activities is available on the following websites: www.zakupki.gov.ru and www.zakupki.rosatom.ru

Information regarding procurement activities and their outcomes is available on electronic trading platforms LLC "Fabrikant", JSC Unified Electronic Trading Platform and B2B-Center

Plans

- To increase the percentage of timely competitive bidding procedures up to 100 %.
- To keep small- and medium-sized business entities in procurement at the level no less than 18 % of the total annual value of contracts entered

of which at least 15 % are the contractors representing small- and medium-size business entities.

- To increase the percentage of open competitive bidding by reducing single-source procurement share.

6 PROPERTY MANAGEMENT

Key goals for property management

Enhanced functioning of property complexes in cooperation with the divisions and departments concerned

Grown income and reduced expenses of RIAR because of efficient management and cost-efficient use of premises (estate property)

Enhanced competitiveness of RIAR, improved economic and financial performance via efficient management of property including non-core assets

Balanced economy of property complexes to achieve their balanced employment

Combined approaches and comprehensive strategies to enhance functioning of non-core property complexes, non-core estate property and shareholders' equity of RIAR, subsidiaries and associated companies

As of December 31, 2018 JSC "SSC RIAR" had the following in the actual use:

- 104 land plots with a total area of 231.25 hectares belonged to RIAR on a property right;
- 10 land plots with a total area of 2 369.13 hectares were on use on a leasehold basis and continuous (termless) use.

In 2018 the lease of two land plots was terminated in connection with their transfer to municipal ownership. RIAR received RUB 53 249 295.00 (Chinese-Russian Joint Venture "Beijing CIAE- RIAR Radioisotope Technology Co.Ltd") and RUB 6 153 235.50 (Belorussian-Russian Closed Joint Stock Company "Isotope technologies") as a share of profit from the companies where it has the coownership share.

GRI 102-45

59.4

mln RUB are earnings from joint ventures

60.7

mln RUB is the revenue from the leasing property

5.1

mln RUB is profit on sales of chattel

114

land plots

2 600.38

ha is the land size

705

real estate objects belong to RIAR under the property right (as of 31 December 2018)

4



We fruitfully work

OUTPUTS

Igor **KNYAZKIN**
**Deputy Director
for Economics and Finance**

The reporting year was marked by the successful completion of the three-year program of financial recovery which core indicators were performed in full. Special note should be taken of the following:

1. Starting the Program with losses (-702 mln rubles), we managed to reach the breakeven point in the past year ahead of schedule and, reversing the situation in the current decade, gained the net profit for a second consecutive year (more than 100 mln rubles).
2. The adjusted free cash flow was increased on own by 1.0 bln rubles (from -0.2 bln rubles to 0.8 bln rubles).
3. The debt burden on the enterprise was removed: investment credits were repaid in full, loan was not contracted since June 2015, receivables and payables were balanced.
4. By ensuring the growth of revenues and optimizing the full costs, the average wage increased

Key economic indicators by years, mln rubles

Indicator	2015	2016	2017	2018	2019
Revenues from sale of goods, products, work and services	4 119.1	5 107.4	4 237.9	5 017.2	5 174.5*
Self-cost of sold goods, products, work and services	4 185.4	4 055.6	3 370.2	3 945.2	4 361.2
Gross profit / loss	-66.3	1 051.9	867.7	1 072.0	813.3
Administrative costs (data in brackets are share of administrative costs in revenue, %)	805.6 (19.6)	807.4 (15.8)	781.9 (18.5)	829.3 (16.5)	961.6 (18.6)
Sales profit / loss	-884.6	110.7	-70.5	47.6	-340.4
EBITDA	-554.9	241.1	369.7	402.2	425.3
Net Operating Profit After Tax (NOPAT)	-335.6	2.3	101.2	101.7	92.8
Net profit / loss	-702.1	-90.3	69.9	110.7	50.0
Reserves	1 715.1	742.2	722.8	950.9	1 091.6

* Including financing of experimental facilities.

by more than one and half times (as compared to 2015).

To consolidate the progress achieved, a development plan for the period up to 2022 was elaborated and approved at the industry-specific level. Profit activity is one of the key indicators. To achieve the targeted purposes and accepted program parameters, plans were made to increase revenue (earnings from R&D, sales of radionuclide products, production of BN-800 fuel assemblies; the SM core modernization project, annual financing of expenditures for maintenance of the experimental facilities and nuclear heritage sites using special-purpose reserve funds of the State Corporation ROSATOM); to reduce the volume of annual program for purchasing standard goods, works and services; to control working capital (optimization of reserves and stocks) and non-core assets.

JSC "SSC RIAR" applies best international practices of customer relationship as regards payments accounting and document management. In 2018, RIAR prepared and adopted a process of legally significant electronic document management in which e-documents had the same legal force as hard copies. The advantages of the process are increased speed of paperwork, prompt transfer of documents to the contractors, reduced tax risks and maximized use of the automated documentation system capabilities. At present, the system operation is being tested between organizations of the ROSATOM State Corporation. Our traditional customers are going to be involved into the electronic document management system in the coming years.

Revenues for 2019 are confirmed one hundred per cent. Contracting as of February is more than eighty five per cent and we are very optimistic about meeting the goals set for the year 2019.

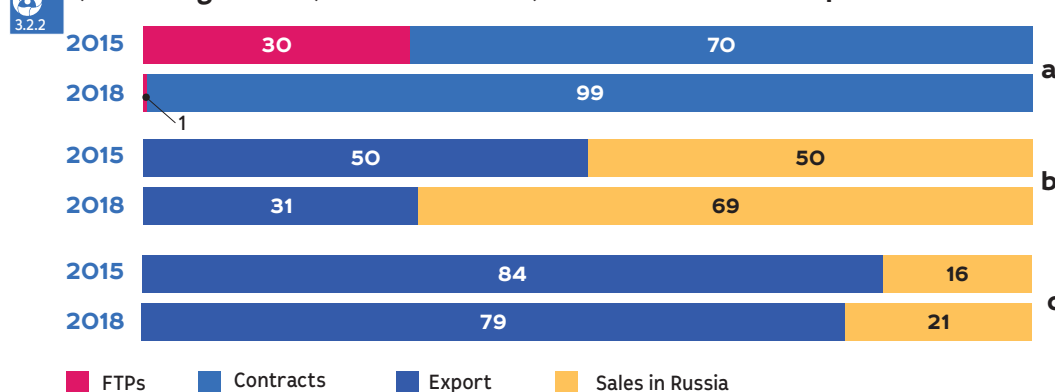
4.1.

Financial Capital

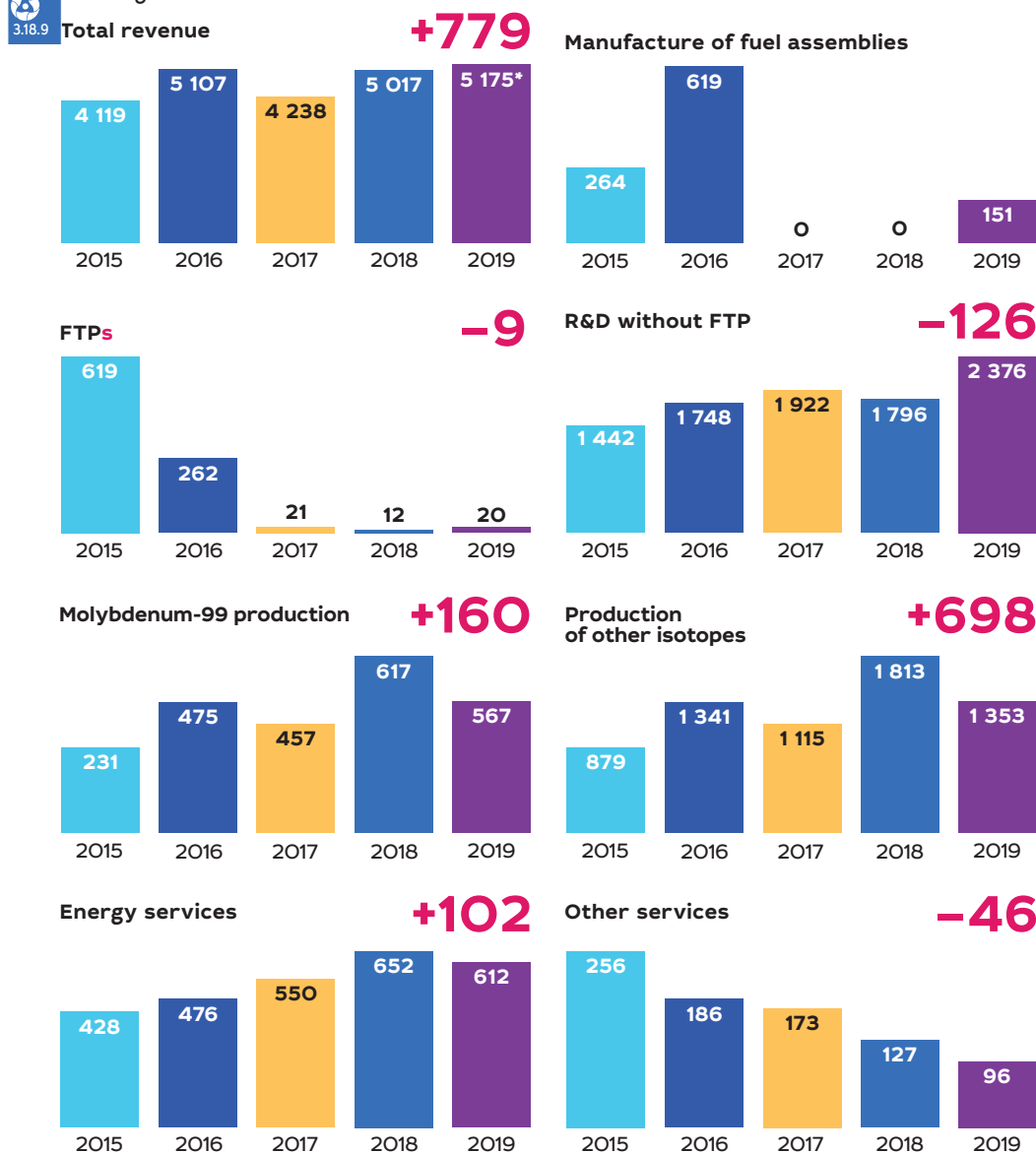
FINANCIAL PERFORMANCE

JSC "SSC RIAR" key performance indicators

Indicator	Values per years		
	2017	2018	
		Target	Actual
Adjusted free cash flow, bln rubles	0.748	0.345	0.805
Implementation of the roadmap for scientific development concept, %	-	100	100
Labor efficiency, mln rubles/person a year	1.491	1.663	1.613
Full costs, bln rubles	3.836	3.831	3,728
Integrated indicator for investment activity efficiency, %	100	100	103
Capital investment integrated indicator, %	-	100	95
Engagement rate, %	85	80	83
Supervisor appraisal	1.2	1.0	1.2
Timely receipt of licenses for performance of work in the field of atomic energy use	-	No faults	
LTIFR and number of injuries resulted from a fall from height at production facilities, including Contractors	0	0.3 (retaining of the base level)	0
Events rated at level 2 and higher on the INES scale	0	No events	
Performance of state-level tasks, %	100	100	100

Structure of revenues from R&D by years, %:
a) including FTPs; b) without FTPs; c) sales of radionuclide products


Dynamics of revenues from services by years, mln rubles
including variations of the 2018 indicators vs. 2017 indicators



* Including financing of experimental facilities.

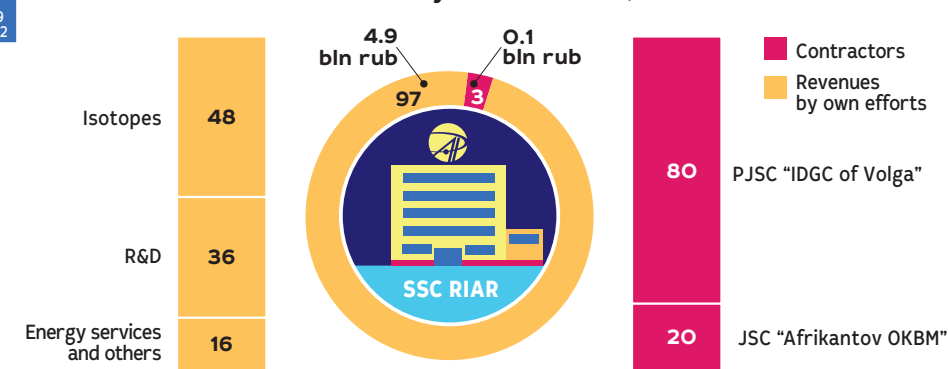


Increase in JSC "SSC RIAR" revenues resulted from the bigger supplies of radionuclide products and growth in electric energy generation at the VK-50 reactor facility. Volume of the research and development was dictated by the finance under the Federal Target Program "New-generation Nuclear Energy Technologies for the Period 2010-2015 and up to 2020". The proportion of federal budget in the overall volume of funds fell from 15 % (2015) to 0.2 % (2018). However, the Institute managed to compensate for this decrease. As a result

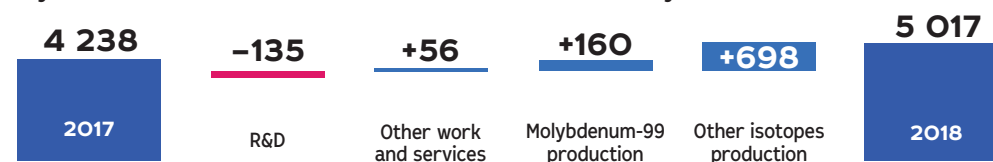
of the compensating measures, additional revenues were earned from production and supply of radionuclide products, including Molybdenum-99 (+ 160 mln rubles) and Californium-252 (+332 mln rubles). From 2015 to 2018, volumes of isotope products production and sale increased by 1 320 mln rubles, including increase in export by 984 mln rubles (from 16 to 32 mln dollars (+ 100 %), which included increase in production of medical-purpose radiochemical Molybdenum-99 by 7 mln dollars (+ 233 %)), which made 48 % from the total volume (27 % in 2015).



Structure of revenues and key contractors, %



Dynamics of revenues from services over the year, mln rubles



The analysis of JSC "SSC RIAR" financial and economic activities showed major improvements in the paying capacity as at 31 December 2018. It was because growth rates of the highly liquid assets in the total balance (monetary resources and debts receivable) outstripped those of the debt finance and short-term

liabilities. In addition, since RIAR refrained from attracting external debt financing, its dependence on external borrowings continued reducing and financial stability of the enterprise improved. Increase in the turnover of current assets happened because growth of the total revenues outpaced that of current assets.

Solvency, liquidity and financial stability indicators, %

Indicators	Values per years			Recommended value
	2016	2017	2018	
Financial stability				
Leverage (capitalization) ratio	13	15	17	Less than 100
Ratio of borrowed and own funds	31	14	16	Less than 100
Equity-assets ratio	88	87	86	40–80
Financial stability index	91	90	88	60–90
Long-term borrowing ratio	4	4	4	–
Liquidity and solvency				
Absolute liquidity ratio	143	62	102	20–50
Quick ratio	165	99	144	70–80
Quick ratio	250	170	205	100–200
Turnover of current assets	849	762	697	200–250
Current assets turnover				
Current assets turnover ratio	113	109	117	–

Income distribution by years, mln rubles

Indicator	2015	2016	2017	2018	2019
Income (sold products, work, services)	4 119	5 107	4 238	5 017	5 175*
Including intra-group turnovers	1 239	2 015	1 312	1 457	1 458
Distribution by geographical segments:					
Russian Federation	2 465	2 882	2 076	2 537	2 776
CIS	34	38	50	67	19
Non-CIS countries	1 620	2 187	2 112	2 413	2 380
Distribution by areas of business:					
Manufacture of the BN-800 FAs	264	619	0	0	151
R&D	2 061	2 010	1 943	1 808	2 396
Isotope production	1 110	1 816	1 572	2 430	1 920
Energy services	428	476	550	652	612
Other services	256	186	173	127	96

* Including financing of experimental facilities.



2.5
bln rubles – International revenue

111
mln rubles – Net profit

249
mln rubles – Cost reduction

49 % – Export revenues

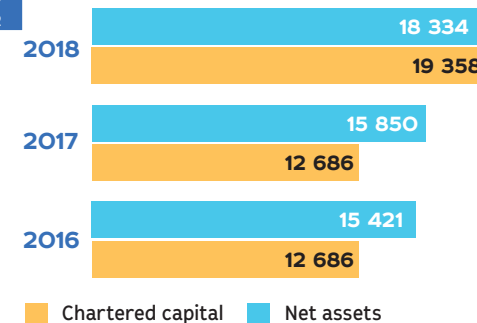
CAPITAL MANAGEMENT

Financial stability of JSC "SSC RIAR" owes much to the economic effectiveness management which basis is the system of budget management of financial and economic activities. The system is regulated with standards of integrated management system and is based on the collection, systematization, treatment and analysis of the economic information in the context of construction projects and profit and loss statements of the RIAR's subdivisions. The budget system takes account of strategic goals and sets target values of economic indicators by means of periodic plan-fact analyses, provides latest target deviation information that is needed by RIAR's Management for making managerial decisions. Effectiveness of the financial management is ensured by the JSC "SSC RIAR" financial policy, use of industry-specific and internal regulations and financial risk management standards. This allows arranging a system of relationships with banks which provide optimization of the bank accounts structure, minimizing bank costs, planning and optimizing cash flows for the efficient allocation of the financial resources inside

the Institute and investment of free cash within loan agreements concluded between JSC "SSC RIAR" and JSC "ATOMENERGOPROM" (pool leader). These agreements allow the funds of the Institute to be placed both on the long run and with a return on the next working day after the transfer to the pool leader within cash pooling operations (working capital financing and automatic return). The work with the available cash assets allowed us to get additional income amounting to 52 mln rubles upon placing the funds in the pool leader's accounts. Positive dynamics of the JSC "SSC RIAR" performance indicators in the reporting period was a consequence of implemented measures aimed at enhancing the efficiency of activities in accordance with the approved financial recovery program for 2016–2018. Financial and economic targets of the recovery program were met in full and the program was successfully completed. In the reporting year, a development program for 2018–2022 was elaborated and approved. Due to the fact that the target revenue might not be met in the reporting period, additional measures were developed which result was an increase in revenue on international market (\$ 38.6 mln) and a significant reduction in costs as compared with the planned values. We managed to improve operating efficiency and to get positive results for the second consecutive year. Among the work carried out to reduce the costs, we may highlight optimized schedules of minor and major repairs, reduced contingencies for radioactive waste management through recalculated cost of processing stages, limited rise in prices for purchased raw materials and products, savings from tendering procedures, performance of work without involvement of third parties, optimized working capital in part of reserves.



Dynamics of assets by years, mln rubles



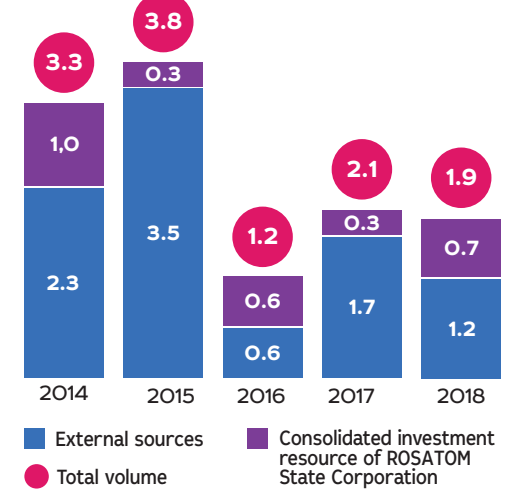
Plans

Forecast indicators for the next year show a positive momentum. The plan is to implement financial recovery measures approved for 2019–2022 so as to improve the performance efficiency to achieve

breakeven (increase in revenue, lowering of costs). Achievement of planned outcomes will allow the enterprise to close 2019 with the net profit of 50 mln rubles.

plant. The main task of these investment activities was provision of a high level of reliability of the property complex. Compensation was made of the "NIAR – Generatsiya" costs since 2015. JSC "SSC RIAR" completed key stages of the investment activities aimed at creating conditions necessary for service and combat actions of Military Unit No. 3706 protecting JSC "SSC RIAR". Acceptance procedures and commissioning of the administrative and warehouse complex are expected in Q2 2019

Investment volume by years, bln rubles



1,9 bln rubles – capital investments in construction, retrofit and modernization

Details about MBIR, PRC and BOR-60 projects can be found in sub-section "Innovative Activity" from Section 4.3.

INVESTMENT MANAGEMENT

Goals

- Improvements in the efficiency of investment activities
- Fulfillment of industry-specific orders and off-industry obligations
- Ensuring the accomplishment of the strategic long-term objectives of the Institute within the established deadlines

Tasks

- Maintaining the current market standing and expansion into new markets for the mid- and long-term perspective
- Servicing and updating RIAR's infrastructure with regard to radiation, environmental, industrial safety and scientific infrastructure

Investment activities of the Institute are performed in accordance with the uniform industry-specific policy of the State Corporation ROSATOM. It aims at maintaining and developing production capacity and research potential of the enterprise. Investment management is provided through management of investment projects at all stages of their lifetime. Investment activities involve project planning, organization, motivation, control and adjustment and aim at achieving the results from investment tasks with constraints in time, budget and risk levels.

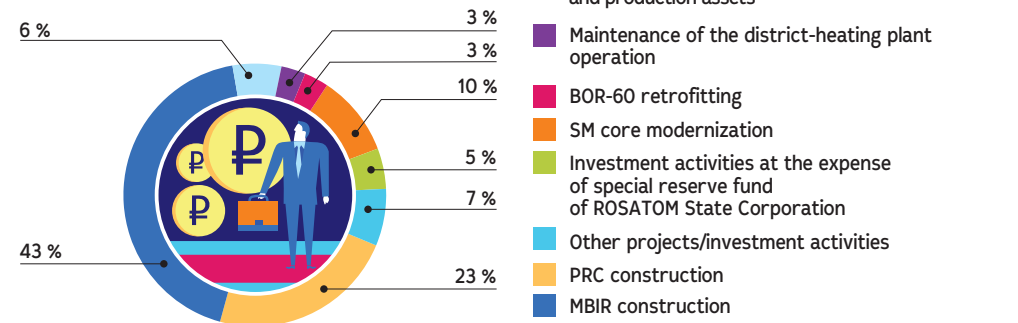
In the reporting period, the full cost of the MBIR construction project, including the milestone schedule of the upper level, was approved with commissioning in 2025; a contract for the reactor construction designing up to the final development was signed, in which completion of the design work is scheduled for June 2019 with the subsequent submission of the design documentation to the State Expert Appraisal Board. The Institute continued the work to construct the poly-functional radiochemical complex (PRC) and to upgrade reactor BOR-60.

The SM Core Modernization project is being implemented as scheduled. The following work was completed within the established deadlines: design and operational documentation was developed including documents to license the retrofitted facility; a pilot batch of improved fuel elements and burnable poison rods was manufactured, it would be tested in 2019. Under the plans for 2019 are equipment deliveries, replacement of the reactor core, changes in the conditions of the reactor operating license in view of the improved core.

We successfully completed a series of investment activities titled "Production Assets", "FP. Required Fire Protection Activities", "Formation of the IT-Structure" which tasks were provision of the up-to-date equipment to enhance production and experimental capability and insurance of the nuclear facilities safety in accordance with the actual federal rules and regulations.

JSC "SSC RIAR" and "NIAR-Generatsiya" Company agreed upon financing conditions of the investment activities to support operation of the district-heating

Amount of JSC "SSC RIAR" investments with a breakdown into projects



Plans

To improve efficiency of the investment and project activities and also quality of the investment project management, we plan to submit to JSC "Science & Innovations" our propos-

als to better ROSATOM's processes of investment activity management and to change existing regulations governing this activity.



Alexey **IZHUTOV**

**Deputy Director,
Science & Research**

In the reporting year, the RIAR's research and production activities were carried out as part of the financial rehabilitation program and the further improvement of the unique experimental base.

The RIAR's nuclear research installations were operated safely, in accordance with the planned indicators. The temporal reactor efficiency coefficient was in the range of 60–80% of the calendar time. According to the schedule, activities were performed related to the refurbishment of the SM reactor core, among which the manufacturing of main core components should be noted. There were continued ampoule and loop tests of prototypes of fuel rods and other core components of nuclear reactors with various types of coolant under conditions simulating normal operation and deviations from normal conditions. New techniques were created, irradiation rigs and loop installations were prepared to test in the MIR reactor so-called "tolerant" fuel resistant to severe accidents. The design of irradiation rig was developed and all the necessary arrangements were done to accumulate chromium-51 in the SM reactor in order to produce a neutrino source. In early July 2019, the source will be delivered to the Baksan neutrino observatory for the BEST sterile neutrino search experiment.

The Reactor Materials Testing Complex continued examinations of VVER-1000 full-scale spent fuel assemblies of various modifications to obtain

the necessary data for improving their operational characteristics. The results were entered into the zirconium alloys database and were used for their licensing as materials for fuel assemblies of foreign nuclear power plants. In the framework of the international project "Zero Level of Nuclear Fuel Failure", studies were conducted, as a result of which recommendations were made for improving the design of fuel assemblies aimed at increasing its reliability. In the "Proryv" design area, new data have been obtained on the behavior of nitride fuel, corrosion state, and mechanical properties of cladding materials, which will be used to improve fast reactor fuel rods and justify safety of continuing testing of experimental fuel assemblies with nitride fuel.

Work on the Proryv project was also carried out in terms of improving the pyrochemical and hydrometallurgical parts of the scheme for processing spent mixed uranium-plutonium nitride fuel and handling high-level waste. Experimental results on soft chlorination on model samples with fission products and minor actinides, anodic polarization of uranium and fuel refining; quantitative characteristics of the processes are determined. The development of pyrochemical reprocessing apparatus is continued.

In 2018, in accordance with contractual obligations, we produced and delivered radioisotope products and ionizing sources to domestic and foreign customers. The main contribution to the sale of radionuclide products was made by the sale of molybdenum-99, strontium-89, iodine-131 and ionizing sources and irradiated materials based on selenium-75, iridium-192, cobalt-60, californium-252. An important result of the year was an increase in sales of medical preparations based on iodine-125 by 1.6 times, iodine-131 by 1.4 times, lutetium-177 by 3 times. Molybdenum-99 shipments increased up 589 TBq.



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in the Rosatom State Corporation**

Labor and Science: there is nothing more important on the Earth.

M. Gorky



4.2.

Production capital

OUTPUT

Physics and engineering of nuclear reactors, irradiation technology and safety of nuclear reactors



RIAR operate six reactors and two critical assemblies of reactors MIR and SM.

In 2018, the following activities were performed:

- capsule and loop tests of fuel rods dummies, other components of the nuclear reactor cores with various types of coolant under conditions simulating regular operation and deviation from normal conditions;
- in-reactor studies of the effect of neutron flux and reactor radiation on the properties of fuel, structural and absorbing materials of nuclear installations for various purposes; in-reactor studies of the mechanical characteristics of materials for nuclear reactors;
- development, creation of irradiation technologies and the production of transplutonium elements, various radioisotopes of medical and industrial purposes, irradiation of materials in order to change their physical properties;
- development of methods for providing, maintaining, monitoring indicators of water chemistry, decontamination of equipment of research and power reactors and experimental research in these areas;
- development of methods for calculating thermohydraulic and neutron-physical characteristics to support operation, safety analysis of research nuclear facilities and their experimental devices;
- development and manufacture of sensors for in-reactor monitoring of temperature, pressure, neutron flux, linear displacements for equipping experimental devices;
- development and manufacture of automated systems for collecting and processing experimental data when conducting in-reactor research;
- design and experimental studies to justify the safe handling of unirradiated and irradiated nuclear materials;
- design and experimental studies in accordance with the work program for the efficient use of fuel in the reactor core;
- obtaining experimental data on physics, thermophysics, thermohydraulics, release and distribution of fission products necessary for verification of design programs, developments and proposals for existing and innovative reactors, justification of safety of existing reactors;

- study of the water chemistry characteristics, development of maintenance methods and monitoring indicators of water chemistry;
- study of the neutron-physical and thermohydraulic characteristics of cores of boiling reactors with natural coolant circulation, study of the performance and resource resistance of materials and various equipment for nuclear power plants,

transients processes, water-chemical and gas modes, characteristics and methods of radiation monitoring. Complex reactor experiments were simulated at critical stands to ensure their safety; the neutron-physical characteristics of the refurbished SM reactor core were studied.

Please, see the details on production and distribution of energy in the sub-section "Environmental protection", Section 4.6

1.5.1 Reactor performance in 2018

Parameter	SM	RBT-6	MIR	RBT-10/2	BOR-60	VK-50
Max power, MW	90	6	39	10	50	200
Time factor, relative units:						
planned	0.64	0.71	0.60	0.73	0.64	0.80
actual	0.67	0.71	0.61	0.73	0.59	0.76
Reactor operation time, days:						
planned	233	259	219	267	234	293
actual	245	259	222	267	214	283
Shutdowns*	24	35	17	38	9	2

* No unscheduled shutdowns.

RIAR's site has almost all types of reactors operated in the world thus allowing for unique research

3.14.1 3.15.3 Reactor materials science, methods to test materials and nuclear components

The innovative development of the nuclear industry provides for the improvement of existing and development of promising types of nuclear reactors, which require the creation and justification of the radiation resistance of new materials.

To ensure the safety of research, RIAR has:

- hot cells and heavy-shielded boxes;
- automated stands for non-destructive examinations of FAs, fuel rods and other core components;
- stand for thermal tests of full-size irradiated fuel rods;
- remote equipment for the re-fabrication of irradiated fuel rods to conduct a variety of experiments in research reactors;

- storage pool for spent nuclear fuel;
- equipment for mechanical testing, study of microstructure, crystalline structure, elemental and isotopic composition, corrosion tests, measurements of thermophysical characteristics of materials both in the initial state and after reactor tests.

Based on the results obtained in 2018, a conclusion was made about the effect of design changes on the performance of the VVER-1000 fuel assemblies and measures were identified for their further improvement. Modern equipment used to study mechanical properties, microstructure and elemental composition allowed for a series of research to determine the relationship between the structural phase state, oxidation, hydrogenation, changes in the strength and ductility characteristics and operating conditions of the FA skeleton components made from promising zirconium alloys. The results are included in the database on the zirconium alloys properties and used for their licensing as materials for fuel assemblies of foreign nuclear power plants in accordance with the action plan for the qualification of fuel of Russian design in the USA for 2015–2019.

3.20.1
3.20.2 In the framework of the international project "Zero Level of Nuclear Fuel Failure", studies were conducted, the results of which gave recommendations on improving the fuel assemblies design to increase their reliability.

In the "Proryv" project new data have been obtained on the behavior of nitride fuel, corrosion state and mechanical properties of cladding materials, which will be used to improve fuel rods of fast neutron

reactors and justify the safety of continuing testing of experimental fuel assemblies with nitride fuel in the BN-600 reactor to higher parameters.

In 2018, results were obtained on the topic of propulsion nuclear power plants that become the scientific basis for substantiating performance and forecasting the lifetime characteristics of fuel assemblies of promising nuclear power plants for icebreakers and floating nuclear low-power plants.

Improving the quality of research is inextricably linked to the development and implementation of more advanced material testing methods. In 2018, as part of the "Proryv" project implementation regarding the substantiation of the performance of fuel rods with mixed nitride uranium-plutonium fuel, a method was developed and introduced to tests irradiated tubular samples with internal pressure of hard plastic filler. This method most adequately meet real cladding stress conditions, allows getting a more accurate assessment of plasticity characteristics of cladding material and can be used as an alternative method for studying the mechanical properties of spent fuel rods claddings.

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Science is a shared creative work and cannot be anything else; it is like a monumental building, which needs to be built for centuries, and where everyone should bring a stone...

H. Poincaré

RIAR has the largest materials science complex allowing conducting research on materials and items from miniature submicroscopic irradiated samples to fuel assemblies after their operation in any of the existing nuclear reactors. The availability of equipment and qualified personnel provides the conditions for successful work on industry-level and federal-level projects

Reprocessing of spent nuclear fuel and radwaste conditioning



Research and development work on the "Proryv" project was carried out in three areas: improving the pyrochemical and hydrometallurgical parts of the scheme for reprocessing spent mixed nitride uranium-plutonium fuel and handling high-level waste.

- The experiments were carried out: on soft chlorination on model samples with fission products and minor actinides; anodic polarization of uranium and electrical refining of fuel; filtration of chloride melts with precipitation; the rationale for transporting molten salt through an unheated pipeline; metallization of uranium dioxide and MOX pellets by reduction of lithium generated on a solid cathode in a eutectic melt of chloride and lithium oxide. The composition of the reduction products, the ratio of metal to dioxide, and the quantitative characteristics of the secondary reduction process are determined. The development of pyrochemical redistribution apparatuses continued: metallization, transportation of molten salt media, soft chlorination, deposition of oxides, vacuum sublimation, filtration, inert gas preparation and purification systems; the documentation has been adjusted for the electrolyzer for metallization and the radiation-protective chamber with an inert atmosphere.
- The study of the microwave denitration operation was continued: experiments were carried out to refine the production of oxide fuel of a given composition, the optimal conditions for microwave denitration of nitrate solutions of actinides were determined, the physicochemical properties of the obtained powders were determined.
- The radiation resistance of magnesium-phosphate ceramics for the immobilization of carbon-14 was studied. As a result of irradiation of matrix samples

with accelerated electrons, absorbed doses are established, at which the destruction of the target phases and their complete decomposition occurs. No significant increase in the leaching rate for all studied cations from radiation-damaged samples was found, the duration of the geological storage of the matrix to complete decomposition of the main phases fixing carbon-14 was assessed.

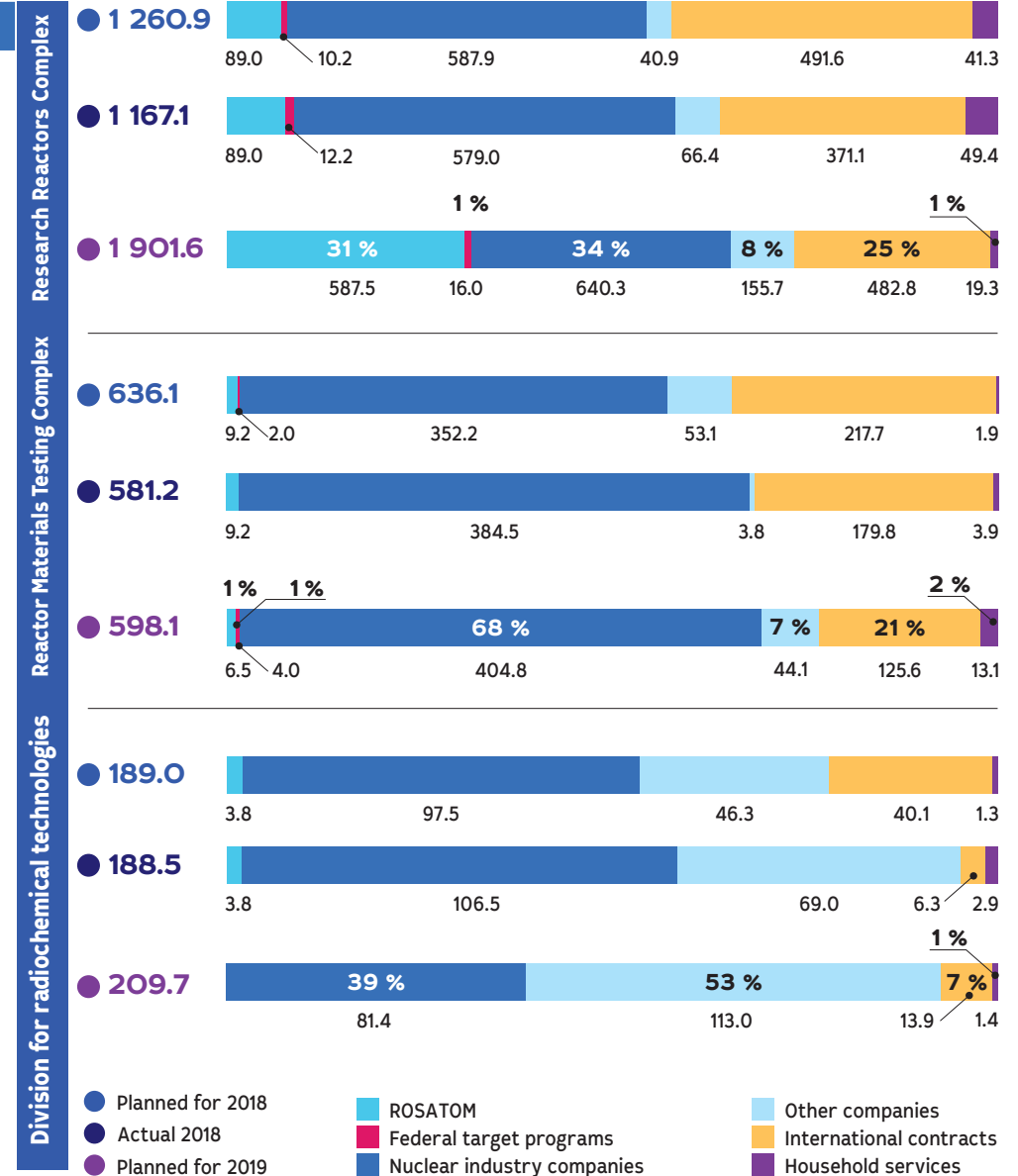
Under the Contract with Marubeni Utilities Services (Japan), there was done metallization of americium from dioxide in a melt of chloride and lithium oxide, and samples of alloys of americium with zirconium, aluminum and iron were made to obtain hydride compositions. The work results will improve the efficiency of americium burning in fast reactors and reduce the environmental impact of nuclear energy.

An important aspect of reducing the negative impact of molybdenum-99 production is the regeneration of irradiated targets. As a result of experiments, it was found that the uranium-containing precipitates can be completely dissolved, the extraction of uranium from the obtained solutions was experimentally verified, which made it possible to show the possibility of uranium recycling and further use to manufacture new targets in the production of molybdenum-99.

Collaboration was developed with JSC Techsnabexport and Japanese organizations for the handling of molten fuel and fuel debris. Based on the analysis of the Fukushima-Daiichi NPP accident, a model was proposed with the inclusion of curium to obtain simulators of fuel debris. This model should be experimentally confirmed and the contribution of sea water and radiation exposure to fuel materials should be evaluated.



Sales of products (services), mln RUB



Radionuclides production

3.22.1

3.34.2

The main contribution to the proceeds from the sale of radionuclide products in 2018 was made by sales of molybdenum-99, strontium-89, iodine-131 preparations

and ionizing sources and irradiated materials based on selenium-75, iridium-192, cobalt-60, californium-252.

Sales of radioisotope products in 2018, mln RUB



Molybdenum-99 was supplied to the CNEN (Brazil), Karpov Institute of Physical Chemistry (Russia), Laboratorios Bacon and Technonuclear (Argentina). There were started regular deliveries of molybdenum-99 to the Beijing CIAE-RIAR Radioisotope Technology Co., Ltd. Production and shipment were carried out weekly on a regular basis and periodically — twice a week.

The growth in sales of californium-252 is due to the successful implementation

of contractual obligations to supply sources to foreign customers: Source Radiographics (Australia) and Areva/Framatome (France). In 2018, the starting material for manufacturing californium-252 sources was obtained by routine radiochemical processing of irradiated targets with curium isotopes, an additional amount of californium-252 was produced by irradiating experimental targets with berkelium-249 and californium-249 in the SM reactor.

Increase in sales volume:

× 1.4
iodine-131

× 1.6
iodine-125

× 7.3
lutetium-177

40.7 Tbq
of cesium-131
for medicine

16.65 Tbq –
average shipment
of molybdenum-99

+589 Tbq
of molybdenum-99

× 2 proceeds
of californium-252
sales

High-purity californium-252 with the minimal process losses is the result of express accumulation technology developed by RIAR

In 2018, when implementing the technology of californium-252 express accumulation from starting nuclides, an advanced technology for the radiochemical processing of irradiated material was used. In 2018, there remained a stable demand in strontium-89, gadolinium-153, tungsten-188. The volume of sales of iodine-125, iodine-131 and lutetium-177 in physical terms increased as compared to 2017 figures. In 2018, commercial batches of medical-grade cesium-131 for IsoRay (USA) were produced on a regular basis and weekly shipped; in total, more than 40.7 TBq was delivered.

Initial exploratory work has been carried out to justify the possibility of application of vanadium selenide as a material of the active part of selenium-75 sources. Currently, such sealed sources are produced in RIAR using elemental selenium. The use of vanadium selenide as the material of the active part would improve the consumer qualities of the sources and significantly increase the environmental safety of their production.

In 2018, modes of vanadium selenide synthesis and active part pressing technology were developed, a complex of thermal and materials science studies was performed, capsules with vanadium selenide samples were irradiated in the SM reactor.

In 2018, RIAR started justifying the technology of in-reactor irradiation and manufacture

of a unique chromium-51 source intended for scientific research of the fundamental properties of matter. In 2018, under the contract with the Institute for Nuclear Research of the Russian Academy of Sciences, the possibility of creating a chromium-51-based neutrino source with the necessary activity at RIAR was justified. Calculations and experimental studies were performed. The design of the device is developed and justified. As part of the safety justification, the effects of reactivity upon installation of the irradiation device in the SM reactor central neutron trap and the parameters of the cooling mode of the chromium disks were determined. The temperature fields and dose characteristics of the gamma radiation field of a chromium-51-based neutrino source with an activity of more than 111 PBq were calculated. The completion of the manufacturing and supply of the source to the Baksan neutrino observatory is planned in early July 2019.

A neutrino is a neutral fundamental particle with a half-integer spin that participates only in weak and gravitational interactions and belonging to the class of leptons



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in the Rosatom State Corporation

The field of research of all sciences is unlimited.
B. Pascal

RIAR is the only Russian producer of curium, berkelium, and californium isotopes in the form of preparations and radiation sources; nickel-63, strontium-89, ruthenium-106, cesium-131, gadolinium-153, lutetium-177, tungsten-188; cobalt-60 sealed gamma sources with high specific activity (more than 9.25 Tbq / g (250 Ci / g)) and selenium-75 sources

Shipping services

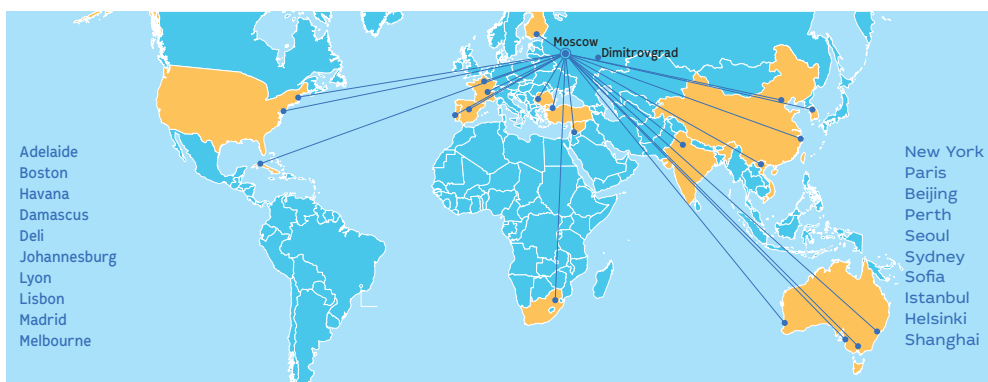
3.23.3

JSC "SSC RIAR" considers shipment of radioisotope products as the essential component in the production cycle; therefore, it pays particular attention to building capabilities in shipment and logistics, updating the fleet of special-purpose vehicles, optimizing logistic schemes and improving service quality provided that the safety requirements are fully met. At present, JSC "SSC RIAR" ensures shipment of Russian radioisotope products (both domestic products and products from other companies)

not only within Russia and CIS states, but also in the EU states, such as Germany, Czech Republic, Poland, Spain, France, and other countries. RIAR has a large number of special-purpose containers that have international certificates to ship radioactive materials and a fleet of special-purpose vehicles equipped according to the European requirements on road transport of dangerous goods by vehicles.

In addition to radioisotope shipment, RIAR renders integrated services to Russian

Shipment of radionuclides



11 car vehicles of different load capacity – specialized vehicle fleet of JSC "SSC RIAR"

277 flights per year

Until December 31, 2020, RIAR has valid permissions for the transit and transportation of radioactive materials across the territory of Poland and for the transportation of high hazardous radioactive materials in the Czech Republic

Until 2022, RIAR has valid Rostekhnadzor's license to handle radioactive substances during their transportation

and international companies on arranging and ensuring delivery to RIAR and return of other products engaged in R&D and production (for example, nuclear fuel samples and structural materials to carry out research, as well as natural minerals for irradiation). RIAR is included into the EORI system and has the unique

number as the company whose activity is related to transit and submittal

Fuel manufacturing

As part of the Roadmap dated 02.16.2018 No. 18/6-Pr for the implementation of paragraph 1 of the "List of instructions of the Director General of ROSATOM State Corporation based on the results of the workshop in Dimitrovgrad dated December 15, 2017 No. 1-1 / 150-PP", the Fuel Technology Department manufactured eight fuel assemblies for the BN-800 reactor containing fuel rods with vibropacked mixed

uranium-plutonium oxide fuel. For the first time in RIAR's practice, conformity assessment of manufactured products was carried out in accordance with the requirements of the newly introduced GOST R 50.06.01-2017 (GOST R 50.06.01-2017. Conformity assessment system in the field of nuclear energy use. Conformity assessment of products in the form of acceptance. Procedure. – M.: FSUE Standartinform", 2018. – 44 p.)



Detailed information on the work performed in 2018 at the nuclear research installations MIR, RBT-10/2, BOR-60, SM, RBT-6, VK-50 and critical assemblies SM and MIR, research in the field of fuel elements and reactor materials, fuel and fuel cycle components, transuranium elements, radionuclide preparations and radiation sources, spent nuclear fuel and radioactive waste management, radiation and environmental safety are presented in the SCIENTIFIC ANNUAL REPORT of JSC "SSC RIAR" (report on the main research activities carried out in 2018): http://niar.ru/annual_report

PRODUCTION CAPITAL MANAGEMENT

2.5.6
2.5.7
3.2.4

JSC "SSC RIAR" is constantly improving the management system needed to carry out research and development work and provide services and timely response to the expectations of its customers. In accordance with the requirements of international and state standards, the enterprise has identified processes necessary for the quality management system functioning (managerial, basic and supporting) and, developed new and updated existing standards.

The main projects of the reporting year to improve the management system of JSC "SSC RIAR" are:

- recertification control of certified quality management system and integrated management system for compliance with state and international standards;
- development and improvement of an integrated management system to implement a unified policy in the field of quality of the ROSATOM State Corporation, updating and integration of regulatory documents of the management system;
- development and implementation of quality assurance programs under the operator's responsibility, as well as when extending the of nuclear facilities lifetime in accordance with the requirements of Standard NP-090-11 "Requirements for quality assurance programs for nuclear facilities".

Improvement of production activity efficiency

To constantly improve the production and management processes, tools of the ROSATOM production system are

Our plans

In 2019, work will continue to improve the integrated management system in accordance with the compiled plan

used, the purpose of which is to create a universal management system based on the best examples of domestic and foreign experience for comprehensive optimization of production and management processes and improving the efficiency of enterprises in the industry, including reducing costs and increasing labor productivity to the level of Russian and foreign competitors.

To increase the processes efficiency, improve their transparency and obtain economic benefits, in 2018, the Financial and Economic Block of JSC "SSC RIAR" started implementing projects to optimize the following processes:

- transport service of RIAR's divisions;
- compilation of the plan and services on the expense account 23 "Auxiliary production", unification of the methodology for allocating costs (economic effect – 0.2 mln RUB);
- accounting costs for maintaining and operating the electrical grid infrastructure (economic effect – 5 mln RUB);
- providing IT services (economic effect – 1.8 mln RUB);
- compilation a topical plan of work (services, products) on revenue to the budget (economic effect – 0.2 mln RUB).

Within the framework of the project "Creating a new model of a medical organization providing primary health care", work was done to optimize the work of registry and blood sampling specialists, doctors and paramedical personnel. The patient's stay in the registry was reduced from 40 to 5 minutes; filling out paper documentation – from 15 to 5 minutes; patient expectations near the blood collection room – from 40 to 10 minutes.

and to increase efficiency production activities of JSC "SSC RIAR".

INTERNATIONAL ACTIVITIES

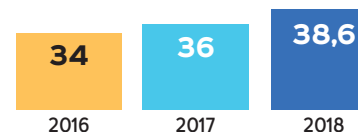
1.2.11
3.20.1
3.21.1
3.23.1
3.23.3
3.24.1

Historically JSC "SSC RIAR" is of great interest to foreign companies and international agencies as a site for conducting experiments and implementing joint projects in the field of irradiation testing, reactor material science, radiochemistry, fuel cycles, development of innovative nuclear fuels and materials as well as for knowledge-intensive manufacturing operations owing to unique experimental capabilities, related infrastructure, scientific and technical potential. From this perspective, one of the high priority tasks of RIAR development has been expansion of international cooperation in science and technology through active collaboration with foreign partners, opening new directions of activities, participation in international meetings and conducting joint experiments within the framework of large-scale international projects. For the last three years higher export earnings from foreign contracts demonstrate that the efforts undertaken by the top management and staff members have been successful in this area.

Scientific research work has been done at RIAR's site under both the existing contracts and long-term foreign contract entered into during the year under report. Historically companies from France, USA, Republic of Korea, Japan, and China etc. are among the foreign customers of JSC "SSC RIAR".

Republic of Korea. RIAR pursues an active cooperation with Korea Atomic Energy Research Institute under the long-term contracts within the framework of SFR Project (Project for development of Sodium-cooled Fast Reactor) that also provides

Bulk of export revenue from foreign contracts from year to year, mln USD



irradiation testing Zr-U fuel rods and their subsequent post-irradiation examinations.

A few future possible contracts have been discussed during the year under report to continue irradiation experiments with the use of RIAR's research infrastructure within the framework of the Korean National Program for development of water cooled small modular reactors. The leading Customers are Korea Atomic Energy Research Institute and KEPCO Nuclear Fuel Co., Ltd.

China. Late last year a PWR-type experimental fuel assembly was successfully delivered to the RIAR's site by rail and loaded in the test loop channel of the MIR reactor under the Contract made between China Nuclear Energy Industry Corporation, China Institute of Atomic Energy and RIAR to study its operational performance.

Possibility of making a few promising contracts for irradiation testing and post-irradiation examinations including the contract targeted at studying radiation resistance of graphite under the conditions similar to its operating conditions in the high-temperature gas-cooled reactor as well as another contract for irradiation testing and subsequent post-irradiation examinations of the PWR-type experimental fuel assembly and absorber rods has been already negotiated. Work is currently under way to sign a Memorandum of Understanding concerning scientific and technical cooperation in the field of peaceful uses of nuclear energy between China Institute of Atomic Energy and JSC "SSC RIAR". One of the promising lines for cooperation extending is to return to cooperation in respect of consultancy within the framework of the Project for CFR-600 (sodium-cooled pool-type fast nuclear reactor) pilot nuclear reactor construction. Such scientific consultancy services can be rendered owing to a package of bilateral documents for comprehensive partnership and strategic cooperation including state priorities for cooperation with China in the field of nuclear power engineering signed on 8 June during the state visit of the President of the Russian Federation to the People's Republic of China.

Japan. Strong cooperative relationships in the field of nuclear power engineering have been established between JSC "SSC RIAR" and Japanese companies and Institutions, in particular with Marubeni Utility Services, Ltd., Tohoku University and Japan Atomic Energy Agency. Fabrication of zirconium-ameridium hydride and investigation of its properties were continued during the year under report. This work has been done under the Contract made between RIAR and Marubeni Utility Services, Ltd. The results of this work are of particular importance to radiation safety for the purposes of radioactive waste processing and management. New avenues for cooperation with the Land of the Rising Sun are nuclear fuel cycle technologies, irradiation tests and post-irradiation examinations of experimental fuel assemblies and advanced fuel, structural materials and elements.

France. The year under report was as rewarding as possible in terms of establishing cooperation and negotiations with both partners and potential customers from France. In June the Contract for Investigation of Hydrogen Effect on Thermal Stability of Irradiation and Cold Work Defects in Zr Model Alloys was signed between JSC "SSC RIAR" and el ELECTRICITE DE France SA. Irradiation testing of Inconel Alloy 718 was accomplished under the long-term Contract with another French Company Framatome. The experimental data obtained under this Contract and gained experience of joint work provided a strong basis for furthering cooperation in the field of irradiation testing and post-irradiation examinations of structural materials and fuels. In particular, new future possible contracts for post-irradiation examinations of irradiated Inconel Alloy 718 specimens and investigation of radiation-induced corrosion of cladding materials are under discussion.

Commissariat à l'énergie atomique et aux énergies alternatives, CEA continues to demonstrate a high level of interest in experimental capabilities of JSC "SSC RIAR". There are also plans to conclude some new contracts for post-irradiation examinations of irradiated specimens and repatriation of certain irradiated specimens to France as a follow-up of work on radiation resistance of structural materials for fast reactor that

has been accomplished during the year under report. JSC "SSC RIAR" and Commissariat à l'énergie atomique et aux énergies alternatives were active in discussing a few promising contracts for irradiation testing of cladding materials and PWR rodlets, including irradiation test of beryllium.

USA. The Contract for investigation of radiation resistance of TWR structural materials under high-temperature irradiation in the BOR-60 reactor made between TerraPower LLC and JSC "SSC RIAR" in 2012 is still under way. Irradiation testing of structural materials specimens is to be conducted until 2020. The Contract also provides for continuing irradiation beyond 2020. All the stages of irradiation testing and out-of-pile tests were successfully accomplished during the year under Report.

RIAR re-launched gemstone irradiation in research reactors of JSC "SSC RIAR". Work done by RIAR to modify optical properties of naturally occurring minerals under irradiation in nuclear research reactors is the best example of high-tech export of innovative services and operating efficiency enhancement of nuclear research reactors.

Fifteen technical reports were drawn up and delivered to Customers during the year under report within the framework of more than ten long-term international contracts. In 2018 a new way of deliverable report transfer as an electronic file via secure file transfer system was successfully adopted within the framework of ongoing contracts with some French Companies in addition to a traditional way. Such a procedure was implemented in full conformity with export control regulations under licenses granted by the Federal Service for Technology and Export Control. Such a novelty made it possible to reduce economic cost and time spending for dispatching deliverable reports.

As to production of high-tech radioactive isotopes, JSC "SSC RIAR" was able to supply radioactive nuclides and ionizing radiation sources of medical application under sixty eight ongoing contracts during the year under report. Among their foreign customers were India, Japan, the Republic of Korea, China, USA, Brazil, Argentine,

the Western and Eastern Europe, Great Britain and other countries. JSC "SSC RIAR" discussed how to enhance cooperation during the meetings with the customers and prospective partners at the Annual Congress of European Association of Nuclear Medicine (EANM-2018) and during the working visit of the RIAR's top management to Joint Belorussian-Russian Enterprise "Isotope Technologies". A great demand for unique test facilities and nuclear research reactors at JSC "SSC RIAR" and long-term prospects for strengthening international activities and scientific cooperation can be proved out as follows:

- A new initiative has been taken to develop an infrastructure to conduct international irradiation tests and studies of nuclear fuel and materials employing nuclear research reactors of JSC "SSC RIAR". Workshops held under the auspices of Nuclear Energy Agency within the Organization for Economic Co-operation and Development (NEA OECD) discussed the possibility of using the RIAR's site as a base for conducting irradiation tests and post-irradiation examinations of new advanced nuclear fuel and materials. As a follow-up to the aforesaid discussion, a delegation from NEA OECD headed by Daniel Iracane, NEA Deputy Director-General visited JSC "SSC RIAR" at the end of November 2018 to discuss possibility of conducting experiments at the RIAR's site targeted at studying fuel behavior under the design-basis accident conditions (loss of coolants accidents are in the first place).
- Increased interaction within the framework of Memorandum signed between ROSATOM and Japan Atomic Energy Agency (JAEA) in September 2017 to share the intention to exchange information and data in the field of reactor physics experiments with the focus on transmutation of minor actinides during radioactive waste management. Scientific Centers in Russia and Japan with their considerable expertise and experience in successful research and development projects in the field of radioactive waste management have a common interest in working together to facilitate sustainable development of nuclear power engineering and environmental protection. During the year under Report,

the authorized representative of JAEA and TENEX Company visited the RIAR's site to discuss areas of cooperation including future possible research projects with the focus on Fukushima Daiichi NPP accident management among the other things as well as further interaction within the framework of the aforesaid Memorandum. It is worth noting that as it has been previously reported the Russian Consortium won the tender held by Mitsubishi Research Institute (Japan) to carry out research on changes in corium due to its ageing. JSC "SSC RIAR" has a key role to play in this Consortium.

- Speech made by Alexey Likhachev, Director General of ROSATOM, at the 62nd IAEA General Conference where he pointed out that one of the first priority nuclear research projects in the Russian Federation was establishing the International Research Center based on the multipurpose fast research reactor. The MBIR reactor was added to the list of reactors available for employment for irradiation tests within the framework of IAEA Program for IAEA designated International Research Centers based on Nuclear Research Reactors (ICERR). The most up-to-date Research Center will be established based on the MBIR reactor.

JSC "SSC RIAR" has been actively engaged in increasing a backlog of foreign contracts and promoting the international cooperation altogether. That is why there were a lot of visits and technical meetings with potential foreign customers and representatives of foreign customers both at the RIAR's site and abroad under the ongoing contracts during the year under report. In 2018 JSC "SSC RIAR" was visited by 80 representatives from 17 Companies and Institutions to discuss prospects for further cooperation and experimental capabilities of our Institute, attend progress review meetings to discuss progress and state of Work and reports delivered under the ongoing contracts. Delegates of JSC "SSC RIAR" went to France, the Czech Republic, Australia, Belorussia, Rumania and China on a regular basis to take part in the progress review meetings with foreign partners, different meetings and working



3.23.4



3.22.1



3.20

groups which were organized under the auspices of different international organizations. They also attended 18 international workshop meetings and conferences both in Russia and abroad to present 47 papers to report the experimental data and promising trends of activities including the attendance of such prominent events:

- NEA OECD Workshop on Enhancing Experimental Support for Advancements in Nuclear Fuels and Materials (France);
- International Workshop "Building Multinational Fuel and Materials Testing Capabilities" on the basis of NEA OECD (France);
- International Workshop Meeting "Management of Large-Scale Projects for Nuclear Research Reactor Construction" (Austria);
- The 62nd regular session of the IAEA General Conference devoted to further development of atomic energy industry worldwide and new generation of research reactors (Austria);
- International Scientific Workshop Meeting "Operation of Russian Nuclear Fuel at Nuclear Power Plants operating WWER reactors. Experience, Analysis, Prospects (the Czech Republic);
- International Conference on the WWER Fuel Performance (the Czech Republic);
- The 31st Annual Congress of the European Association of Nuclear Medicine (Germany);
- Bilateral Russian-Japanese Meeting devoted to decommissioning and remediation of Fukushima Daiichi Nuclear Power Plant territory organized by Japan Nuclear Safety Research Association together with Japan Ministry for Education, Culture, Sports, Science and Technology;
- XIII International Nuclear Forum "Safety through Nuclear Technologies: Transportation of Radioactive Materials (ATOMTRANS-2018)" (Russia);
- XI International Scientific and technical Conference "Safety, Efficiency and Economics of Nuclear Power Industry (MNTK-2018).

In 2018 seven articles authored by researchers from JSC "SSC RIAR" were published in flagship foreign periodicals.

JSC "SSC RIAR" continues to work intensively as a base institution for the CIS Member States to share the intention to exchange information and data in field of nuclear research reactor safety. In October 2018 there was the 5th Meeting of the Consultative Advisory Board of the Base Institution in Minsk that was attended by representatives of foreign companies, Belorussia, Kazakhstan and the Russian Federation. The outcome of this meeting is an adopted Work Plan for 2018–2019.

During the year under report employees of JSC "SSC RIAR" continued to be active in promoting international activities, research and development and thus engaging an increasing number of foreign customers to conduct experiments and supply radioactive isotopes jointly with every passing year. According to the outcomes of 2018, the backlog of foreign contracts amounted to almost US \$ 95 million for a ten-year period. JSC "SSC RIAR" is the largest experimental site in the Russian atomic sector and it will continue to expand and strengthen its presence at the worldwide markets for technology- and knowledge-intensive services and innovative products.

A number of potential foreign customers and thus contracts being at different stages of implementation indicate that the Institute's facilities and related infrastructure are in demand and thus it will allow RIAR to consolidate its achievement through long-term contracts and proceed with the mutually beneficial cooperation..

QUALITY CONTROL



Quality management at RIAR is based on the quality management concept stated in international quality management standards. The integrated quality management system is under the direct supervision of the Chief Engineer who is the RIAR's top management representative in charge of quality and ecology. As to the quality policy guidance, it is also implemented by the Quality and System Engineering Department that is subordinate to the Chief Engineer.

Its timely applicability is verified ANNUALLY

The quality management system is intended to ensure institutional governance, research, business and engineering management at RIAR and is targeted at meeting the Customer's requirements to the full extent with a view to provide the desired quality within the fixed timeframes as well as safe performance



3.24.2
3.34.1



2.5.6

RIAR worked out and put in place a series of measures and documented procedures aimed at high performance of quality management system. It has feedback from consumers of products and services to sustain development and promotion of its business performance. Moreover, RIAR conducts regular Customers' satisfaction surveys.

JSC "SSC RIAR" affected the transition to the latest ISO management system standards ISO 9001:2015 "Quality management systems. Requirements" (GOST R ISO 9001-2015) and ISO 14001:2015 "Environmental Management Systems. Requirements and Guidance for Use" (GOST R ISO 14001-2016). RIAR successfully completed supervisory recertification audit

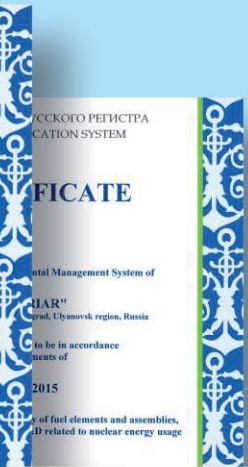
Quality Assurance Policy

Common intentions of the RIAR's management and areas of RIAR's business activities to assure quality are set forth in the quality management policy of JSC "SSC RIAR". The quality assurance policy was updated in 2018. It was brought to attention of every employee and made available to the general public.

of its integrated quality management system and thereby it confirmed its compliance to the aforesaid standards and Certification Association "Russian Register" that is a member of International Certification Network IQNet granted appropriate certificates (for a three-year term). It also completed supervisory recertification audit for compliance to the requirements of the State Military Standard GOST RV 0015-002-2012 "System for Military Equipment Development and Launching into Manufacture. Quality Management Systems. General Requirements". Independent non-profit company "Institute for Testing and Certification of Armaments and Military Equipment" granted Certificate No. SDS VS O1.521-2018 that is valid till 9 September 2021.

The integrated quality management system is applicable to the design engineering, fabrication and supply of fuel elements, fuel assemblies, radiochemicals and radionuclide sources. It also extends to research and development work in the field of nuclear energy application

Compliance Certificates



Regular internal audits of integrated management systems were conducted to provide its high functional status. As evidenced by findings of internal auditing, the integrated management system is firmly in place. Yearly RIAR sets goals and objectives attributable to quality control in order to enhance its production capacities. These goals and objectives are decomposed as performance indicators and assigned to all divisions and departments of RIAR. Attainment of goals and objectives assigned to both RIAR and its divisions and departments is monitored. Introductory and consulting workshop "Risk-based thinking in transition to standards ISO 9001:2015 and ISO 14001:2015.

Processes and methods of risk management attributable to ISO 31000 and ISO/IEC 31010" was held as a part of work on further development of integrated management system.

The following documents were updated:

77 Quality Standards
93 Quality Assurance Programs

Accomplishment of quality objectives by JSC "SSC RIAR", %

Applying for Certificates of Compliance	100
Activities attributable to transition to the latest standards	100
Elaboration of standards and keeping them up to date	100
Verification of RIAR's standards	100
Accomplishment of internal auditing program	100
Production of high quality radioactive nuclides	118
Fabrication of high quality nuclear fuel	37.5
Customers' satisfaction with R&D	86
Customers' satisfaction with the products supplied	88
Satisfaction of customers with State Orders	89.7
Actual reactor availability factor	100
Elaboration of Quality Assurance Programs and their updating	100
Funding of R&D in the field of reactor materials science	99.2
Funding of R&D for nuclear research reactors	100
Funding of R&D in radiochemistry	99.8
Trouble free operation of nuclear research reactors and test facilities	100
Staff training	60

30.0

80.0

Plans

To undertake surveillance internal audits and confirm the compliance as follows:

- Certified quality management system to the requirements of the State Military Standard GOST RV 0015-002-2012;
- Certified integrated management system to the requirements of international standards ISO 9001:2015 (GOST R ISO 9001-2015) and ISO 14001:2015 (GOST R ISO 14001-2016).

GRI 417-1
417-2
417-3
418-1

Customer's satisfaction assessment



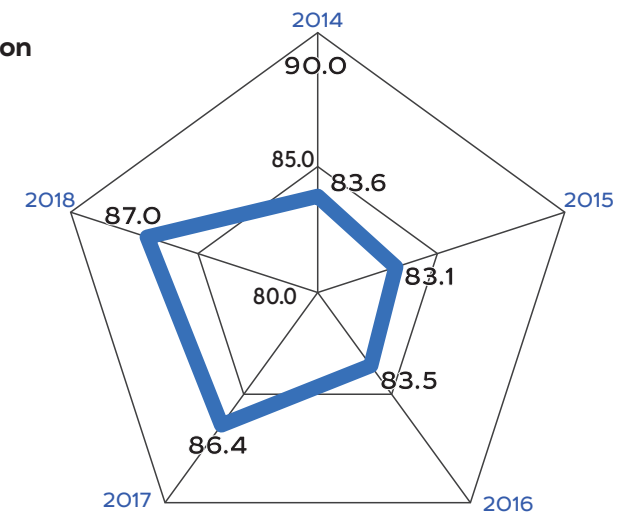
Activities related to assessing the customer's satisfaction, methods and frequency of data acquisition as well as the data analysis method are governed in conformity with the RIAR's Standard STO DP 086-410-2015 "Integrated Quality Management System of JSC "SSC RIAR". Monitoring and Customer's Satisfaction Assessment".

A questionnaire survey was conducted the main customers of RIAR's products and services rendered following the results of 2018.

An average level of customers' satisfaction grew in 2017 at the expense of grown level of customer's satisfaction with R&D activities.

As evidenced by the questionnaire survey, Companies who use services and products of JSC "SSC RIAR" consider RIAR a reliable supplier and they have plans to continue cooperation under the contracts. Moreover, they are ready to refer other consumers to RIAR. In their opinion, the information about services rendered by the Company and its products is available. There were no claims and complaints from the Consumers of products and services.

Average level of customers' satisfaction from year to year, %

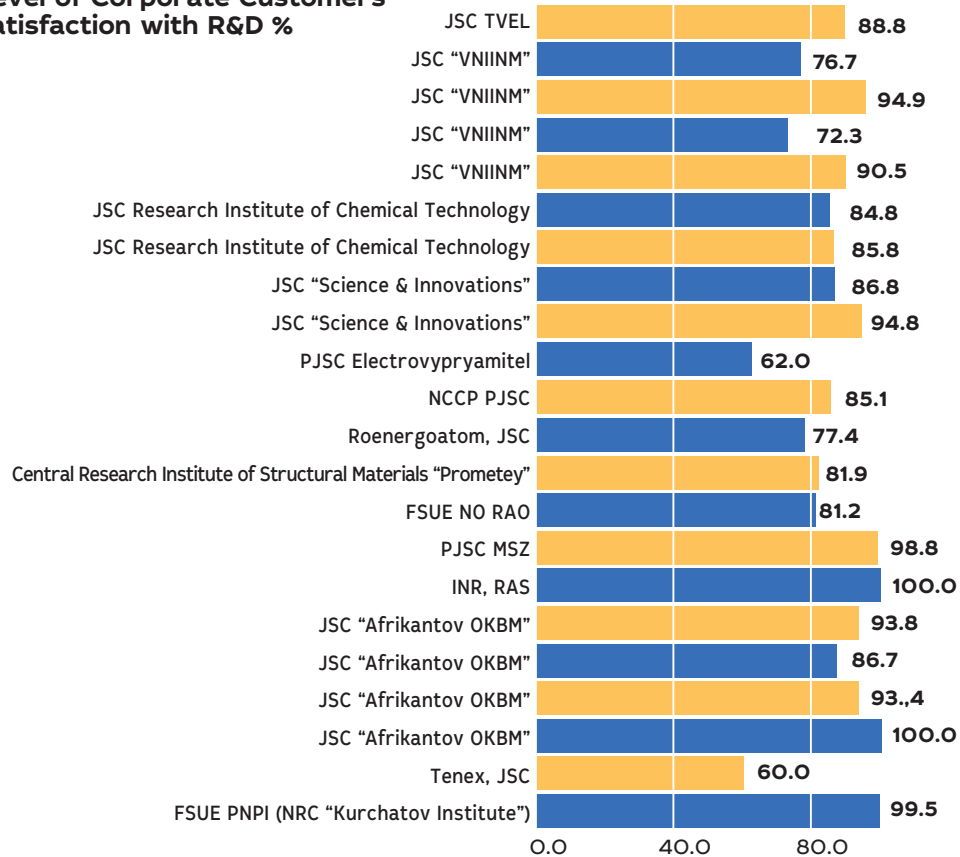


Averaged Customers' satisfaction with

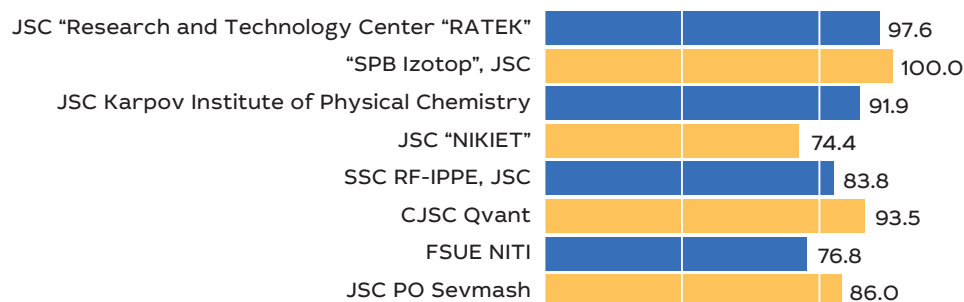
R&D
86 %

Products
88 %

Level of Corporate Customers' satisfaction with R&D %



Level of Corporate Customers' satisfaction with products, %



4.3.

Intellectual capital

INNOVATIVE ACTIVITY

9 One of the main tasks of the innovative development of JSC "SSC RIAR" is to increase the competitiveness of products and services through the upgrading of existing technologies and technical re-equipment of production capacities. Various innovation forms are used, but the priority is given to the application of own technologies and competencies. The main innovative projects are covered by the Federal Target Program "Nuclear Energy Technologies of New Generation for the Period 2010–2015 and till 2020".

In the year 2018, which was declared the Year of Science at the Rosatom State Corporation, there was held the first open competition of advance projects of nuclear industry employees to include their proposals into the unified R&D program. The main objective of the competition is the selection of proposals to implement the research in the priority areas

of scientific and technological development of the State Corporation.

The RIAR's employees submitted 27 applications for the competition, the expert committee of Rosatom State Corporation selected nine advance projects, of which three projects were included into the unified R&D program. Their implementation will start in 2019.

The list of projects included into the unified R&D program:

1. Development and justification of the technology for heterogeneous burning of minor actinides in a fast reactor (Supervisor – A.L. Izhutov).
2. Development of technology for the creation and application of corrosion-resistant heat-resistant and wear-resistant coatings for zirconium alloy fuel rod claddings (Supervisor – A.L. Izhutov).
3. Radium-223 / thorium-227 generator to produce radium-223 chloride (Supervisor – O.I. Andreev).



27 applications to participate in the advanced projects contest

9 advanced projects selected by experts for implementation

3 advanced projects included into the unified R&D program

Key innovative projects

Design and construction of the multi-purpose fast test reactor MBIR	Design and construction of Polyfunctional Radiochemical Complex	Retrofitting of fast test reactor BOR-60
<p>Purpose</p> <p>A high-flux reactor should become a new technological platform for nuclear energy based on the closed nuclear fuel cycle of fast neutron reactors. A peculiar feature of this reactor is a three-circuit scheme of heat transfer from the reactor to the environment: primary and secondary coolant is sodium, the third is water. The reactor thermal power will be 150MW, the electric one up to 55MW, the maximum neutron flux density is about $5.3 \cdot 10^{15} \text{ sm}^{-2} \cdot \text{s}^{-1}$</p>	<p>The complex is designed to try out technologies for spent nuclear fuel reprocessing and radioactive waste management. This complex will significantly reduce the amount of spent nuclear fuel, make it possible to dispose radioactive waste with a radiation background close to natural. The complex will be able to reproduce any spent nuclear fuel reprocessing technology and their combinations, for which modular shielded boxes are provided with the possibility to install biological protection as well as, unified installation platforms for operational readjustment and other equipment</p>	<p>The 60 MW reactor is a unique multi-purpose installation to test structural, fuel and absorbing materials used and proposed for use in various types of nuclear reactors, as well as materials for fusion reactors. Tests of individual fast reactor equipment components of the primary and secondary cooling circuits are additionally performed</p>
<p>Target</p> <p>Reactor tests, including dynamic modes, and post-irradiation examinations, and testing of new types of equipment of various technological systems, production of electricity and heat, development of new technologies to produce radioisotopes and modified materials</p>	<p>Obtaining reliable data for testing, experimental and industrial justification of promising closed-fuel cycle technologies; creation of an International Center for fast reactor fuel handling of at JSC "SSC RIAR"</p>	<p>Extending the reactor lifetime, increasing the reactor safety and expanding its experimental capabilities to provide an experimental justification of the main parameters of IV-Gen reactors, their nuclear safety and fuel cycle</p>
<p>Outcome for the year</p> <ul style="list-style-type: none"> • 2 055 m³ of concrete was laid (88 446 m³ from the beginning of construction). • 392 tons of fittings were installed (15 901 tons from the beginning of construction). • Concreting work was carried out at elevations from +5.900 to +13.100 m. • A system for tensometric monitoring of the stress-strain state of the MBIR reactor vessel was installed. • Acceptance testing of prototypes of automatic control actuators, manual control and shim rods of the MBIR reactor control and protection system was completed at the JSC NIKIET site. • The ATOMMASH plant, a branch of JSC "AEM Technologies", Volgodonsk, launched the first stage of the MBIR reactor assembly 	<ul style="list-style-type: none"> • The contractor has been changed: instead of JSC "NIKIMT-Atomstroy", the construction of the complex is carried out by JSC SNPO "Eleron". • 1 120 m³ f concrete has been laid (19 553 m³ from the beginning of construction). • 101.8 tons of fittings were installed (2 602.8 tons from the beginning of construction). • 15.9 tons of complex embedded parts were installed (127.6 tons from the beginning of construction) 	<ul style="list-style-type: none"> • Projects have been developed to replace electromagnetic starters of the sodium circuit heating system and electric motors of the main circulation pumps. • The strength calculations were made for the reactor gas spectrometric loop, intermediate heat exchanger, oil and water separator, water heater PSV-200U, process and vertical condensers, and buffer capacity of steam generator. • A new power supply scheme for the operator's information support system was put into operation. • Rechargeable battery was mounted for the first channel of the emergency power supply system SAE-1 (220 V)
<p>Plans for 2019</p> <ul style="list-style-type: none"> • The completion of the control assembly, hydraulic and pneumatic tests of the reactor in Volgodonsk. • Completion of acceptance testing of emergency protection actuators for reactor protection control systems 	<ul style="list-style-type: none"> • Continuation of the main period of construction. • Continued installation of parts of previously delivered biological protection elements and embedded parts of special systems. • Preparation for testing a unified technological module and its life support systems (as part of the research work implementation). • Preparation for testing on equipment simulators, units for medium-level waste handling and vitrification of high-level waste (as part of related work on the "Breakthrough Project"). • Development of project documentation, taking into account all the engineering systems and production process chains, including scientific support 	<ul style="list-style-type: none"> • Purchase of equipment according to the retrofitting plan. • Construction and installation work to upgrade the reactor radiation control system installation
<p>Mid- and long-term plans</p> <p>Continuation of construction, manufacturing, supply and installation of equipment; commissioning. Execution of activities on behalf of the Chairman of the Government of the Russian Federation D.A. Medvedev on the early termination of the Federal Target Program "New Generation Nuclear Energy Technologies for the Period 2010–2015 and till 2020" and the development of activities under the State Program "Development of the Nuclear Energy Industry"</p>		<p>Continuation of the project in accordance with the plan</p>

INTELLECTUAL CAPITAL

Being a key to developing innovations and achieving strategic goals, RIAR's intellectual capital includes intangible assets: knowledge, technology, intellectual property and people with a variety

of competences. Highly qualified experts allow the RIAR's engineering capability to be preserved and the research to be performed at a high level.

INTELLECTUAL CAPITAL PORTFOLIO*

as of December 31, 2018



269 objects of intellectual capital:
100 patents for inventions (10)
114 know-how (71)
35 patents for a useful model (12)
17 certificates for PC programs (7)
2 certificates for database
1 certificate for a brand name

* In brackets is the number of objects, the copyright of which is the Russian Federation.

Full accounting value of intellectual property objects by years, mln rub



6 applications for state registration of intellectual property

38 filed production secrets (know-how)

6 obtained patents for useful models and inventions, certificates for computer programs

14 publications in peer-reviewed world publications in the field of atomic energy use (per year per 100 researchers and developers)

MANAGEMENT OF INTELLECTUAL CAPITAL

In 2018, in addition to solving problems and ensuring the fulfillment of the target indicators of the ROSATOM's innovative development and technological modernization program for the period up to 2030, the main areas of innovative activity of JSC SSC "RIAR" were aimed at implementing a set of measures to form a unified R&D program, which includes two main areas:

- participation in the ROSATOM's first open tender of applications for the implementation of initiative research work aimed at achieving the strategic development goals of the State Corporation;
- formation of proposals aimed at implementing ROSATOM's priority areas of scientific and technological development in accordance with the criteria for achieving technological leadership and excellence.

To implement the above measures, the specialists of the Intellectual Property Management Department conducted research on the existing technical and technological level and development trends in the field of developments proposed for inclusion into a unified R&D program, their patent purity, competitiveness and possible commercializability.

71 persons holds degrees

10 persons – Doctors of Science

3 persons defended their thesis work in 2018

Inventive work in JSC "SSC RIAR"

Indicator	Values per years		
	2016	2017	2018
Application for an invention and useful model, computer program submitted in the RF	9	8	3
International applications for patents	0	1	3
Patents obtained for an invention and useful model, certificates for computer programs	16	15	6
Number of filed know-how	0	3	38
Inventions, useful models, brand names, computer programs and know-how in force	214	228	269

57.2 % of employees have higher education

30.1 % of employees have industry-specific education

2018 — A Year of Science in the Rosatom State Corporation

Science-chosen ones should treat knowledge as an entrusted to them treasure belonging to all people.

K. Timiryazev

Details on publications of RIAR's specialists and their involvement in to various events

Indicator	Value
Total number of publications in peer-reviewed journals	227
Number of publications in journals:	75
international	6
Russian	69
Monographs	2
Attended conferences, symposia, workshops, etc:	85
Russian	67
international	18
Including CIS countries	2
Number of papers (talks) presented at conferences, symposia, workshops, etc:	125
Russian	78
international	47
Including CIS countries	3

Number of employees who took part in contests 2018

Contest	Number of participants	Winners
Contest to get a scholarship of the President of the Russian Federation for young scientists and graduate students who carry out advanced research and development in priority areas of modernization of the Russian economy	3	1
Contest for the ROSATOM award to young scientists working in the nuclear industry	4	1
"ROSATOM" Contest "Innovative leader of the nuclear industry"	3	-
Industry tournament of professional skill "Atomskills"	2	-
All-Russian contest "Engineer of the Year"	3	1
Contest among RIAR young employees	78	30

1.6.3 Knowledge Management System

The process of knowledge generation, preservation, distribution and use is one of the essential processes to manage RIAR's innovation activity and development. Preservation of acquired scientific and technical competencies is very important for the safe operation of existing nuclear facilities and effective introduction of new developments.

The purpose of the knowledge management system is to effectively use the intellectual capital, identify and distribute the acquired knowledge and arrange conditions for knowledge transfer. The same-name

project has been successfully implemented in RIAR since 2012.

In order to maintain and improve the process, a functional organization structure of the knowledge management system was established.

Phases of the project are described in full in the annual reports for the prior years (<http://niiar.ru>)

JSC "SSC RIAR" is a member of the State Scientific Centers Association "Science"

GRI 102-13

Key tasks

- minimizing the risks of losing the knowledge and skills used in the course of business;
- shaping the mechanisms for commercial use of knowledge, including the results of intellectual activity;
- integrated approach to preserving and developing critical knowledge and skills;
- motivating the employees to acquire new knowledge and competencies;
- improving the efficiency of knowledge formalization, arrangement of a permanent teaching and experience transfer system;
- providing access to information sources;
- improving the efficiency of staffing business processes: personnel selection, training and motivation.

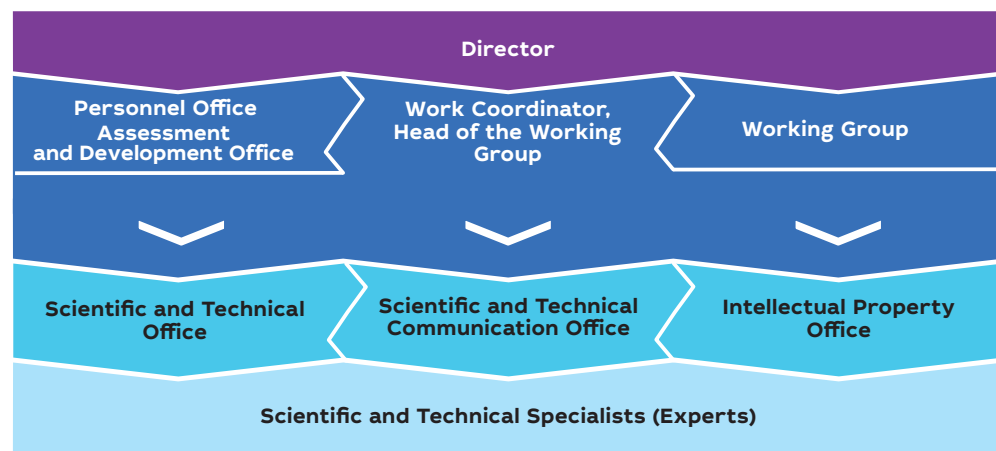
Innovative ideas

- annual courses and lectures conducted by JSC "SSC RIAR" experts and creation of a library of video lectures;
- release of a RIAR-oriented multimedia teaching video for students and post-graduate students;
- launching new sections "Knowledge Management System" and "Library" on the RIAR's website;
- release of print media: scientific publications, popular science editions, publications about RIAR's history and people;
- English language courses;
- establishment of an interactive platform on the enterprise website for sharing knowledge, discussing ideas, tasks and projects;
- forming a collection of works of RIAR's employees and provision of access to full-text publications.

Plans

- To deal with the tasks of increasing the use of intellectual property objects
- To extend opportunities for critical knowledge preservation and transfer.

Knowledge Management System Structure



Outcomes 2018

- A knowledge map, programs and a list of critical knowledge have been developed.
- The topics of critical knowledge and the carriers of this knowledge have been determined.
- Multimedia modules on the RIAR's activity topics have been developed.
- Video materials of JSC SSC "RIAR" experts' lectures have been prepared for the library of video lectures.
- Tabs on the RIAR's home website for:
 - videos of scientific readings in the framework of ROSATOM's Year of Science;
 - compilation of information about contests and other public competitions announced by the Russian Science Foundation, Russian Foundation for Basic Research, participation in which may be of interest to the RIAR's scientists.

Future plans

- Updating the knowledge map, program and the list of critical knowledge.
- Creation and placement of critical knowledge multimedia modules on the portal of the ROSATOM's scientific and technical library.
- Expanding ways to store and transfer critical knowledge: introduction of new tools to implement the knowledge preservation process.

3.19.1 Preservation of knowledge of critical importance

JSC "SSC RIAR" has a working group to preserve critical knowledge and face the following tasks:

- extraction, structuring, formalization, systematization and organization of storage of formalized knowledge;
- identification of critical knowledge;
- assessment of the risks of loss and development of a list of knowledge;
- development of a program and definition of tools for implementing the process of knowledge preservation;
- documenting and digitizing critical knowledge;
- transfer of key knowledge and competencies in order to maintain staff continuity;
- development, implementation and updating of regulatory and methodological documents.

2018 – A Year of Science in the Rosatom State Corporation

Science is a huge treasury of knowledge accumulated by mankind.

N. Krupskaya

15 lectures conducted by RIAR's experts

59 lectures in the video library

55 students of English courses

18 multimedia modules on RIAR's activities

3.19.3 Provision of scientific and technical information

The provision of sci-tech information to scientific workers of JSC "SSC RIAR" aims at ensuring access to information sources of different levels and formats. The key task of the Scientific&Technical Information Department is the support of the scientific and technical information content, including the formation, storage, distribution and use of information resources that correspond to the RIAR's profile.

The system of the Russian Science Citation Index (RSCI) on the platform of the scientific electronic library eLIBRARY.RU contains collections of works of JSC "SSC RIAR" published since 2010.

In 2018, there were uploaded in the RSCI:

- 4 collection of works of RIAR' researchers (39 articles);
- 2 proceedings of conferences (87 articles);
- 2 monographs written by RIAR's researchers;
- annual scientific report (59 articles).

We continue studying the publication activity of individual researchers and the institute as a whole in the SCIENCE INDEX system (on the eLIBRARY.RU platform).

2018 – A Year of Science in the Rosatom State Corporation

Every scientific work, every discovery, and every invention is a universal labor. It is made up of work of both contemporaries and predecessors.

K. Marx

RIAR's employees have access to the international database of scientific citation indices Web of Science, funds of the State Public Scientific and Technical Library. Work is underway to organize the participation of RIAR's employees in scientific and technical events at various levels, as well as to increase publication activity in leading Russian and foreign scientific journals. RIAR's researchers and experts actively interact in various working groups, take part in technical meetings and seminars held under the auspices of international organizations.

Release of publications

JSC "SSC RIAR" continues releasing printed and electronic publications in order to preserve critical knowledge on the key topics, expand the competence of scientific and technical specialists and horizons of young employees, inform about the capabilities and achievements of the institute, strengthen the mentoring system, perpetuate the history of the organization.

JSC "SSC RIAR" seeks to ensure that all its publications are official, i.e. they are

assigned the ISBN number and UDC indexes, SRSTI, LBC, materials are compulsorily edited and published, which guarantees high quality of the published material and compliance with all standards in the field of editorial and publishing activities. All scientific publications of the institute are reviewed by members of the editorial boards, Publishing Board and scientific and technical sections.

A scientific report is annually issued in JSC "SSC RIAR" (report on the key research activities carried out in the reporting year) in Russian and English as well as bulletins on violations at nuclear research installations of Russia and the CIS, Environmental Report. Collection of scientific articles of JSC "SSC RIAR" is released on a quarterly basis, as well as collections of abstracts and presentations of conferences and seminars, books, brochures, booklets.

Detailed information on the editorial-publishing activity of JSC "SSC RIAR" can be found in the scientific annual report: http://niiar.ru/annual_report

Scientific Board

R&D Boards on research areas

- Physics, engineering, irradiation technologies and safety of nuclear reactors
- Reactor materials testing and technologies
- Nuclear fuel cycle
- Radiochemistry and analytical chemistry
- Nuclide technology

Engineering&Technical Boards

- Research Reactors Complex
- Radiation and environmental safety, handling of radioactive substances and nuclear materials

Subdivision R&D Boards

- Research Reactors Complex
- Reactor Materials Testing Complex
- Fuel technologies Division
- Radiochemical Division
- Radionuclides&Radiochemicals Division
- Reactor facility VK-50

Editorial-Review Board

Editorial staff of JSC "SSC RIAR" Collection of Scientific Articles

Editorial staff of JSC "SSC RIAR" Annual Report

Editorial staff of JSC "SSC RIAR" Scientific Report

12 issues are ready for publication

RIAR's issues are in the RSCI database



English language courses

In order to ensure the sustainable development of international scientific and technical activities and increase the involvement of young employees into the interaction with foreign partners, RIAR organized English language courses for scientific staff and technical specialists. Among the expected results are the participation

of specialists in international events where the working language is English, the ability to independently create presentations and make presentations in English, and to study scientific articles in the original. Training is carried out on two levels: basic and advanced. Employees who have successfully completed a course are involved into international events and they also have a career priority.



Dmitry **RUSINOV**

Deputy Director of JSC "SSC RIAR" for HR Management and Social Development

Another priority is development of staff competencies to successfully meet the business challenges. Two RIAR's employees took part in the third championship AtomSkills-2018 held by ROSATOM based on WorldSkills methods. As part of the accomplishment of this task, every year RIAR's employees participate in different competitions and conferences (for example, in regional competition "Engineer of the Year", competition for RIAR's young specialists aged 35 or less). The Institute continues to implement a distance learning system.

The next priority is building a result-oriented culture: it is necessary not only to keep the achieved staff engagement rate, but also to raise this index and promote ROSATOM's values. Focus groups were established including those involving subdivision managers to identify the problematic issues of staff concern. An action plan is under implementation to improve the certain factors.

One more important priority is to enhance business satisfaction with HR management activities. At the end of the year, a survey on satisfaction with the HR function was performed. As a result, all HR management services were highly appreciated by RIAR's employees. The Institute continued HR management process computerizing, and new document templates were introduced.

The cooperation between RIAR and higher educational institutions of Ulyanovsk region and other ones was flourished: 306 students underwent hands-on training, and 33 graduates were employed.

In the future the above activities will continue, and there will be new objectives. To successfully meet them, it is necessary that RIAR's employees and management give confidence to HR management services, as trust is the most appreciation and result of high-quality activities.

The key HR management goals are as follows:

- development of staff competencies (with the priority of developing R&D competencies and competencies to increase the efficiency of business operations);
- increase of staff satisfaction and engagement rate;
- maintenance of competitive labor productivity by reducing the labor intensity of operations;
- improvement of innovativeness and efficiency, including through the reformatting of corporate values and development of the ROSATOM production system.

The HR management experts implemented successfully a provision on remuneration of RIAR's employees with new, more effective tools for bonuses and KPI identification; the work to raise RIAR subdivision managers' and employees' awareness of the motivation tools was also continued.

One of the HR management priority areas is leader development at all management levels as well as enhancement of a mentorship system. As part of the accomplishment of this task, a system is initiated for long-term career planning, job rotation and talent growth. A roadmap for the employment of young specialists and trainees is under development. In 2018, three employees of the Institute participated in the competition "Innovative Leader of the Nuclear Industry".

2018 – A Year of Science in the Rosatom State Corporation

Science and life are linked closely and indissolubly, neither of them being absolutely humiliated: the more science serves life, the more life enriches science.

G. Plekhanov

4.4.

Human Capital

STAFF UPDATE

As at December 31, 2018 the total number of RIAR staff members was 3 253 including 3 205 full-time employees and 48 part-time employees. The number of employees decreased by 2.4 %, which resulted from the financial rehabilitation program to optimize the number of the staff members. 57.2 % of staff members have higher education degrees and 30.14 % of them have industry-specific education. The staff turnover made up 5.79 %.

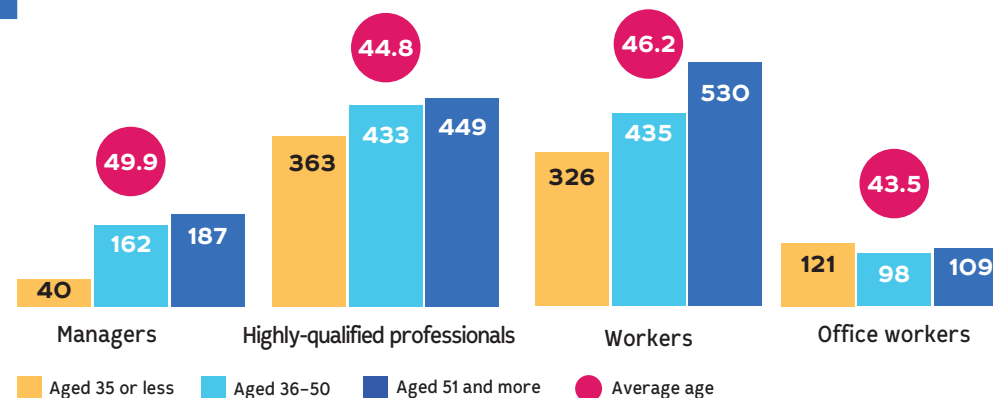
In 2018, 18 women and 1 man took maternity and parental leave. 4 employees resigned from the Institute during the maternity

and parental leave, and 35 employees returned to work, 21 of them have been working at RIAR during 12 months after their return.

In accordance with the labor law, the minimum period to notify the employees about important changes in the company's activities is stated in the collective bargaining agreement making up at least two months.

3 253 staff members

Staff composition and structure by categories, age and average age



Basic staff categories by year, %

GRI 405-1
1.7.2

Managers

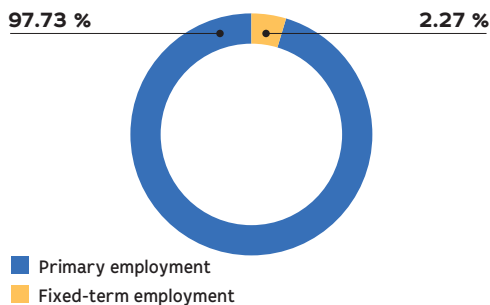
Highly-qualified professionals

Workers

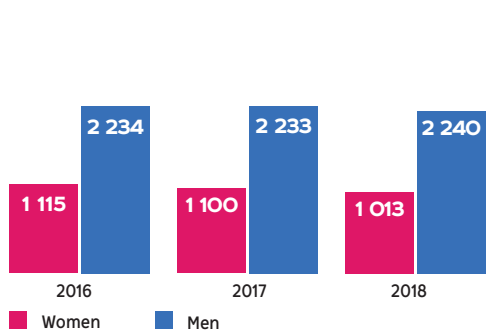
Office workers



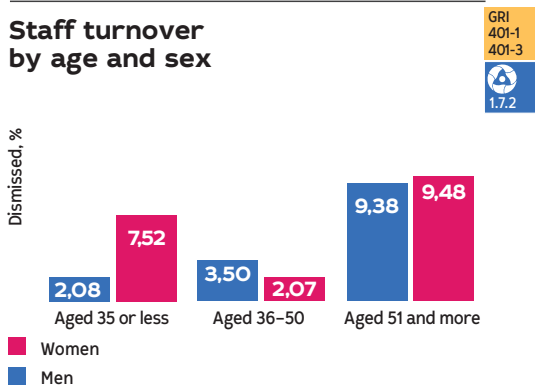
Total labor force by the contract type



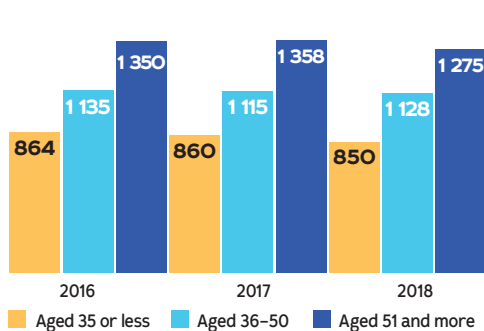
Staff by sex



Staff turnover by age and sex



Staff by age



Remuneration

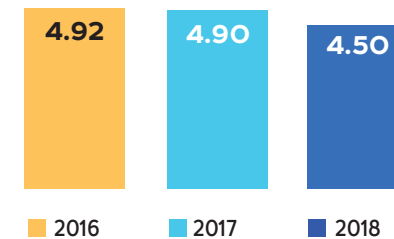
The remuneration system of JSC "SSC RIAR" and employee benefits are targeted at compensation in exchange of good production and economic outputs, performance enhancement and professional development.

A provision on remuneration at RIAR is based on the Unified remuneration system (URS). One of the remuneration basic principles is providing equal opportunities for different age-sex groups. Salaries of the staff members depend on their position, professional capabilities and outputs. At that, there is

no difference between the men's and women's basic salary. The Institute exercises its best efforts to assess the outputs of its employees in a decent way, that's why RIAR offers competitive minimum and average wages. In accordance with the industry's agreement on nuclear power, industry and science for the period of 2018-2020, RIAR undertakes to set the minimum wages at the 1.3 living wage that made up 13 042 rubles. In 2018, there was a positive trend in the average monthly wage growth.

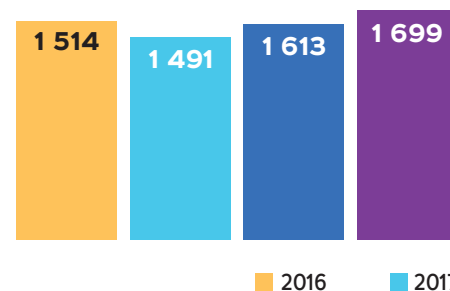
GRI 405-2

Decimal coefficient by year

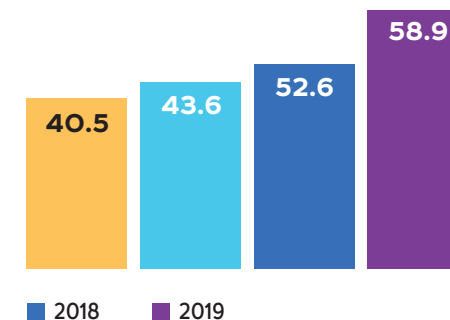


One of the key components illustrating social tension among the staff members is a decimal coefficient that describes contrast in wages between 10 % high-paid and 10 % low-paid staff. The world's best practice considers this coefficient ranged from four to six to be optimal. In recent years RIAR has the optimal decimal coefficient.

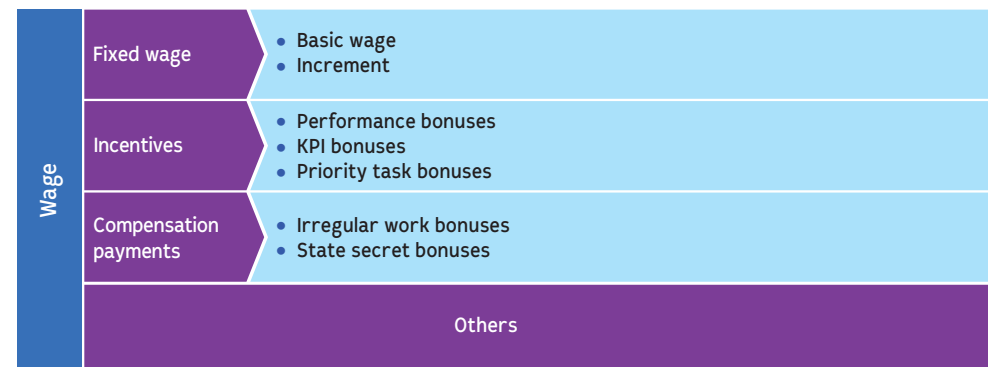
Labor productivity by year, thou. rubles / persons



Average wage by year, thou. rubles

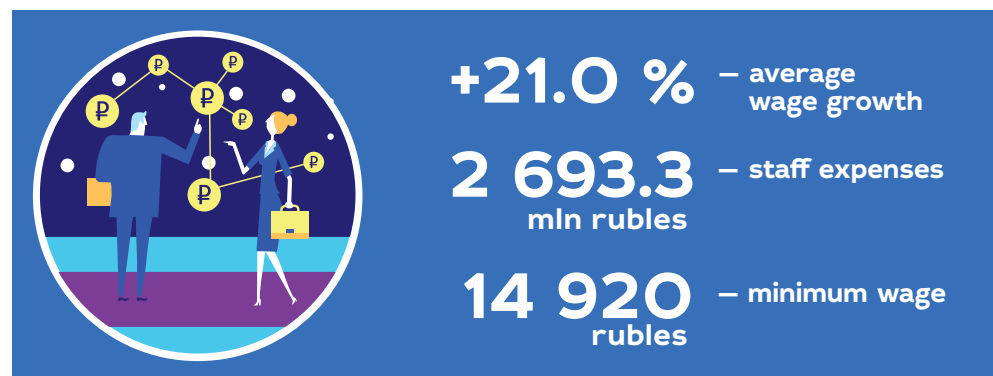


Wage structure at JSC "SSC RIAR"



Staff expenses structure

Indicator	Value by year, million rubles		
	2017	2018	2019
Staff expenses	2 260.2	2 693.3	3 024.6
Including:			
Payroll	1 688.9	2 007.6	2 250.0
Social expenses	28.7	40.0	54.4
Staff recruitment and development expenses	5.3	5.4	9.0
Other staff expenses	0.8	1.3	4.4
Taxes (insurances)	536.5	639.0	706.8



HUMAN CAPITAL MANAGEMENT

The most precious RIAR's value is a tight-knit team of highly-qualified professionals who help the Institute to achieve good results over all these years. That is why the key components of RIAR's social policy are staff training, development, motivation, social programs and social responsibility. All these aspects are set forth in a collective bargaining agreement, which is applicable to all staff members of the Institute. The human capital management strategy is based on the RIAR's mission and the top priorities

of ROSATOM. It is human resourcing that ensures viable business aiming at a maximized shareholder value of RIAR, its fully functional business model within the scope of strategic objectives, as well as a considerable growth in the business scope and profitability due to human capital augmentation, which implies both an increased number of the staff and competencies building, career and professional development, and better working conditions.

GRI 202-2



HR management strategy at JSC "SSC RIAR"

2.5.6

Human resourcing:

- RIAR is provided with highly-qualified and skilled professionals through attracting best experts, staff efficient selection, training and development, implementation of the integrated assessment system and career planning;
- The talent-pool development program is enhanced to make well-arranged selection and appointment of the candidates to the key positions using RIAR's own internal talent pool; compiled are succession plans for the critical positions;
- A knowledge management system is implemented and motivation is provided to keep and transfer the key knowledge to young professionals using the mentorship system.

Enhancement of HR management efficiency:

- The unified HR management system is under operation making the following processes computer-aided: keeping the organizational structure and schedule; HR management; working time schedule and recording; social programs implementation; rewards management; employee performance management; analytics and statistical reporting; service rendering to the employees; implementation of a pilot project of the Social Insurance Fund of the Russian Federation;
- Involvement in the projects on introducing the ROSATOM production system, thus enabling HR services to be improved, and their work to be arranged in a more efficient way;
- Reduction in the staff expenses including reduced travel costs.

Corporate culture development:

- Use of the ROSATOM values to attract professionals and build their career;
- Participation in the surveys on the ROSATOM staff engagement rate



HR management regulating documents

- Labor Code of the Russian Federation
- Agreement on nuclear power, industry and science for the period of 2018–2020
- Single industry-based procedure on staff performance management in the ROSATOM State Corporation and its organizations
- Single industry-based procedure on career and succession management in the ROSATOM State Corporation and its organizations
- Single industry-based procedure on occupational standards in the ROSATOM State Corporation and its organizations
- Code of Ethics and Staff Conduct of JSC "Science and Innovations" and organizations under its supervision
- Single industry-based social policy of the ROSATOM State Corporation and its organizations
- Charter of JSC "SSC RIAR"
- Internal work regulations for JSC "SSC RIAR" staff members
- Standard of Enterprise STO KP 086-416-2016 "Integrated Management System of JSC "SSC RIAR". HR Management"
- Provision on performance appraisal of JSC "SSC RIAR" staff members
- Collective bargaining agreement between JSC "SSC RIAR" and its staff members (effective 2018–2021)
- Main provisions on work arrangement for JSC "SSC RIAR" staff members
- Procedure on interaction between JSC "SSC RIAR" subdivisions during staff training arrangement

GRI 102-41

Social policy and corporate culture

In compliance with the labor laws, the labor relations at RIAR are regulated by a collective bargaining agreement for all staff members. The Institute provides employment for each of its staff members under the employment contract and acts in accordance with the Russian law, the Charter of RIAR,

industry-based agreement and collective bargaining agreement to keep working positions. Within the framework of the common social policy of ROSATOM and corporate social programs, RIAR annually increases expenses.

JSC "SSC RIAR" is a member of the All-Russian Association of Employers "Union of Employers of the Nuclear Industry, Energy and Science of Russia"

GRI 102-13



Labor relations management goals at JSC "SSC RIAR"

- Establish a system of social and labor relations contributing greatly to stable and productive work, successful development, social prestige and business reputation
- Establish social and labor rights and guarantees improving the position of employees in relation to the current legislation
- Raise living standards of employees and members of their families
- Create a favorable psychological climate
- Implement the principles of social partnership and mutual responsibility of the parties

Social expenses in 2018

GRI 201-3

2.10.1

Indicator	Actual expenses, thou. rubles
HR related expenses:	29 913.5
Cultural and sport events	415
Sanatorium treatment, recreation for children	10 373.5
Housing improvement	367
Financial assistance and one-time payments	8 844
Healthcare	7 456
Cultural and sport events arranged by the primary trade union organization	2 458
Unemployed retirees related expenses:	8 585.3
Financial assistance and one-time payments	4 332
Treatment at the RIAR's health resort center	4 253.3
Non-HR related expenses:	1 498
Other expenses for trade union organizations	1 498
*TOTAL	39 997

* Excluding insurance payments, healthy meals and charity.

100 % – share of employees covered by the collective bargaining agreement

A new collective bargaining agreement was signed between the employer and employees of JSC "SSC RIAR" for 2018–2021

GRI 102-41

GRI 402-1

Any change in the activity of RIAR and its subdivisions including liquidation, change in ownership or legal form, full or partial suspension of production resulting in worse working

conditions or reduced staff number, could only be possible after prior notice at least three months before such changes take place

Housing program

GRI 413-1

RIAR continued the implementation of a housing program launched in 2015 to attract young professionals and improve living conditions of employees. This program enables young professionals and highly-qualified experts to get assistance in case of living in the temporary housing: dormitories, corporate or rented flats.

In 2018, 17 employees received a reimbursement of the rental cost totaling 367 thou. rubles

Prospects

From 2019, the RIAR's employees will be able to get assistance in the form of a special-purpose loan to make initial credit payment and purchase a permanent housing.

Health enhancement

GRI 201-3

Annually, RIAR performs rehabilitation activities in a health resort center under its supervision for its staff members and unemployed retirees. Under the health enhancement program, four health cam-

paigns were arranged for children of the RIAR's staff members in the health resort center, and 163 vouchers to the children health holiday camps in Dimitrovgrad and Ulyanovsk region were bought for a total amount of 2.2 mln rubles.

Medical services under the voluntary health insurance program



1820 medical services received

7.4 mln rubles – expenses for medical services

Corporate culture

The Slavsky Conference Center (a unit of JSC "SSC RIAR") is the key venue of local and regional cultural, scientific and educational events. It houses the RIAR's Veterans Board, a hobby club, and children's ensembles. To enhance the corporate culture and social partnership, young professionals meetings take place there, as well as research meetings, workshops, festivals, and cultural events including industry-wide events ("Rosatom Culture Territory", "Open-Air Museum"). The highlight of the year was a gala night dedicated to the 30th anniversary of the Slavsky Conference Center; it was attended by painters, local and regional creative communities, RIAR's veterans, staff members, Dimitrovgrad companies' managers, RIAR's partners and nongovernmental organizations. Among significant events of the year there were also the following ones:

- All-Russian Conference for young researchers "R&D to ensure the development of new generation nuclear technologies";
- XX Russian Conference "Safety of Research Nuclear Facilities";
- Workshop on current issues in the pyrochemical processing of the irradiated nuclear fuel;
- Extended meeting of the trade union committee on the occasion of the 70th anniversary of the Russian Trade Union of the Workers of Nuclear Power Engineering and Industry;
- "Meeting of Generations" coincided with the 100th anniversary of the All-Union Leninist Young Communist League.

Traditional meetings between the Director of JSC "SSC RIAR" and the Institute's employees were held in July and December within the framework of Director's Days. The Institute's anthem composed in 2018 was officially sounded at the celebration of the Nuclear Industry Employee's Day at the Slavsky Conference Center.

In 2018, the cooperation continued between the Institute and the Regional State Autonomous Institution of Culture "Lenin

Memorial". Under a signed bilateral agreement, concerts are held for RIAR's employees by the Ulyanovsk State Academic Symphony Orchestra and other well-known groups. One more time the Slavsky Conference Center performed an international music festival "World, Epoch, Names...". Such events are very popular among the citizens.

RIAR held the annual children's festival "The Future is Ours" that was confined to the Children's Day and attended by more than 100 young dancers, reciters and singers from Dimitrovgrad. The festival was a bright event for our city; it won a huge audience and gained great interest among the participants.

Another important event initiated by the ROSATOM Public Council was the municipal phase of an All-Russian creativity contest to perpetuate the living history of the emergence and development of the Russian nuclear industry. The contest main objectives were to transfer the knowledge and best practices from older generations to the younger ones and educate young people for allegiance to the country, respect for older generations, and pride in the Russian nuclear industry achievements. Over 160 schoolchildren from Dimitrovgrad took part in this event arranged for the third time.

In 2018, fruitful cooperation continued between RIAR and Nuclear Energy Information Center of Ulyanovsk to include different events, such as film showing, interactive playgrounds, regional forums, tours, performance of RIAR's staff members, and educational quests for the employees' children.

In 2018, RIAR's staff members participated in the regional phase of the All-Russian physical culture campaign "Ready for Labor and Defense". RIAR's employees who are engaged in sports activities initiated and coarranged the whole range of local sport events. In particular, a Dimitrovgrad minifootball team with RIAR's staff members has been very successful. Traditionally, the Institute's employees became winners of regional chess tournaments.

Particular attention should be paid to success of a RIAR's art and handcraft club "Atominka". In cooperation with other Dimitrovgrad handcraft clubs several handmade fairs were arranged that became great entertainment events. Traditionally, some funds received from these fairs were given for charity.

Mutually beneficial cooperation continued between RIAR and municipal and regional administrations, public organizations, cultural and educational departments, mass media, and Melekes eparchy. This cooperation is aimed at strengthening and developing the culture of society and the younger generation.

Among particularly significant events in 2018 were: the regional geographic festival "Frigate Pallada", the third all-Russian contest "The Golden Grain of Russia", "Meetings of Generations" of journalists dedicated to the 100th anniversary of the city newspaper "Dimitrovgrad", Memorial Days of Archimandrite Gabriel.

Special attention was paid to site improvements such as greening. In 2018, RIAR's staff members with representatives of nongovernmental organizations and local and regional authorities planted mountain ash trees, oaks and birch trees.

JSC "SSC RIAR" composed its own anthem



Events to develop the corporate culture and interact with stakeholders:

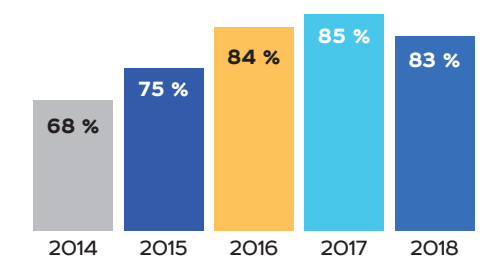
28	internal corporate events
16	visits of foreign delegations
61	concerts and performances
20	meetings and hearings
13	events of regional authorities
15	exhibitions and expositions



Staff engagement

Annually, the Institute conducts an engagement survey "Your opinion is important to Rosatom", which is the key indicator of work satisfaction of RIAR's staff members. In 2018, questionnaires were distributed among 672 staff members from 19 RIAR's subdivisions. The results obtained from these questionnaires and focus groups are used by the RIAR's management to compile annual plans on improving the engagement rate.

Staff engagement rate by year



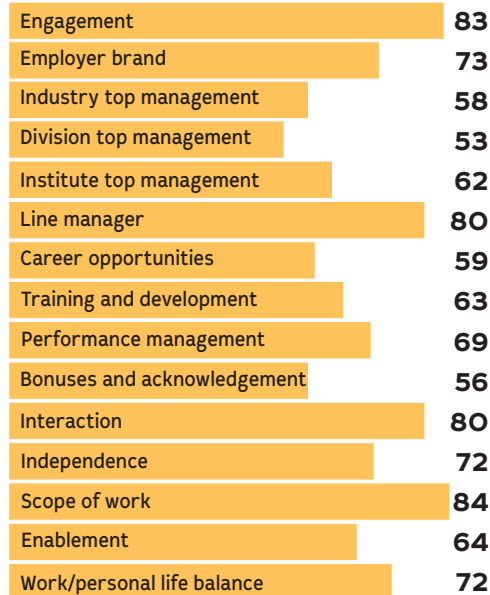
In accordance with the survey results, RIAR's staff members are most satisfied with such factors as "Interaction", "Scope of work", "Line manager", "Employer brand", "Work/personal life balance" and "Independence". Among the Institute's strengths, employees note a decent wage at the regional level, high production culture, human potential and team, presence of social facilities (the Slavsky Conference Center, health resort center). Some respondents point out that they feel a special sense of pride in the fact that the Institute is a leading research center of the region and the whole industry. In their responses, employees also note that RIAR and ROSATOM as a whole have scientific and technical potential for a successful development.

Events and factors that have a positive influence on the engagement rate:

- break-even point and growth of the Institute's profit associated with the implementation of the financial rehabilitation program and, as a result, increase in the wage fund;
- expansion of the orders and new international contracts, which also contribute to improving the financial situation at RIAR and create a sense of stability;

- implementation of voluntary health insurance and housing programs.

Survey results by engagement factors, %



Highly-qualified and skilled professionals

The key projects on RIAR development require involvement of highly-qualified professionals. Therefore, the RIAR's management pays much attention to sustainable staffing. There are current programs on interaction with young people and mentorship development, as well as hands-on training of students at RIAR, award of young specialist status and immunity grants.

At JSC "SSC RIAR" mentorship is carried out in the following areas:

1. Mentorship for students and trainees. RIAR conducts all types of hands-on training for students of industry-oriented and regional higher educational institutions, secondary vocational educational establishments,

and collaborates closely with training and specialized departments.

2. Mentorship for young specialists (recent graduates). The employer shall provide social and occupational adaptation for its young employees. For recent graduates and young professionals who are hired for the first time a mentor is appointed.
3. Mentorship when transferring the key knowledge and skills. Scientific management of the post-graduates makes it possible to keep and transfer the key knowledge and skills.

101 mentors

To create conditions attractive for recent graduates including advanced training and mastering skills, transfer of knowledge and experience by leading professionals, RIAR has an established and successfully functioning Board of Young Professionals that represents the interests of young employees. The scientific and engineering unit under this Board is targeted at providing assistance to the young employees in mastering their job, and acquiring hands-on experience that contribute to fast technical and business career growth.

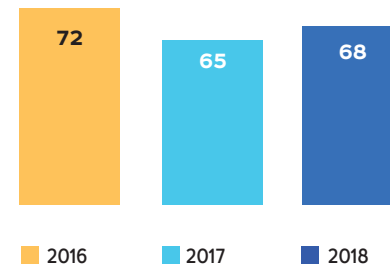
To provide the knowledge continuity for students, post-graduates and young professionals, RIAR annually holds contests, forums and conferences.

Campaigns involving schoolchildren are targeted at their career orientation and understanding the prospects of training in RIAR-needed specialties. Such campaigns

include, for example, open days and career fairs arranged in Dimitrovgrad, Ulyanovsk, and Kazan on the basis of MEPhI, UISU, UISTU, Kazan State Power Engineering University, etc. The RIAR's management, HR Office and PR Department's professionals are greatly involved in such campaigns. This interaction with young people will provide further RIAR staffing with local population. Keeping this objective in mind, RIAR arranges regular technical visits to its site. Every year schoolchildren and students of Dimitrovgrad, Ulyanovsk region and other neighboring ones (Samara region, Penza region and the Republic of Tatarstan) visit RIAR.

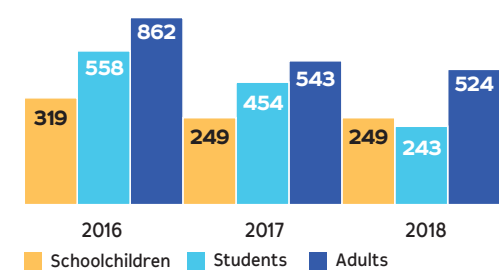
The key indicator describing RIAR interaction with young people is an employer-sponsored target enrolment of school leavers in leading higher educational institutions to be trained in RIAR-relevant specialties.

Number of technical tours by year



The target enrolment is performed in accordance with the collective bargaining agreement of the Institute. An essential in resolving RIAR-sponsored training objective is the interaction with higher educational institutions. In addition to RIAR's involvement in major educational programs, such engagement implies joint R&D. Besides, there are long-term contracts with Dimitrovgrad schools implementing advanced educational programs

Number of visitors by year



and secondary vocational educational institutions. RIAR collaborates with higher educational institutions in the following key areas: nuclear reactors and materials, chemical process of modern energy materials, physics, nuclear physics and engineering, radiation safety. All types of hands-on training are performed at JSC "SSC RIAR": introductory, on-the-job, research, and undergraduate training.



3.26.3



Highly-qualified and skilled professionals

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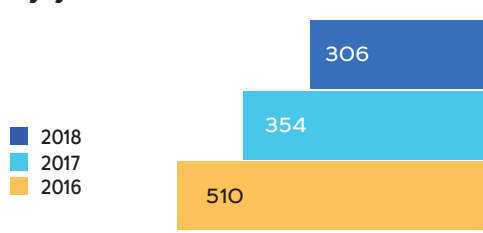


GRI 102-41

In 2018, 25 RIAR's professionals were engaged in training at MEPhI (Dimitrovgrad branch) and Ulyanovsk State University (UISU). To enhance the efficiency and perform RIAR-sponsored training, there are basic departments established in these higher educational institutions headed by Director of JSC "SSC RIAR" (at MEPhI) and Chief Scientist of the Research Reactors Complex (at UISU). The academic council of MEPhI (Dimitrovgrad branch) includes one employee of JSC "SSC RIAR". In implementing joint R&D projects with higher educational institutions there is a unique opportunity to involve students in joint research related to RIAR activities.

Such abovementioned projects enable RIAR to attract young professionals on an ongoing basis and to resolve the highly-qualified staffing objective.

Number of students trained at JSC "SSC RIAR" by year



5 post-graduates

33 contracts on joint activities with 21 higher educational institutions of the country

33 employed graduates, 7 of them – by target enrolment

21 students trained on RIAR-sponsored program

Staff development

As part of enhancing the production culture and safety of JSC "SSC RIAR" in 2018, the Institute's employees underwent mandatory training, which is determined by the regulatory legal acts of the Russian Federation and industry-based regulatory documents, as well as training aimed at developing professional and technical knowledge and skills. Training programs include both professional retraining and advanced training. The main areas of training: nuclear and radiation safety; general and special requirements

for industrial safety; occupational health and safety for managers and specialists; physical protection; fire safety; environmental safety; metrology; transport safety, accounting and control of nuclear materials, radioactive substances and radioactive waste; official secrets protection; construction in nuclear energy and industry; procurement activities.

Every year the Institute assesses the development level of professional and technical knowledge and skills

1 683 – number of trained staff members

5 443 – amount of expenses on training thou. rubles

of employees in order to ensure compliance with their occupied or planned positions, to stimulate advanced training and increase the professionalism of the RIAR's employees. An appropriate database of employees applying for vacant leadership positions is elaborated. The procedure and time frame for assessing the development level of professional and technical knowledge and skills of employees is determined by local regulations of the ROSATOM State Corporation and JSC "SSC RIAR".

GRI 202-2
2.7.1

To plan the career of key professionals at the Institute, a succession plan is formed for leadership and critical positions. To date, 23 successors have been approved (with maturities of up to five years). Building and development of the management talent pool provide wider opportunities for career and professional growth, and increase in motivation and involvement in the process of professional activities, thus helping RIAR to keep unique experts and gifted professionals in the nuclear industry and reducing the dependence on the job market. The talent pool is a priority source for appointment to vacant or newly established management positions at the Institute. Outside candidates are appointed for leadership positions

only in cases when there is no right candidate in the management talent pool.

In 2018, three RIAR's employees completed successfully the development programs "ROSATOM's Capital" and "ROSATOM's Talents" and defended design works in the areas of activity. Two of them entered the TOP-10 of the best succession candidates of 2016-2018.

Average training hours by employee categories

Category	Men	Women
Managers	44.8	26.3
Professionals	46.5	36.4
Workers	61.5	24.8

GRI 404-1

2018 – A Year of Science in the Rosatom State Corporation

Every country is to develop its science. If not, this country will inevitably turn into a colony.

F. Joliot-Curie

Assessment of professional and technical knowledge and skills

Assessment	Number of persons
Assessment of the basic level of professional and technical knowledge and skills in the field of Total Cost Management and Total Cost Management Nuclear Construction of employees involved in the management of costs and terms for the implementation of investment and construction projects in the nuclear industry	19
Assessment of professional and technical knowledge and skills of employees involved in the design of nuclear facilities that are not subject to certification in accordance with labor law	23
Scheduled performance appraisal of:	32
• workers of the services performing the functions of a technical customer;	4
• workers involved in the design of nuclear facilities of the project unit	

GRI 404-3

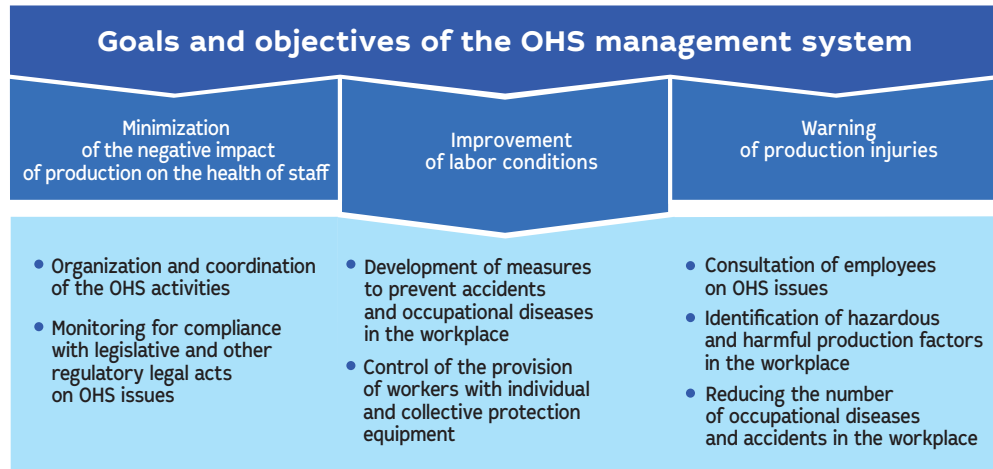
OCCUPATIONAL HEALTH & SAFETY

GRI 102-11
403-2
403-3

3.2.4

The level of occupational injuries and occupational diseases has a significant impact on both the economic and social component of the enterprise's activities. Preventive measures increase labor productivity, which generally augments the economic efficiency of JSC "SSC RIAR". The Institute has introduced the ROSATOM unified industrial OHS policy, which defines the goals, objectives and main activities in terms of ensuring safe working conditions and protecting the health of personnel; the OHS management system is aimed to prevent occupational injuries and occupational diseases, and to improve the working conditions of the employees. For the seconded persons and contractor's

workers that perform work at radiation hazardous areas and facilities of JSC "SSC RIAR", individual dosimetric control is organized. Contracts concluded with contractors reflect their obligations in the field of compliance with OHS requirements; relevant agreements are concluded and OHS questionnaires are filled out. Regular checks are conducted to ensure compliance with safety requirements when fulfilling works together with contractor's representatives. A purposeful activity in this area allows us to talk about reducing the risks associated with the occupational and industrial safety in recent years (see Sub-section 2.4. "Risk management" of Section 2).



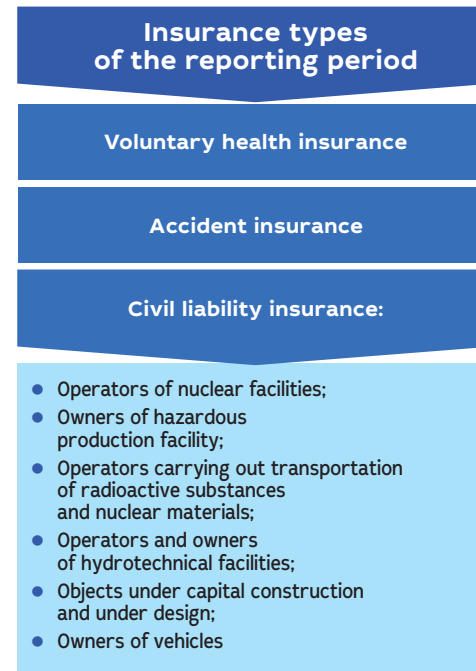
Insurance is actively used for risk management. In 2018, various types of insurance contracts were concluded for the uninterrupted operation of the enterprise.

The OHS activities at JSC "SSC RIAR" are implemented in compliance with the Agreement on Nuclear Power, Industry and Science for the period

GRI 102-41
403-1
403-4

of 2018–2020 and Collective Bargaining Agreement of the enterprise for the period of 2018-2021. JSC "SSC RIAR" has adopted a comprehensive plan of measures to prevent personnel injuries during construction and installation works in the Institute's subdivisions and on its territory. The objectives of implementing this plan are to ensure a high level of production culture; minimize the incidence

of occupational injuries and occupational diseases; preserve the health of workers; increase labor productivity, additional motivation and attractiveness of labor. Since 2015, there have been no accidents at JSC "SSC RIAR". For more than 15 years there have been no fatal accidents. The indicators of injuries for JSC "SSC RIAR" and its subcontractors, – coefficients of production injuries, occupational diseases, lost days, absence at the workplace – are equal to zero.



20 080 – insurance bonus
rubles

9.7 – insurance coverage
mln rubles

Employees' Health Control

Every year RIAR's employees go through periodic medical examinations. Medical examinations are performed in full compliance with the Order of the Ministry of Healthcare and Social Development of the Russian Federation. In 2018, 2 535 RIAR's employees who worked in contact with harmful and / or dangerous substances and occupational factors underwent medical examinations.

In addition to the annual medical examinations, tumor marker assays were performed for men born in 1972 and older and women born in 1978 and older to detect early possible changes due to cancer. The total number of persons examined was 1 491; no cases of occupational diseases were detected.

In accordance with the system of the three-stage administrative-public control, the following schedules of activities to control the state of occupational health and safety at the enterprise were developed:

- checks to examine compliance with the health, radiation, industrial and fire safety requirements;
- meetings with representatives of the RIAR's subdivisions as a result of the above checks;
- inspections by OHS specialists.

873 persons received the OHS training

537.7 – amount of expenses on the OHS training
thou. rubles

GRI 102-11
2.10.3
3.15.1

4.5.

Social Reputation Capital

INFORMATION SHARING AND COMMUNICATION LINES

GRI 413-1
 In the field of internal lines of communication JSC "SSC RIAR" continued work on improving the feedback channels: there is a forum (with the possibility to an anonymous question); service "Ask Director"; messages from specially installed mail-collecting boxes are analyzed; personal receptions of management are held. Among the existing channels of communication there is RIAR's site, radio, television panels and information boards, printed communications.

In order to understand the format of obtaining information most in- demand by employees, a sociological survey was conducted, which showed that workers have an interest in "classic" communication channels – information boards – much higher than in messengers, which are widely used today, in mobile applications, and in social networks. Therefore, a decision was made to resume the publication of the news-bulletin "Vestnik RIAR", the first copies of which were already reviewed by readers.

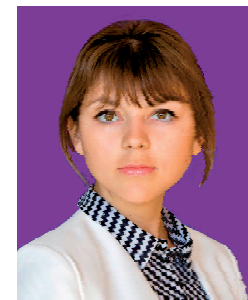
In 2018 two Information Days and two Director Days were held within the framework of the industry-level project, where the work results of industry, division and institute were summed up. The cascading of information, involvement of the corporate radio and the site, more than 90 % of the Institute's employees were covered. Every year,

in the second quarter, Director of RIAR meets with the RIAR's staff to report on the results of the current activity, identify key tasks and answer questions. Thanks to the announcement of the event, interest in these meetings is traditionally high. At the end of the year, RIAR's Director initiated meetings with young employees and heads of various departments of the Institute. In particular, during these meetings held in a festive and informal setting, the results of the contest for the best engineering and technological, as well as scientific division of the enterprise were summed up.

The project to update the information panels in the RIAR's museum exposition was fully completed: RIAR's specialists added the panels with new archival materials, and improved the interface. An innovation was the establishment of a separate excursion schedule for employees of the enterprise: two days a month, any employee can visit the museum and exhibition exposition and learn more about RIAR's history. The interactive "RIAR Honor Board" is also used: photos and achievements of the RIAR's best employees are updated on the site twice a year - on the Institute Day and Nuclear Worker Day. Radio programs are broadcasted three times a week; there are more than a thousand radio stations on the RIAR's site. Three art exhibitions were held at RIAR within the framework of cooperation

with local and regional cultural organizations. To promote a healthy lifestyle, the development of sailing and water recreation, the Project "Corporate Sailing Regatta" was successfully implemented. In the course of the year the PR Department provides information support for events and projects implemented by ROSATOM in the territory of nuclear energy enterprise presence; regional events of different focus and competitions.

Within the framework of communication activities printed and video materials on the activities of the Institute were posted in federal and industry-level mass media (sites of ROSATOM and Scientific Division, industry-level Internet resources and printed publications). The staff of the PR Department has always assisted in the preparation of videos for regional and federal TV channels. Active interaction with the industry-level press continued – newspaper and radio "Country ROSATOM", magazine "Vestnik Atomprom". For several years cooperation with the Information Center for Atomic Energy of the city of Ulyanovsk continues: educational and research projects are being implemented, excursions are organized, joint competitions are held among schoolchildren and students. In particular, for the popularization of science, the achievements of Russian nuclear industry and the increase of interest in technical occupations, children's creativity competition "Atom is our friend" was held.



Anna **VOLKOVA**

Head of PR Department – Press secretary

GRI 102-20

The principles on which the institute's information policy is based have been and remain to strengthen public confidence in the nuclear industry, transparency of RIAR's activities and openness to dialogue, focus on high professionalism indicators. In our daily work, we seek to inform interested parties in a timely manner about all significant aspects of our activities, reasonably maintaining a balance between openness and protecting commercial interests, and respond promptly to media inquiries.

In the reporting year, we actively engaged with customers, partners, public organizations, authorities and other stakeholders using various communication channels.

The number of references in federal, regional, industry and city mass media exceeded 500, and the number of materials posted, mostly neutral and positive, amounted to more than 300.

A separate area of our activity is steadily developing – the internal communications system, the improvement of corporate culture. In addition to the task of providing high-quality information support to the enterprise's activities, new formats of events are constantly being developed to strengthen the corporate spirit and organization image.

The Public Annual Report is another opportunity to provide more information about JSC "SSC RIAR" not only to consumers and suppliers, but also to general public. I am convinced that the Integrated Annual Report, which most fully and in an accessible way reflects information on the results of our institute's activities, on its plans and development prospects, will be useful for increasing the involvement and interest of employees.

Institute employee was recognized as the best PR specialist of the Ulyanovsk region

100 % – employees' questions are responded by Director*

330 press releases

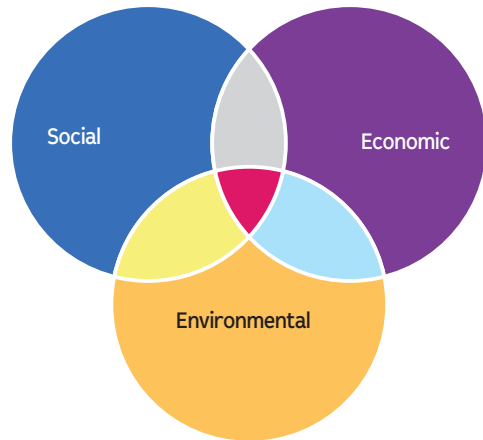
Information on publications is presented in more detail in Section 4.2 "Intellectual Capital", in RIAR's Annual Reports, on excursions and corporate events – in Section 4.4 "Human Capital"

* During meetings with Director

PUBLIC STANCE AS TO SUSTAINABLE DEVELOPMENT

GRI 102-21 The sustainable development is understood as a single process, characterized by continuous improvement of financial indicators, efficiency gains for use of property and full implementation of all organization obligations. The sustainable development of JSC "SSC RIAR" includes a system of consistent work of economic, social and environmental implications contributing to the attainment of ROSATOM's strategic objectives and further overall development of the Institute.

Sustainable Development Components



The economic component of sustainable development is determined by nuclear, radiation and industrial safety, operational and economic efficiency, increasing its share on the national and global markets. Safe business performance and improved production efficiency of RIAR, social benefits and guarantees for its employees (see

The linkage between sustainable development goals of the organization and key performance indicators is described in more detail in Section 3.2 "Governance Strengthening"

Subsection "Human Capital Management" in Section 4.4) are the key reference points to identify the key performance indicators.

The environmental component of sustainable development is ensured by the integrity and viability of biological and physical natural systems, environmentally sound development of RIAR without any harm being done to the environment and personnel's health

(see Subsection "Environmental Protection" in Section 4.6), efficient utilization of scarce natural resources and application of the latest environmental, low impact, energy- and material-saving technologies, minimizing environmental impact, obligatory compliance with all requirements of environmental legislation (see Section 4.6 "Natural Capital").

The social component of sustainable development is targeted at preserving stability of existing social and cultural arrangements and reducing a number of personal conflicts, building a peaceful open society, interacting with all interested parties, transparency of activities (see Subsection "Stakeholders' Engagement" in Section 4.5).

Particular attention is given to development of corporate culture, human resources and to interaction with educational institutions (see Subsection 4.5 "Human Capital Management" in Section 4.4).

The available research and production capacities, optimization of business, efficiency enhancement as well as extension of its business range and expertise contribute to a long-term stable and sustainable development of JSC "SSC RIAR" and thus being a good evidence of high-level social responsibility.

GRI 102-21 Criteria of sustainable development

External environment	Criteria	Internal environment
Economic component of sustainability		
Investment policy	Financial and economic	Investments
Economic situation		Monetary policy
Tax policy		Tax assessment
Financial policy	Market	Financing instruments
Competitors' activity		Marketing policy
Market situation		Price formation
Advertising Policy	Operating	Advertising
Scientific and technical progress		Use of the latest technologies
Production capabilities		Enhancing production capabilities
Raw material base	Governance	Expanding raw material base capacity
Business model		Governance efficiency
Social component of sustainability		
Socio-political situation	Political	Moral environment in the organization
Legislation	Legal	Compliance with requirements of labor legislation
Staffing situation	Staffing	Staffing policy, staff development and training
Social situation	Social	Social policy, providing social guarantees, availability of social programs
Ecological component of sustainability		
Ecological situation	Ecological	Application of the best purification and environmental technologies
Ecological policy		Implementation of measures to protect the environment, compliance with the requirements of environmental legislation, pollution charges and penalties for exceeding emissions and discharges limits
Labor Protection Policy		Implementation of measures for occupational and industrial safety

Public Stance as to Sustainable Development in partnership with Stakeholders

JSC "SSC RIAR" puts great importance to corporate social responsibility, takes into account the views and opinion of all the stakeholders and parties concerned for analysis and management of the RIAR's business in conformity with the requirements of the AA1000-series international standards.

In accordance with Standard AA1000 APS (The AA1000 AccountAbility Principles Standard), JSC "SSC RIAR" demonstrates a systematic approach to managing interaction with the stakeholders and the parties concerned as it is considered to be an important factor for enhancing management performance

and quality of reporting, identification of the most critical challenges for sustainable development and thereby enabled timely response to them. According to the requirements of AA1000SES standard (The AA1000 Stakeholder Engagement Standard) JSC "SSC RIAR" tries to engage stakeholders to the maximum extent possible and thus to consider their views and ideas for analysis of RIAR's business performance, interaction with stakeholders is targeted at advancing in strategic goals and actions. RIAR in its efforts to ensure a high level of openness and transparency in its business, more predictable and sustainable results in enhancement of public reporting system, interacts with its stakeholders purposefully (see Subsection "Stakeholders' Engagement"

in Section 4.5), provides information on all the aspects of its business, responds to the demands and wishes speedily, implements consistently the principles of corporate information policy by maintaining a proper balance between openness and accessibility of information and its commercial interests. For the purpose of successful implementation of transparency policy, all currently available form of communication such as publication of reports (Annual Report, Environmental Compliance Report, Annual Scientific Report (http://niiar.ru/annual_report), internet, websites, questionnaires, press conferences, public dialogues, consultations, arrangement of stakeholders' on-site visits, distribution of promotional brochures etc. are used.

Principles set forth in the AA1000 Standards

Engagement	Participation of stakeholders in elaboration of crucial strategic decisions with a view to attain sustainable development (see Chapter 2 "Strategy")
Importance	Evaluation with a view to determine timeliness and significance of the information disclosed to the Company and its stakeholders (see Appendix 1 and Subsection "Stakeholders' Engagement" in Section 4.5)
Responding	Responsive measures taken by the Company responding to requests of stakeholders as to its business activities and effecting sustainable development performance (see Chapter 3 "Governance", Subsection "Stakeholders' Engagement" in Section 4.5 and Appendix 1)

DEVELOPMENT IN THE REGION OF RIAR'S BUSINESS PRESENCE

JSC "SSC RIAR" puts great importance to the development in the region of its business presence because the challenging tasks it has been faced up with call for substantial development of the infrastructure in Dimitrovgrad and bringing it in conformity with the highest standards known in the world. Relations with the region where RIAR undertakes its business activities are established through the intensive work with the local authorities and general public, elaboration and financial backing of projects

with social and humanist response and with the focus on specific goals and given territories. The ROSATOM State Atomic Energy Corporation and the government of Ulyanovsk region entered into the cooperation agreement. This agreement opens up new extensive opportunities for additional targeted financial backing of socially important projects using tax payments of JSC "SSC RIAR" to the budget of the RF constituent territories.

GRI 201-1 Economic value generation and its distribution among the stakeholders on an annual basis

Criterion, mln RUB	2016	2017	2018
Generated economic value (sales revenue, investment revenues, assets revenues)	5 727.7	4 755.1	5 578.2
Direct economic value generated and distributed:	5 499.9	4 149.1	4 884.0
Operational expenditures	3 058.7	1 808.2	2 083.7
Payroll payments and other benefits for employees	1 652.2	1 688.9	2 007.6
Payment to the providers of funds	154.8	20,7	-
Gross tax payments	578.1	584.3	742.4
Investing to communities	56.1	47.0	50.3
Undistributed economic value	+227.8	+606.0	+694.2

The ROSATOM State Atomic Energy Corporation in cooperation with the Government of the Ulyanovsk region commenced the implementation of joint projects targeted at developing digital economy and digital public administration in the Ulyanovsk region. For instance, the ROSATOM State Atomic Energy Corporation is involved in a joint large-scale cooperation project together with the Ministry of Health of the Russian Federation to establish a lean health center. The project is aimed at introducing ROSATOM's principles of work management in the out-patient medical units. Dimitrovgrad was granted a status of priority social and economic development area. This status promotes creating investment-friendly and urban favorable environments. Such a mechanism

of entrepreneurship encouraging will make it possible to gain extra revenues for the budget so that to spend them for improving social and economic conditions in the municipal entity. A particularly important element of the priority social and economic development area is an establishing Industrial and Business Park "Dimitrovgrad". It will be situated in close proximity to the RIAR's site and create the most favorable conditions for siting innovation-driven enterprises.

881 – is the amount of charges paid by RIAR to all level budgets and non-budgetary funds
mln rub

JSC "SSC RIAR" is a major taxpayer and an enterprise with a high level of social responsibility

Healthy lifestyle activities are targeted at further development of a municipal sports infrastructure to increase a number of public going in for sport and access to sports facilities. Physical culture and health improving activities are undertaken by JSC "SSC RIAR" with a view to promote sports activities and engage employees

and their families in physical exercise and sport on a regular basis. The staff members take an active part in sports and athletic meetings, municipal- and regional-level sport events, all-Russian completions organized by various sport-related, In volleyball and football tournaments, canoe and catamaran racing, tourist gatherings, family relay races and cross-country running.



Social events for children under the auspices of ROSATOM and JSC "SSC RIAR"

- ROSATOM School
- International creativity contest "Nuclear Kids"
- All-Russian creativity contest "Praise pioneering creators"
- Educational social project "Towards the Future"
- Children Nuclear Academy
- ROSATOM Schooler
- Amateur Theater Festival "Curtain Up"
- International dance solo festival "Zolotoe Zernyshko"



Promotion of education and culture

During the year under report RIAR made every effort to advance in networking with educational establishments of all the types to ensure adequate staffing; setting up an advanced library-based center to enhance informational support and IT penetration as well as intellectual potential of people; development of cultural properties. RIAR collaborates with 28 higher education institutions in order to educate and train competent specialists (see Section 4.3 "Intellectual Capital" and Section 4.4 "Human Capital").

Slavsky Conference Center (a unit of JSC "SSC RIAR") is a central place where cultural, scientific, educational events of city-, region- specific relevance are held. Different workshops, conferences, negotiations, meetings, business meetings were traditionally held during the year under report at Slavsky Conference Center with the participation

of JSC "SSC RIAR", ROSATOM State Atomic Energy Corporation, Federal Medical-Biological Agency of Russia, organizations from the town and region, as well as a executive bodies of State government authorities and local authorities. Various scientific programs and cultural events initiated by the ROSATOM State Atomic Energy Corporation were organized, outstanding musicians performed; famous paintings were exhibited in exhibition halls.

RIAR pays considerable attention to general improvement and landscaping of its territory: tree seedlings are regularly planted, work is underway to create a comfortable environment.

More than **45** thousand people attended performances, concerts, meet-the-artist events, exhibitions and festivals



Joint projects sponsored by ROSATOM, JSC "SSC RIAR" and local and regional administration

- Interregional Forum "Innovative Nuclear Medicine Technologies in the XXI century"
- Regional Geographic Festival "Frigate "Pallada""
- Christmas and Easter Charity Festivals
- International Festival "Theatrical AtomGrad"
- International Festival "Peace, era, names..."
- Creativity shopping festival "Atominka"
- Project "Creation of comfortable urban environment"

Improvement of housing and utilities infrastructure and contribution to the beautification of public amenities

JSC "SSC RIAR" provides electrical power, supplies cold and hot water as well as heat to the western district of Dimitrovgrad. Redundant electric power is supplied to the unified energy grid of Ulyanovsk region.

The construction of a new neighborhood housing complex "AcademGorodok" in Dimitrovgrad for researchers and people engaged in Nuclear Innovation Cluster is still under way. Housing Complex "AcademGorodok" is a comprehensive development of residential area that represents itself low-rise prefabricated apartment buildings located in the forestall area and covers an area of 8 ha.

The accomplishment of adjacent territory provides for construction of children's playgrounds and sports grounds, recreation areas for adult residents and vegetation. There are parking lots for temporary parking of cars and bicycles. New apartment buildings are equipped with individual heating systems which offer significant savings in paying the utility bills. The ground floors of some apartment buildings are reserved for commercial facilities. There will be 26 three-floored and five-floored apartment buildings with total area of 39 thousand square meters.

The project "Comfortable Urban living Environment" continued in 2018 in Dimitrovgrad. The primary goal of this project is to provide necessary conditions for promoting and improving the quality and well-being in the urban environment (see Section 4.4 "Human Capital").

Interaction with suppliers and contractors in the RIAR's business presence

The construction of multi-purpose fast research reactor and multifunctional research module for spent fuel reprocessing with the use radiochemical methods stimulates the creation of new jobs. Some staff members are hired from the local residents who live in the Ulyanovsk region. Each job in the construction of the aforesaid facilities actually provides opportunities for creating another 10 to 12 jobs in the allied industries.

Nuclear Innovation Cluster in Dimitrovgrad

The Nuclear Innovation Cluster in Dimitrovgrad was actively promoted and supported by municipal administration of Dimitrovgrad, the Government of Ulyanovsk region, ROSATOM State Atomic Energy Corporation, Federal Medical and Biological Agency under the RF Ministry of Health and Social Development. Nowadays the main purpose of the Nuclear Innovation Cluster is to develop and enhance the innovation-driven R&D territory of presence in Dimitrovgrad. A close cooperation among the parties concerned creates a favorable climate for investment to implement the program on the Nuclear Innovation Cluster development with the focus on three major trends of activities: implementation of large-scale cluster projects within the scope of federal target-oriented programs; establishment of social, engineering and transport infrastructure to create favorable conditions for living and optimal conditions for business doing as well as for beginning small innovative business and its promotion. By end of 2018 one of the major projects of the Nuclear Innovation Cluster that is the construction and launching of the Federal High-Tech Center for Medical Radiology has been basically at the finish line. RIAR pursues its work together with the university departments for medicine, science and technology of the Volga Federal Region and the Russian

60 participants of Cluster

15 key projects

40 billion RUB of investments

Official web-site of the Independent Non-profit Organization "Centre for Development of Nuclear Innovation Cluster":

<http://cluster-dgrad.ru/rus/>

Cluster social networking page:
<https://www.facebook.com/crk.dgrad>




3.21.2
3.22.1
3.28.1

Ministry of Health for human resourcing and staffing support of the Nuclear Cluster projects. Staff members of JSC "SSC RIAR" participated in educational training courses provided by the designated company of the Nuclear Cluster.

The Nuclear Innovation Cluster is in the list of Pilot Innovation- Driven Territorial Clusters. It is supported by the Center for Nuclear Innovation Cluster Development under the program of the RF Ministry


for Economic Development targeted at small- and medium-size business support.



2018 – A Year of Science in the ROSATOM State Corporation









The job of science is to serve people. L. Tolstoy

JSC "SSC RIAR" forms the Cluster core	Unique infrastructure base	The only research complex in the country and one of the few in the world with research reactors, materials science and radiochemical laboratories to solve a wide range of tasks
	Rich experimental base	Significant number of experimental data related to neutron irradiation, reactor material science, and allied fields of research
	Single-area research work	Concentration of highly skilled specialists
	Experience in international cooperation	Work on international projects, including in working groups and organizing committees, research and development work under international contracts
	Production of radionuclides	Production of pharmaceuticals for the Federal Center for Medical Radiology of Federal Medical-Biological Agency of Russia (proton and radionuclide oncotherapy)
	Strategic planning	Strategy of social and economic development of the municipal unit "The city of Dimitrograd" up to 2025; of Ulyanovsk region and Volga federal district for the period up to 2020
	State Financing Guarantee	Participation in federal special-purpose programs



Major Projects of the Nuclear Innovation Cluster


- Construction and launching of the Federal High-Tech Center for Medical Radiology
- Set up of Research and Production Complex for Radio-Pharmaceuticals and Medical-Use Products
- Construction of Multifunctional Radiochemical Research Complex
- Construction of Multipurpose Fast Research Reactor

Foreign Participants of the Nuclear Innovation Cluster			
	France Clusters	France Clusters	http://www.franceclusters.fr
	INTER-MEDICO GmbH	INTER-MEDICO GmbH	http://www.intermedico.de
	NANOPROGRES Company	NANOPROGRES	http://www.nanoprogres.cz
	National Cluster Association	National Cluster Association	http://www.nca.cz
	RAMON Science & Technology Co.	RAMON Science & Technology Co.	http://www.ramon.com.cn
	Slovak Innovation and Energy Agency	Slovak Innovation and Energy Agency	http://www.siea.sk
	Le-Marc Projektmanagement GmbH	Le-Marc Projektmanagement GmbH	http://www.le-marc.com/
	Frankfurt Innovation Center Biotechnology GmbH	Frankfurt Innovation Center Biotechnology GmbH	http://www.fiz-biotech.de

Plans

Long-term plans for the implementation of cluster interaction, the center of which is JSC "SSC RIAR", are related to the expansion of non-energy areas of nuclear technologies application, increased international cooperation on the basis of Multipurpose Fast

Research Reactor and Materials Science Research and Development Center, to the cooperation with the Russian Federal Medical and Biological Agency in the field of radiology (nuclear medicine), development of infrastructure, research consortium, exploratory research programs.



2018 – A Year of Science in the ROSATOM State Corporation

The real and legitimate goal of the sciences is the endowment of human life with new inventions and riches. F. Bacon

More detailed information about major projects implemented by the Nuclear Innovation Cluster is available on its official web-site (<http://cluster-dgrad.ru/rus/proekty-klastera>)

STAKEHOLDERS' ENGAGEMENT

GRI 102-12
102-21
102-31
102-32
102-42
102-43

55
3.27.2



The members of RIAR Committee for Public Reporting express their gratitude to those who have shown their interest in company activities and read this Report

The system of interaction with stakeholders affects significantly the development of JSC "SSC RIAR"; therefore, consideration of stakeholders' interests in strategic planning is an important condition of sustainable development.

The development of stakeholders' engagement forms and methods, analysis and consideration of their requests enable timely feedback to any possible risk related to stakeholders' engagement, particularly in view of social aspects and reputation. In the reporting year a ranking map was updated based on the survey conducted among top and senior managers of JSC "SSC RIAR", and representatives of the major groups of stakeholders.

RIAR has set forth its public stance on all activity aspects to provide a high level of openness and transparency of its activities to stakeholders. During these years a public reporting system has been developed and is still being enhanced.

The analysis of a change in the reciprocal influence between the stakeholders and RIAR is conducted from the beginning

of integrated reports drafting. The analysis results show that the partners have a great influence on the directions of RIAR's activities (see Chapter 2 "Strategy" and Chapter 4 "Outputs"). Year by year transparency, openness and public acceptance of RIAR activities are being improved.

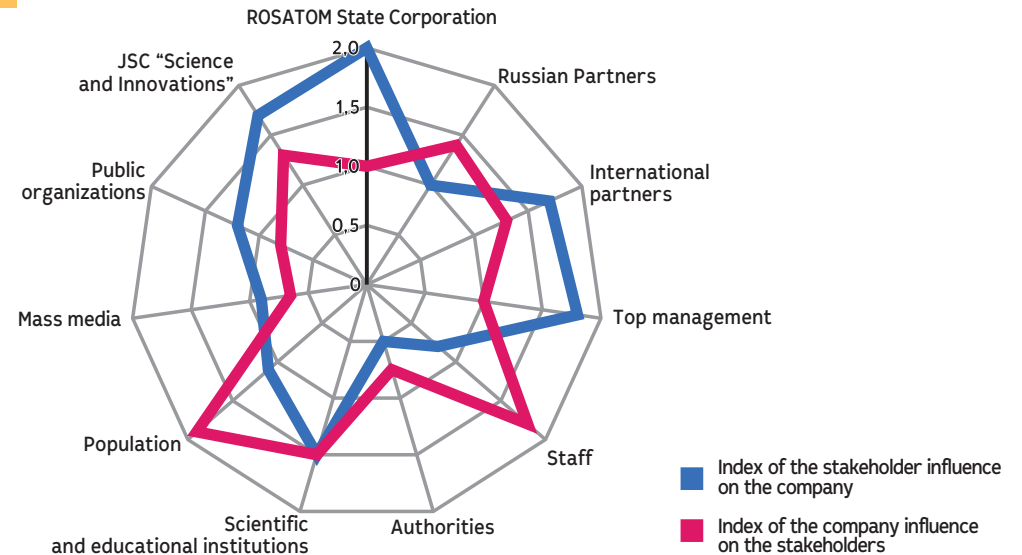
Thanks to close cooperation with the stakeholders and their interest in company activities within the engagement framework we reach the understanding of perspectives of future collaboration and RIAR's activity trends.

Functioning of the public reporting system is generally provided by the Committee for Public Reporting Activities and PR Department. Various divisions of JSC "SSC RIAR" are responsible for drafting annual public reports; the responsibility is not documented in the KPI maps of all division heads.

For more details related to the public reporting system development see Public Reports 2011-2017 (<http://niar.ru>)

GRI 102-40
102-42

Ranking map of RIAR's stakeholders



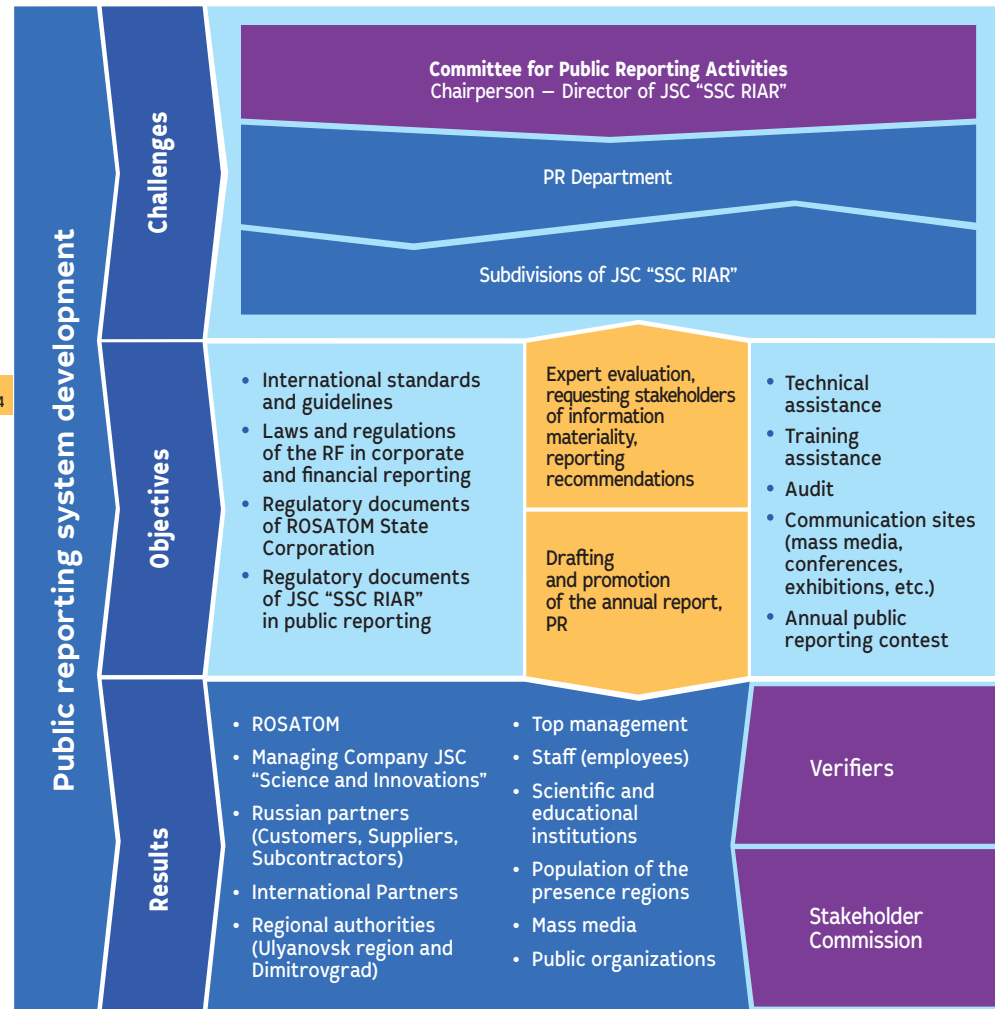
In the course of Report drafting, as in previous reporting years, a great deal of work has been done both by RIAR's professionals and stakeholders' representatives. RIAR communicates effectively with all stakeholders by providing in time important information about all activity aspects and responding to stakeholders' requests and wishes.

For more detailed information about the activities and involvement of the Committee for Public Reporting Activities, Stakeholder Commission and authorized RIAR's subdivisions in the public reporting system development please refer to Annual Report 2014 (http://niar.ru/sites/default/files/pgo2014_in_29062015_c_ssykami_O.pdf)



Regulatory system of public reporting

- Provision on the Stakeholder Commission in Public Reporting of JSC "SSC RIAR"
- Provision on the Committee for Public Annual Reporting of JSC "SSC RIAR"
- Standard of Enterprise STO 086-202-2016 "Integrated Management System of JSC "SSC RIAR". Integrated Annual Report Drafting Procedure"



GRI 102-54

GRI 102-54

Plans

- To issue Reports according to new GRI Standards.
- To increase the rate of stakeholders' involvement in Report drafting activities.
- To analyze the best practices in drafting and designing public reports.
- To increase the Report usefulness for readers.
- To introduce new reporting formats.
- To participate in industry and Russian corporate reporting competitions.
- To promote the Report on the organization territory.
- Participation of report-related specialists in workshops.

Public reporting system improvement

Object	Results of the year
Regulatory and methodological system	<ul style="list-style-type: none"> Issue of an order on activities for drafting Annual Report and approval of the Report concept, work plan, schedule, and terms of reference to provide information for the Report. An Order on approval of the updated Stakeholder Commission membership and schedule of activities involving stakeholders for the period of Report drafting has been issued. Improving a system for information collection and treatment in order to file reporting data in accordance with the international integrated reporting standards. Updating regulatory documents on public reporting, taking into account new international standards: provisions on the Stakeholder Commission in Public Reporting of JSC "SSC RIAR" and on the Committee for Public Annual Reporting of JSC "SSC RIAR", as well as standard of Enterprise STO 086-202-2016 (Rev. of 26.11.2018) "Integrated Management System of JSC "SSC RIAR". Integrated Annual Report Drafting Procedure"
Staff	<ul style="list-style-type: none"> Analysis of Russian and foreign annual reports, analytical reports of the Russian regional network on public reporting. Participation in public reporting consultative workshops
Report drafting	<ul style="list-style-type: none"> Issue Reports according to new GRI Standards. Dialogue with stakeholders' representatives on key aspects of RIAR's activities. Increased involvement rate of the stakeholders' representatives in drafting the Report. Improving the utility of the information presented in the Report. Improving the quality of Report design and wording.
Stakeholders	<ul style="list-style-type: none"> Broadening the range of stakeholders including foreign ones involved in Report drafting. Establishment the long-term partnerships with major stakeholders. Updating the list of major stakeholder groups. Using the Report as a reference and analytical information source
Surveys and questionnaires	<ul style="list-style-type: none"> Questioning of stakeholders and survey of RIAR's top management to identify significant aspects of RIAR's activities as well as reciprocal influences between RIAR and stakeholders. Surveys on utility and quality of the information contained in the Report. Questionnaires and surveys on updating the Report priority topics. Surveys among the RIAR's staff to identify the Report readability index. Questionnaires to identify stakeholders' expectations and wishes. Testing of best practices in drafting and designing public reports as well as in the interaction with stakeholders
Promotion	<ul style="list-style-type: none"> Publication at RIAR's official website (http://www.niar.ru/annual_report), in mass media, addressed mailing, distribution at forums, scientific conferences, exhibitions, meetings with business partners, etc. Participation in Russian public reporting contests: <ul style="list-style-type: none"> Rating of Annual Reports among ROSATOM's enterprises: 2nd place in the category "Best Annual Public Report of ROSATOM Division Organizations"; 7th place in the overall rating; 10th place in the nomination "The best Public Report according to the Stakeholders' opinion"; Survey of Corporate Transparency of the Major Russian Companies conducted by the Russian regional reporting network: 16th place, transparency level I (56.15 points); Expert-RA rating agency: 5 stars out of 5 rating classes: "5 stars – the highest quality of the annual report" – "1 star – satisfactory quality of the annual report"

GRI 102-44 Engagement in Report Drafting

The stakeholders were involved in all milestones of Annual Report 2018 drafting from shaping its concept to discussions of the final draft. They had an opportunity to give their requests and recommendations as well as ask questions. In the course of Report drafting in accordance with the AA1000 SES Stakeholder Engagement Standard the following activities were arranged involving the representatives of all groups of stakeholders:

- surveys:
 - to investigate the reciprocal influence between the stakeholders and JSC "SSC RIAR";
 - to identify significant aspects of RIAR's activities, (more than 100 respondents were surveyed, see Appendix 1);
 - to assess the Report with respect to criteria;
- discussion of the Report concept (in absentia, 26 participants);
- meeting with stakeholders (15.03.2019) and report drafting activities (more than 1 500 participants);
- public consultations on the Report draft (in absentia, 40 participants).

RIAR regularly informs its target audiences about all important events related to its primary activities.

The concept and draft of the Public Report 2018 were discussed by the stakeholders, additionally the public reporting issues were brought to the discussion at the events with the participation of a wide range

Concept of Annual Report 2018

During the reporting year RIAR continued discussions of the Annual Report concept in absentia. The members of the Committee for Public Reporting Activities and Stakeholder Commission of JSC "SSC RIAR" participated in these discussions. The Report concept was introduced to the participants based on questionnaire surveys conducted among the external and internal stakeholders. The results of these questionnaires were used to compile a relevance matrix

of stakeholders, during which the main results of the reporting year, information on the social and environmental policy and plans for the future were presented by the RIAR's top management, socially significant aspects of RIAR's activities planned for disclosure in the report, and the priority topics of the report were discussed.

Public representatives highly appreciated the quality of the presented information and the organization level of public reporting in RIAR.

Stakeholders' Assessment of JSC "SSC RIAR" Report

Accessibility	95 %
Openness	80 %
Communication channels quality	60 %
Clarity	80 %
Flexibility	80 %
Promotion activity	70 %
Feedback	80 %
Information completeness	82 %

For more information, please see Subsection of this Chapter "[Information sharing and communication lines](#)"

and a ranking map (see Appendix 1), that reflects the interrelationship between stakeholders and RIAR, and takes into account wishes related to Report drafting and public reporting system enhancement of those who were polled. The discussants voiced their recommendations that contributed to specify and finalize the Report concept. The concept was approved by the order of JSC "SSC RIAR" issued on January 15, 2019.

Events with stakeholders

3.23.4
3.27.1

Event	Location and date
Scientific and technical workshop "Enhancing Experimental Support for Advancements in Nuclear Fuels and Materials"	France, January 8–11
Meeting of regional young scientists board	Ulyanovsk, January 24
Russian-Japanese workshop on decommissioning and site remediation of the Fukushima Daiichi Nuclear Power Station	Tokyo, Japan, January
Meeting on social and economic development of the city within the framework of the visit of the Plenipotentiary Representative of the President of the Russian Federation M. Babich	Slavsky Conference Center, Dimitrovgrad, February
Meeting of the territorial tripartite commission on labor protection	Dimitrovgrad, February 1
Ceremonial event dedicated to the Day of Russian Science	Dimitrovgrad, February 9
Interview of the Director of SSC "JSC RIAR" with the Russian news agency "RIA Novosti" prior to the Day of Russian Science	News feed, February
Meetings of the Director of SSC "JSC RIAR" with representatives of RIAR veterans' organization	Slavsky Conference Center, Dimitrovgrad, March 2
Meeting on the federal project "Creating of comfortable urban environment"	Dimitrovgrad, March
Visit of the delegation of Japan Atomic Energy Agency, "Tenex", "Marubeni Utility Services, Ltd", Tohoku University	JSC "SSC RIAR", March
Meeting with Deputy Minister of Industry and Trade of the Russian Federation S. Tsyb	Slavsky Conference Center, Dimitrovgrad, March 5
Visit of the delegation of the Expert Council of the State Duma Committee on economic policy, industry, innovative development and entrepreneurship, on the development of biotechnology, pharmaceutical and medical industries under the leadership of Chairman Vladimir Gutenev	JSC "SSC RIAR", March 12
All-Russian Youth Conference "R&D in Provision of Development of New-Generation Nuclear Technologies"	Slavsky Conference Center, Dimitrovgrad, March 27–29
Meeting with Governor Sergei Morozov at the opening ceremony of the second stage of the nanotechnology center	Ulyanovsk, March
Workshop of the Interregional Center for the provision of organizational, methodological and practical assistance on radiation safety to the population in the Volga region	JSC "SSC RIAR", March 27
General Meeting of Shareholders of CJSC "Isotope Technologies"	Minsk, Belarus, March 29 — April 1
Workshop on MCNP6, OECD/Nuclear Energy Agency	Paris, France, March
Scientific Workshop within the framework of "Proryv" Project	Moscow, March 29–30
Meetings of Director with the representatives of RIAR's staff	JSC "SSC RIAR", April 01–30
Rosatom Industry Scientific Conference	Moscow Region, April 06–07
Ceremonial event dedicated to the 30th anniversary of Dimitrovgrad town public organization of war, labor, Armed forces and law enforcement agencies veterans (pensioners)	Dimitrovgrad, April 10
Working visit of Deputy Director General — Director of the Innovation Management Unit of Rosatom State Corporation Yuri Olenin, Executive Director of JSC "Science and Innovation" Nikolay Kondratyev, Deputy Director for Human Resources and Organizational Development Ekaterina Rakhmankina	JSC "SSC RIAR", April
20th International scientific and technical conference of young specialists "Nuclear Power Plants"	Podolsk, April
IX Eurasian scientific and technical conference "Strength of heterogeneous structures PROST-2018"	Moscow, April
Event dedicated to the 62nd anniversary of RIAR's establishment	Slavsky Conference Center, Dimitrovgrad, April 27
Industry Scientific Workshop "Radiation Damage Physics of materials for nuclear engineering"	Obrninsk, April
Industry Conference "People of Rosatom"	Moscow, April
Tenth Anniversary International Forum ATOMEXPO-2018	Sochi, May 14–16
Working visit of Executive Vice President and Director of the Division for Strategy and International Relations of the Japan Atomic Energy Agency, Deputy Managing Director of "Tenex"	JSC "SSC RIAR", May
XI International Scientific and Technical Conference "Safety, Efficiency and Economics of Nuclear Power Industry" (MNTK-2018)	Moscow, May
XX Russian Conference "Safety of Research Nuclear Facilities"	JSC "SSC RIAR", May 28 — June 1
All-Russian Scientific Conference "Welding and Related Technologies for the manufacture of equipment for special and critical purposes"	Moscow, May

Event	Location and date
II Industry forum "Safety Day for Nuclear Energy and Industry"	Moscow region, June
Board meeting of Chinese-Russian Joint Venture "Beijing CIAE—RIAR Radioisotope Technology Co. Ltd."	Shenzhen, China, June
Annual scientific and technical workshop on technologies for spent nuclear fuel reprocessing and radioactive waste management of thermal and fast neutron reactors	Moscow, June
Meeting of the industry commission for the regulation of social and labor relations	Moscow, June
Visit of Chinese representatives from "Fangda Carbon New Material", Tsinghua University, Chinese-Russian Joint Venture "Beijing CIAE—RIAR Radioisotope Technology Co. Ltd."	JSC "SSC RIAR", June
Industry scientific and technical workshop-meeting on "Safety Management System of Nuclear Energy Defense Application"	Murmansk, June
Discussion of the prospects for cooperation within the framework of the International Research Center, established on the basis of the MBIR reactor	Paris, France, July
Workshop-meeting on the support of major projects for the construction of research nuclear facilities	Vienna, Austria, July
Meeting of Director with the representatives of RIAR's staff (Director Day)	Slavsky Conference Center, Dimitrovgrad, July 9
Workshop "Rhenium-188 and radiopharmaceuticals based on it. Prospects for development and application"	Obrninsk, July
Working visit of representatives of the state energy generating company of France and operator of nuclear power plants	JSC "SSC RIAR", July
Industry Conference of Human Resources Management Services Heads	Veliky Novgorod, July
Meeting of internal control and audit heads of Rosatom organizations	St. Petersburg, July
Competition of professional skill "The best driver of the Ulyanovsk region"	Ulyanovsk, August 25
V International Open Festival of Pure Music "U-235"	Sosnovy Bor, August 25–29
Rock festival "Golden Pines-2018"	Dimitrovgrad, September 8
Rosatom Youth Congress	St. Petersburg, September
Public discussion of materials justifying the license for the operation of the existing facility for the deep burial of liquid radioactive waste of the Federal State Unitary Enterprise "National Radioactive Waste Management Operator"	Slavsky Conference Center, Dimitrovgrad, September 13
International Scientific and Technical Workshop on Nuclear Fuel	Prague, Czech Republic, September
62nd Session of the IAEA General Conference	Vienna, Austria, September
Workshop on SCALE, OECD/Nuclear Energy Agency	Paris, France, September 16–22
IX Russian conference with international participation "Radiochemistry-2018"	St. Petersburg, September
Exhibition "Nuclear Cluster" dedicated to the Nuclear Worker Day	Dimitrovgrad, Town Museum of Local Lore, September 27
Nuclear Worker Day Event	Slavsky Conference Center, Dimitrovgrad, September 28
19-th Session of the Commission of CIS Member States on Peaceful Uses of Atomic Energy	Bishkek, Kyrgyzstan, September
Meetings of the Scientific and Technical Council of FSBI "Hydrospetsgeology"	Moscow, September
Technical workshop and meeting on the implementation of modern welding technologies	Dimitrovgrad, October
Annual Congress of the European Association of Nuclear Medicine	Dusseldorf, Germany, October
International Workshop on Creating a Multinational Infrastructure for Nuclear Fuel and Materials Research	Paris, France, October
International Conference "Water Reactor Fuel Performance Meeting" (TopFuel-2018)	Prague, Czech Republic, October
Workshop-meeting of youth trade union active members of the Russian Trade Union of Nuclear Power and Industry Workers "Vector-2018"	Moscow region, October
V All-Russian Symposium "Separation and Concentration in Analytical Chemistry and Radiochemistry" with international participation	Tuapse, October

Event	Location and date
Industry Conference "Closing of the Nuclear Power Fuel Cycle Based on Fast-Neutron Reactors"	Tomsk, October
XIII International nuclear forum "Safety nuclear technologies: transportation of radioactive materials — "ATOMTRANS-2018"	St. Petersburg, October
Fifth Meeting of the Basic Organization advisory body of the CIS Member States for information exchange in the area of safety assurance of nuclear research facilities	Minsk, Belarus, October
Meeting of RAS Council on Heavy Ion Physics	Dubna, October 26–27
Meeting of the interdepartmental working group on attracting federal budget funds to the Ulyanovsk Region (with the participation of Vladimir Gutenev — First Deputy Chairman of the State Duma Committee on Economic Policy, Industry, Innovative Development and Entrepreneurship)	Dimitrovgrad, October 29
Working meeting of Alexander Tuzov, Director of JSC "SSC RIAR" with Director of the Federal Medical-Biological Agency Vladimir Uyba on the prospect of cooperation between organizations in the operation of Federal High-Technology Center for Medical Radiology of FMBA of Russia in Dimitrovgrad	JSC "SSC RIAR", November 1
Technical Meeting on the Development and Manufacture of the BRR-2 Research Reactor for the Bolivian Nuclear Research and Technology Center	Nizhny Novgorod, November
Meeting of the Environmental Council on the formation of environmental public expert focus of civil society in Dimitrovgrad and maintenance of urban forests	Dimitrovgrad, November
XVI International School-Conference "New Materials: Tolerant Nuclear Fuel"	Moscow, November
Working visit of JSC "Greenatom" delegation headed by General Director Mikhail Ermolaev	JSC "SSC RIAR", November
Assembly of entrepreneurs of nuclear cities—Meeting of business-community representatives of cities of Rosatom's enterprises presence	Moscow, November
Meeting of the Scientific and Technical Council for progress achieved in the preparation of JSC "SSC RIAR" information geoeological package	Moscow, November
Working visit of the delegation of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (headed by Deputy Director General Daniel Iracane)	JSC "SSC RIAR", November
Scientific and technical conference "Neutron-physical problems of nuclear energy" Neutronics-2018 ""	Obrninsk, November
Industry forum "Leaders of change"	Moscow, December 5–7
Meeting of Director with the representatives of RIAR's staff (Director Day)	Slavsky Conference Center, Dimitrovgrad, December 21
Year 2019	
Discussion the issues of increasing the efficiency and expanding the radioisotope products sale with Deputy General Director of "Rosatom Healthcare" JSC Rustam Rakhmatullin	JSC "SSC RIAR", February
Working visit of the delegation of the leaders of ROSATOM and the managing organization JSC "Science and Innovations"	JSC "SSC RIAR", February 5
Working visit of the delegation of the Swedish company "Studsвик Nuclear AB"	JSC "SSC RIAR", February
Days of the Ulyanovsk Region in the Federation Council (exposition)	Moscow, February 11-13
Annual meeting to discuss the status of work on the project to create an International Experimental Thermonuclear Reactor (ITER)	Saint-Paul-les-Durance, France, February
Meeting of the tripartite commission for the regulation of social and labor relations in Dimitrovgrad	Dimitrovgrad, February
Workshop "Development of technologies and equipment for the pyrochemical processing of the spent nuclear fuel reactors on fast neutrons"	Yekaterinburg, February
Working visit of the leaders of China Isotope and Radiation Corporation and Chinese-Russian Joint Venture "Beijing CIAE—RIAR Radioisotope Technology Co. Ltd."	JSC "SSC RIAR", February
3rd International Ural Workshop "Radiation Physics of Metals and Alloys"	Yekaterinburg, February
Informing day. Video conference with Director General of Rosatom State Corporation Alexei Likhachev	JSC "SSC RIAR", March 5
Meeting with stakeholders in celebration of the 63rd anniversary of the founding of JSC "SSC RIAR"	JSC "SSC RIAR", March 15
Meeting of the special-purpose committee of the State Duma on the development of nuclear medicine	Dimitrovgrad, March
IAEA Regional Meeting	Brussels, Belgium, March
Meeting of Director with the representatives of RIAR's staff	JSC "SSC RIAR", March
European Research Reactors Conference (RRFM-2019)	Jordan, March
Working visit of the delegation of the National Centre for Nuclear Research "POLATOM" Radioisotope Centre	Otwock, Poland, March

GRI 102-44
Stakeholders' suggestions on the Report drafting

3.27.2 In the course of the dialogue and Annual Report 2018 drafting stakeholders voiced their suggestions and recommendations on the disclosure of this or that information in the Report, improvement of the public reporting system and interaction with stakeholders.

When drafting this Report, JSC "SSC RIAR" took into account all the comments and suggestions of stakeholders participating in the dialogue.

Information on corporate culture development and stakeholders' engagement activities is provided in Subsection "Human capital management" of Section 4.4.

Stakeholders' suggestions made when drafting report

Requests / suggestions	Implementation
Describe innovative activities	Information is provided in Section: 4.3 "Intellectual Capital"
Reflect the environmental information in the report in more detail, given that the Year 2018 was declared the Year of Voluntary Ecology in the Ulyanovsk Region	Information is provided in Section 4.6 "Natural Capital", on the half-title page of the Scientific Annual Report
Provide material on risk management	Material is provided in Section 2.4 "Risk Management"
Provide more detailed information on cooperation, plans and results of technological development and long-term leadership in the global market	Information is provided in Sections: 1.3 "Position in the Industry", 2.2 "Strategic Tasks and Goals", 4.2 "Production Capital"
Expand interaction with stakeholders' representatives	Information is provided in Sections: 4.4 "Human Capital", 4.5. "Social and Reputational Capital"
Exclude Appendix "Information on compliance with the Corporate Governance Code"	The Appendix is not presented
Place Public Assurance Statement into Appendix	Information is provided in Appendix 1
Reflect the scientific activity and scientific potential of the institute (Year of Science in the State Corporation)	Information is provided in the Scientific Annual Report and Sections: 4.2 "Production Capital", 4.3 "Intellectual Capital", taken into account in the design of the Report and reflected in the text
More detailed information on the capital and the effectiveness of its use	Information is provided in Section 2.3 "Business Model and Capitals"
Correlate the wording of RIAR's strategic goals with those of UN sustainable development	Information is provided in Section "Appendix", and in Subsection "Public Stance as to Sustainable Development" of Section 4.5 and in Chapter 2 "Strategy"
Focus on the leading positions of RIAR among the ROSATOM enterprises	Information is provided in Sections: 4.2 "Production Capital", 4.3 "Intellectual Capital" and in Chapter 2 "Strategy"
Consider the possibility of issuing Report 2018 in accordance with new GRI standards	The Report was made in accordance with new GRI standards
Provide more information on the Key performance indicators system	Information is provided in Subsection "Governance strengthening" of Section 3.2
Issue a short version of the Report prior the full one	The short version of the Report was issued and placed on the site prior the full one
Consider the possibility of either quantitative or qualitative comparison of the results of competing companies in the Russian and international markets	The suggestion will be considered in the drafting of Report 2019

GRI 102-54

4.6.

Natural Capital

ENVIRONMENTAL POLICY

GRI 102-11
The policy of JSC "SSC RIAR" in the field of ecology (environmental policy) is the main document of the organization that declares high-level guidelines for the environmental protection. It is aimed at the implementation of the fundamentals of the state policy on the environmental development and nuclear and radiation safety of the Russian Federation. Implementation of the JSC "SSC RIAR" ecological policy is based on a plan developed in accordance with the unified industry-level methodical instructions for implementation of environmental policy of ROSATOM. The environmental-related activity of RIAR is conducted regarding the following environmental aspects: energy, water, bio-diversity, products and services, allowable emissions and discharges, limits of waste generation and disposal, indicators of air and water quality, water discharge and water use standards. To achieve the performance of environmental-related activities, JSC "SSC RIAR" took over commitment to implement and maintain best environmental management practices in accordance with international and national standards in the field of environmental management. This commitment is implemented as an integrated quality and ecology management system. This system is supported in action, develops in accordance with the principle of continuous improvement; it is effective and meets the international standards requirements.

RF-level strategic documents in the field of environmental protection and environmental safety were adopted, and changes in the environmental legislation were introduced. A new system of environmental regulation is put into force, including general and differentiated requirements. Since 2017, the renewed version of GOST R ISO 14001-2016 and the unified industry-level environmental policy of ROSATOM and its organizations have been in force. Therefore, the task-in-hand for 2018 was the update of environmental policy of JSC "SSC RIAR" and related documents as well as the development and performance of the relevant activities. The updated environmental policy was put into effect by the RIAR's director order in February 2018. The scheduled inspection audit of integrated management system carried out in August of the reporting year by "Russian register" (an independent body on management systems certification) proved the system conformity to international standards ISO 14001: 2015 (GOST R ISO 14001-2016) and ISO 9001: 2015 (GOST ISO 9001-2015).

The text of the environmental policy is available on the RIAR website: http://niar.ru/?q=ecological_policy. You can get acquainted with the ecological activities reports on the: http://niar.ru/annual_report



2018 – A Year of Science in the Rosatom State Corporation

Ecology is a science of future, and the human's existence on our planet would probably depend on its progress.

F. Dreux

RIAR has no imported, exported or reprocessed waste deemed hazardous under the terms of Annex I, II, III and VIII to the Basel Convention. Waste transported between countries is also absent



Andrey VOROBAY

Chief Engineer of JSC "SSC RIAR"

the management system requirements integration into the company's business processes. In addition to the improvement of the management system, the practical activities on the implementation of the RIAR's environmental policy have been continued. The amount of non-radioactive pollutant emissions into the atmosphere over the whole year was within the limits of the effective permission (Order No. 1165 of Rosprirodnadzor for the Ulyanovsk region, dated on December 12, 2017). Separate emissions per registered objects having a negative impact on the environment did not exceed 5 tons per year in the absence of Class I and Class II substances. This means that the negative impact is so small that it is not subject to be declared as a form of federal statistical monitoring.

The stable quality was demonstrated during the operation of the waste water treatment system of the industrial storm sewerage system PLK-1. The project for construction of local sewage water treatment plant of the pilot and experimental division has been continued: in 2018 the equipment for effluent treatment of the galvanic workshop was purchased and installed, the pre-commissioning work was started. In 2019, the project implementation will be pursued, it is planned to replace the gas treatment units in all workshops of the pilot and experimental division and to put into operation the industrial storm waste water treatment system.

In 2018, the funds provided by the Institute for current environmental protection activities, payments for environmental protection services and investments made up about 130 million rubles that is significantly higher than the similar expenses for the previous year (101.7 million rubles). The amount of investments in 2018 increased more than fivefold (from 0.823 million rubles to 4.384 million rubles).

In 2018, the improvement of the integrated management system in quality and environment was continued. The changes in the international standards led to a recertification audit, as a result of which the certification authority declared the RIAR's integrated management system compliant with the requirements of ISO 9001:2015 (GOST R ISO 9001-2015) and ISO 14001:2015 (GOST R ISO 14001-2016) and issued certificates of compliance for the period up to 2021. It should be noted that a new version of GOST R ISO 14001-2016 implies the significant changes in the field of the environmental protection and response to the environmental change. This is especially true about the risks and opportunities for the environmental aspects of the RIAR's activities and the commitments undertaken. The eventual emergency and other contingency situations that may have negative environmental consequences ought to be identified within the scope of environmental management system application. In this regard, it is illustrative that no significant events occurred at the radiation facilities of the Institute in terms of safety assessment and public information according to the classification of the International Scale of Nuclear and Radiological Events (INES) for the reporting period.

Another significant change is the senior management role enhancement in demonstrating its leadership and commitment to the environmental management system and in assuring



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Science ought to serve only for the good! We do not let it be ahead of the morality.

Jules Verne

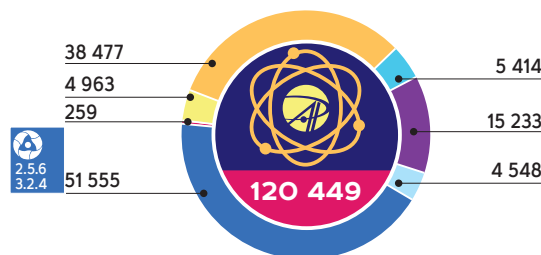
GRI 102-11
201-2
416-1

ENVIRONMENTAL PROTECTION



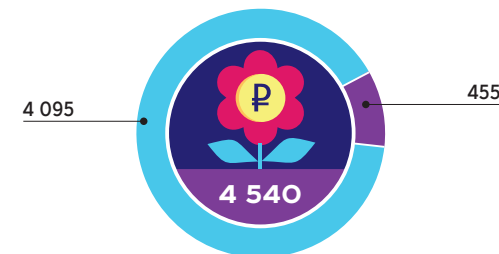
Total environmental protection expenditures and investments

Total expenditures by purpose of environmental activities in 2018, k RUB

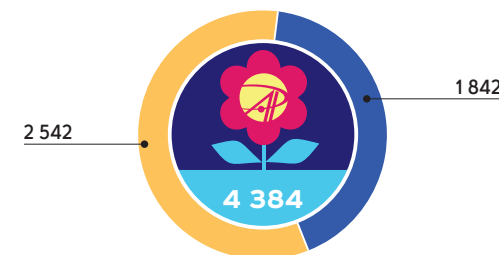


- Waste water collection and treatment
- Waste management
- Protection and rehabilitation of lands surface and subsurface water
- Radiation safety of the environment
- R&D activities and developments to reduce negative man-caused effect on the environment
- Other areas of environmental activities
- Air protection and prevention of climate change
- Protection and rational use of water resources

Payment for services related to the environmental protection



Investments into environmental protection and rational use of natural resources*



* In the main capital directed to environmental activities (at the expense of all financing sources).

Waste generation

GRI 301-1
301-2
306-4

As a result of RIAR production and economic activities, nearly 27 types of production and consumption waste generated are Class I-V waste. The waste is mostly low-hazardous (Class IV) and virtually non-hazardous (Class V). Waste to be disposed, decontaminated or emplaced is sent to the organizations that hold a license to conduct waste management activities. The waste is emplaced at special-purpose

facilities entered into the State Register of Waste Disposal Facilities. Delivery of waste to be handed over to special-purpose organizations is made using transport facilities of the organizations licensed to conduct waste transport activities. The ways to dispose waste correspond to the licenses available and types of waste. Data on the amount of waste are generated based on the internal inventory.

Mass of waste transported in the region by type and groups

Waste type	Waste referring to Annexes II and VII to the Basel Convention	Waste mass, t
Mercury, mercury-quartz, luminescent lamps, mercury thermometers waste, high-pressure sodium lamps lost their consumption properties	A1. Metal and metal-containing waste	1677
Industrial and motor mineral oil waste	A3. Waste comprising mainly organic elements that can contain metals and inorganic materials	1.563
Water-based lubricating fluid obtained when working metal	A4. Waste which can contain nonorganic or organic elements	3.5
Garbage from office and domestic facilities that is practically harmless; waste (garbage) from cleaning territory and premises of social-rehabilitation and cultural and sports institutions and from entertainment events	Y46. Waste collected from households	741.0

JSC "SSC RIAR" neither manages hazardous waste covered by the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal nor performs trans-boundary movements of RIAR-owned hazardous waste. The total mass of waste transported per 2018 year (sent for disposal and decontamination to other organizations) deemed hazardous under the terms of Annex I, II, III and VIII to the Basel Convention makes up 747.74t.

Dynamics of production and consumption waste generation by hazard classes

Waste hazard classes	Amount of waste generated per year, t			Change in waste amount 2018/2017, t (%)
	2016	2017	2018	
I	2.312	1.028	1.078	-0.050 (1.05)
II	0.037	0.053	0.031	-0.022 (0.58)
III	1.255	1.950	0.516	-1.434 (0.26)
IV	38.847	309.338	21.6	-287.738 (0.07)
V	257.672	364.330	1064.3	699.970 (2.92)
Total	300.123	676.669	1087.525	410.856 (1.61)

Waste amounts by hazard classes and type of management

Waste management methods	Waste amount by hazard classes, t					
	I	II	III	IV	V	Total
Transfer from other organizations	0	0	0	0	705.6	705.6
On-site incineration	0	0	0	0	0	0
Transfer to other organizations for disposal and deactivation	1.675	0	1.565	3.5	125.3	132.04
Transfer to other organizations for emplacement at waste landfills	0	0	0	12.0	939.0	951.0
On-site storage	0	0	0	0	705.6	705.6
On-site accumulation	0.523	0.031	0.104	55.8	0	56.458

Consumed materials

In 2018, the JSC "SSC RIAR" did not conduct activities related to the waste processing or reuse (deactivation and disposal). The share of purchased or used materials,

of which the stability was certified by a third party is 100%. No significant impact on the environment was revealed regarding the transportation of RIAR activities-related products and other goods and materials,

and labor transportation. The transportation services are performed using equipped motor roads and modern vehicles.

Energy efficiency

The RIAR power supply system includes production and consumption of energy produced by RIAR, as well as energy resources purchased from third-party organizations. JSC "SSC RIAR" does not consume the fuel from renewable sources; in the reporting year non-renewable fuels were used for motor

transport and reactor facilities VK-50 and BOR-60. The increase in heat energy consumption is explained by lower outside temperature (during the heating period) with reference to 2017. The reduction in the consumption of energy resources was achieved through of the optimization of the operation modes of reactors VK-50 and BOR-60: combined production of electric and thermal energy, repair of building contours, optimization of coolant flow rate in heating and ventilation systems, and replacement of obsolete power meters.

Consumption of heat energy + 1.56 %
electric energy - 2.71 %

Purchased energy - 44.33 %
Sold energy + 18.74 %

Total fuel consumption from non-renewable sources

Fuel type	Energy, GJ			Costs, k RUB			Relative index 2018 / 2017, %	
	2016	2017	2018	2016	2017	2018	Energy	Costs
Nuclear fuel	5 169 597	5 092 631	5 779 924	67 760	102 452	131 096	-13.50	-27.96
Industrial fuel oil	7 301	0	0	1 064	0	0	0.00	0.00
Diesel fuel	7 504	6 042	7 928	5 601	4 969	7 937	-31.20	-59.72
Petrol	2 845	2 207	2 466	2 250	2 008	2 677	-11.76	-33.36
Total	5 187 247	5 100 880	5 790 318	76 674	109 429	141 710	-13.51	-29.50

Total energy consumption, GJ

Energy type	2016	2017	2018	Relative index 2018 / 2017, %
Bought for consumption	289 122	264 915	147 469	44.33
Own generation	581 640	1 253 691	1 373 262	-9.54
Sold to other organizations	460 303	536 684	637 266	-18.74
From non-renewable sources	5 187 247	5 100 880	5 790 318	-13.51

Consumption of energy resources per years

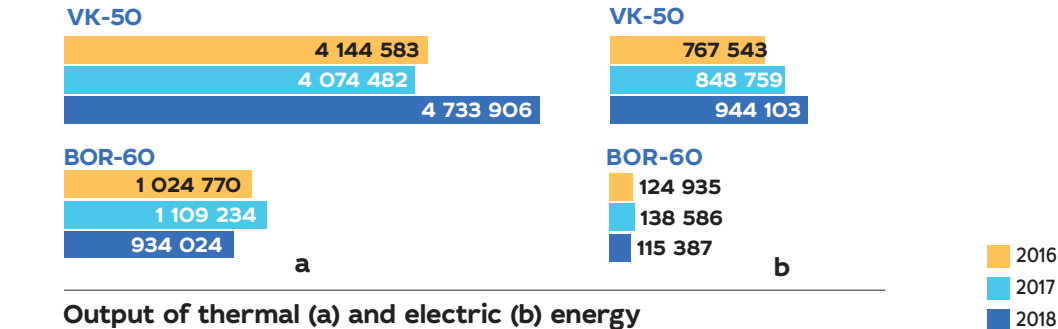
Energy type	Energy, GJ			Costs, k RUB (excluding VAT, reference price 2015)			Relative index 2018 / 2017, %	
	2016	2017	2018	2016	2017	2018	Energy	Costs
Thermal energy	384 142	375 012	380 870	124 449.64	120 426.62	120 690.87	-1.56	-0.22
Electricity	461 272	461 381	448 891	259 577.19	259 222.01	252 617.13	2.71	2.55
Total	845 414	836 393	829 761	384 026.83	379 648.63	373 308.00	0.79	1.67

GRI 301-3

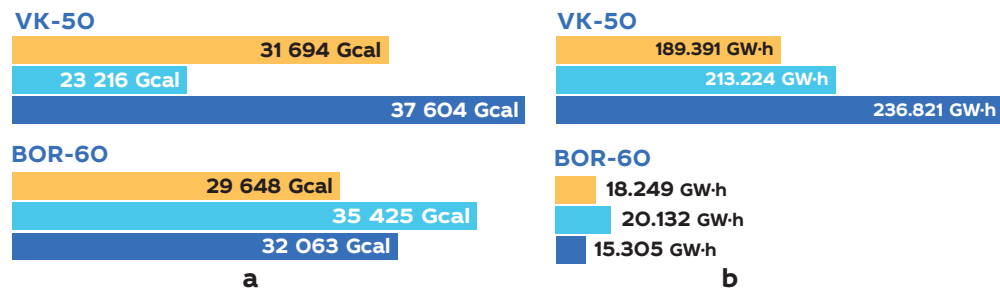
GRI 306-2

GRI 201-2

Generation of thermal (a) and electric (b) energy per reactors and years, GJ



Output of thermal (a) and electric (b) energy per reactors and years



Water intake and waste water discharge

The RIAР's water sources are the Cheremshan Bay of the Kuibyshev reservoir and mineral resources, which provide RIAР with technical and drinking water, respectively. The largest volume of the water intake (97.65 %) is water for technical water supply and cooling. The volume of water consumption in RIAР does not exceed the limited values of water intake.

To get information on water intake, water meters are used as well as data from the water supplier LLC "RIAR – GENERATION" (wells (gang No. 3) are in lease).

The Cheremshan Bay of the Kuibyshev reservoir is formed by a mouth of the Great Cheremshan River, the left tributary of the Volga River, and rivers and streams flowing into it. The total length

of the Cheremshan Bay from the mouth to Dimitrovgrad is more than 60 km, the maximal width is 14-15 km. The prevailing depth is 2–3 m. The depth more than 5 m exists in the Great Cheremshan River bed at the locations of former lakes and hollows. The water level is banked up from the reservoir: the maximal level makes up 53.98 m, the minimal level is equal to 47.64 m according to the Baltic height system. The water intake area (well gang No. 3) consists of a number of water intake wells located along the Cheremshan Bay. Usually, there is no significant influence of technical water intake on the Cheremshan Bay. In the summer season, there is a significant impact on underground drinking water (well gang No. 3).

The RIAР water use system provides for a multiple use of water in the production process. For certain types of production, a water reuse is provided with a periodical feeding to compensate water losses

Water intake per sources, thou. m³

Water source	Location	Water consumption by years,			Allowable water intake
		2016	2017	2018	
Surface water used for technical water supply and cooling	Cheremshan Bay of the Kuibyshev Reservoir	7 633.51	8 667.46	7 887.76	12 633.0
Underground water used for drinking, household and practical needs from another water supply system	Mineral resources along the bank of the Cheremshan Bay of the Kuibyshev Reservoir (well gang No. 3) and water intake area "Gorka" Recreation center	193.242	207.544	142.89	–
		2.04	0.601	0.021	24.63
Sewage from other organizations	LLC "RIAR–GENERATION"	562	546	221.66	–
Total		8 390.792	9 421.605	8 252.33	–

because of evaporation. For a part of the technological processes, when there is a need in cooling water, a straight flow system is used according to the following scheme: surface water (water intake) – a cooled object – surface water (water discharge). In water recycling and direct-flow cooling systems technical water from Cheremshan Bay of the Kuibyshev reservoir is used.

Wastewater discharge and runoff from the RIAР territory is done through the storm water drainage system into the Cheremshan Bay that is a part of the Cheremshan State Ichthyological Reserve. The volume of wastewater discharge over the reporting year made up 2 271.00 thou. m³. The Reserve is intended for the preservation and restoration of the fishing stock of the Kuibyshev reservoir. It is a shallow well-warmed area rich in forage reserve and feeding areas for young fish. Ichthyofauna is represented by more than 50 fish species, of which 23 is of commercial value. Some representatives of the ichthyofauna are listed in the Red Book of the Ulyanovsk region (nine-spined stickleback and chub) and in the Red Book of Russia (European bullhead, Russian spirin, sterlet). The Cheremshan Bay fauna is also represented by 140 taxonomic groups of phytoplankton, 30 zooplankton species, 25 zoobenthos species. Water ecosystems

located within the JSC "SSC RIAР" territory are water use areas on the rivers Yerikla and Bolshoy Cheremshan, in Cheremshan Bay of the Kuibyshev reservoir. The impact of RIAР discharges is insignificant and does not cause the contamination of habitats as well as any changes in the biodiversity. There were no significant floods detected in 2018. However, the object of protection is quite vulnerable since the RIAР's water use area is directly located in the Reserve territory.

You can find more details about the RIAР's habitat fauna and flora representatives listed in the Red Book of Russia: <http://niar.ru/sites/default/files/красная%20книга%20России.jpg> and in the Red Book of the Ulyanovsk region: <http://niar.ru/sites/default/files/красная%20книга%20Ульяновской%20области.jpg>

Under the program related to preservation of the Volga population of the imperial eagles and in order to popularize of the Ulyanovsk region natural emblem, a web camera was installed to observe the life of these birds in the nests. Link to online broadcasting: <https://www.ivideon.com/tv/camera/100-8Vo2M8hyc9pORIXAOEWvMI/0/?lang=ru>

3.06% – the total volume of the water intake from the circulation water

257 699 thou. m³ – water flow rate in the circulation water supply systems

GRI 102-11 306-5 308-1

GRI 304-1 304-2 304-3 304-4 306-1

GRI 303-3

GRI 306-3

GRI
304-1
304-2**The Cheremshan State Ichthyological Reserve**

Administrative area	Meleless district, Ulyanovsk region
Location	North-eastern part of the water area of Cheremshan Bay, Kuibyshev reservoir (coordinates: 49°51'3 E. and 54°14'9 N)
Type of object	State Reserve
Area, hectares	2 902.0
Status	Regional-level reserve to preserve the fish stock
Related regulatory authority	Regional-level Inspectorate of the Fishery Protection
Status document	Decree # 216 as of March 28, 1985 and decree #303 as of August 07, 1990 of the Regional Executive Body
Purpose of establishment	Spawning and feeding grounds for commercial fish species

GRI
304-3
304-4

The land area of JSC "SSC RIAR" takes 2600.38 hectares. Within the RIAR territory more 360 species of higher vascular plants are identified, twelve of them are listed in the Red Book of the Ulyanovsk Region. The animal world includes 500 species of vertebrate and invertebrate animals. The reptiles and amphibians fauna includes 16 species, of which 2 species are listed in the Red Book of the Ulyanovsk region. The bird fauna includes 183 species, of which 32 species are listed in the Red Book of the Ulyanovsk region and 14 species are included into the Russian Red Book. Three species are in the IUCN Red List: spotted eagle, imperial eagle and black-winged pratincole. The invertebrate fauna is rather rich. One of the largest groups of the invertebrate animals is the insect group. The list of most widespread and frequent insects includes 207 species. Some species are listed in the Red Book of the Ulyanovsk region and four species are in the Red Book of Russia: Saga pedo and butterflies Polyxena, Apollo and Mnemosyne.

There are no production sites that are owned, leased or managed by JSC "SSC RIAR" and located in protected natural areas and territories with high biodiversity value that are outside the boundaries of protected natural territories

or adjacent to such territories; there is no significant impact of activities, products and services of JSC "SSC RIAR" to such territories. The enterprise is allocated one water use site in the protected natural territory: the north-eastern border of the Cheremshan State Ichthyological Reserve is located in the area of the RIAR water intake. The annual discharge of sewage in this water use area is 2 271.1 thous. m³; 42.9 tons of pollutants are discharged together with sewage water, including 23.7 tons of chlorides, 7.6 tons of organic and 11.5 tons of suspended substances. The implemented measures to manage the impact on biodiversity include reforestation and cleaning of the sanitary protection zones of the Cheremshan Bay of the Kuibyshev reservoir from unauthorized landfills. It is planned to introduce mechanical purification of waterstorm sewage discharged into the Bay from the RIAR's site No. 2. Control of the impact includes continuous monitoring of the state of the environment and ecological risks and periodic assessment of the impact of the enterprise on the environment.

The habitats of flora and fauna in the RIAR-impacted zone are in a satisfactory ecological state.

GRI
303-2

3.311

The RIAR activity potentially affects the neighboring area 12.5 km in radius. Based on the many years' experience, it can be stated about no threat to the existence of flora and fauna.

The gamma-radiation exposition dose from the ground surface is 4.644 nC/kgH (18 R/h). The specific activity of radionuclides in plants, water and soil is in accordance with the sanitary standards.

Average indices of water quality in surface water body

Index	Place of control				Max acceptable concentration*, mg/dm ³
	Cheremshan Bay		River Erykla	River Bolshoy Cheremshan	
	Background traverse	Control traverse	Background traverse	Background traverse	
Concentration, mg/dm ³ of:					Background value
Suspended substances	5.2	10.2	4.9	8.7	0.25 + 0.75*
Dissolved oxygen	7.2	6.4	6.4	9.6	More than 6.0
Dry residue	521	433	268	551	1 000
Ammonium ions	0.58	0.36	0.57	0.125	0.5
Nitrate anions	2.8	0.8	1.21	3.0	40.0
Nitrite anions	0.060	0.023	0.051	0.016	0.08
Sulfate anions	92	41	Less than 50	95	100
Chloride anions	15.7	26.1	Less than 10	11.7	300
Forms soluble in water:					
Iron	0.169	0.25	0.36	0.181	0.100
Cooper	0.0010	0.0010	Less than 0.001	Less than 0.001	0.001
Zinc	0.002	0.003	Less than 0.005	Less than 0.005	0.010
Chromium					
chromium (III)	Less than 0.01		Less than 0.01	Less than 0.01	0.07
chromium (VI)	Less than 0.01		Less than 0.01	Less than 0.01	0.02
Anionic surface active substances	0.012	0.018	0.012	0.009	-
Phosphate ions (by P)	0.130	0.095	0.055	0.053	0.2
Oil and oil products in dissolved and emulsified state	0.028	0.029	0.034	0.023	0.05
Oxidability, mg O ₂ /dm ³ :					
Permanganate	4.7	8.3	7.5	4.6	-
Bichromate	15.1	24.7	19.6	14.6	-
Biochemical consumption of oxygen, mg O ₂ /dm ³ :					
for 5 days	1.57	2.68	1.77	2.26	2.1
for 20 days	3.2	6.5	3.6	4.9	3.0
pH index	7.8	7.7	7.7	8.2	Background value
Water t, °C	9.3	21.5	14.6	19.8	-

* For water objects of commercial fishing importance.

3.32.2 Polluting substances in discharges in Cheremshan Bay

Polluting substance	Amount, t
Organic compounds (total biochemical consumption of oxygen)	7.5851
Suspended substances	11.4709
Dry residue	0.0000
Ammonium ion	0.0000
Nitrate anions	0.0000
Nitrite anions	0.0000
Sulfate anions	0.0000
Chloride anions	23.6525
Iron*	0.1930
Copper*	0.0000
Zink*	0.0022
Chromium (III) and (VI)	0.0000
Anionic surface active substances	0.0136
Phosphate ion (by P)	0.0000
Oil and oil products in dissolved and emulsified state	0.0022
Total	42.9195

* All water-soluble forms.

Emissions of hazardous substances into atmosphere

Direct emissions of greenhouse gases into the RIAR atmosphere resulted from the combustion of fuel oil in the boiler units and operation of sewage water treatment plants of the recreation center, and also due to fuel consumption by mechanisms and vehicles. The quantitative determination of the direct emission of carbon dioxide from the stationary combustion in the boiler is carried out according to the guidelines for the quantification of greenhouse gas emissions volume by organizations engaged in economic and other activities in the Russian Federation. The calculation method is based on the use of release coefficients and direct measurement of fuel consumed (fuel balance) and ignores methane and nitrous oxide emissions arising potentially during the stationary combustion of fuel. The quantitative determination of the direct

methane emissions from sewage water treatment is carried out according to the guidelines on the calculation of pollutants emissions into the air from the fugitive sources from sewage water aeration stations. In 2018, there were no direct emissions of carbon dioxide and methane from the boiler of the recreation center. The heat balance is affected by water vapor and ozone. RIAR annually emits about 600 thous. m³ of water vapor, which is formed in the cooling towers of nuclear installations. In 2018, the ozone emission was 0.0714 kg. Indirect greenhouse gas emissions of RIAR are the results of the electricity and heat production for own consumption when burning fuel oil and gas at the heat and power supply plant LLC "RIAR—GENERATION". Other indirect greenhouse gas emissions originate from sources under the management of JSC "Alliancetransatom", which carries out transportation of employees and cargoes. The estimation of volume releases is quite challenging since there are no data on the consumption of electricity, heat and use of vehicles by these organizations.

Proposals to reduce the greenhouse gas emissions include reducing energy consumption, transportation, uncontrolled leaks from refrigeration equipment and air conditioners. The location of RIAR in the settled land allows implementing rational methods of forest management and reforestation on a sustainable basis with a view to protecting and improving the quality of sinks and storage of greenhouse gases. From the list of ozone-depleting substances, the treatment of which is regulated by the Montreal Protocol on Substances that Deplete the Ozone Layer, the RIAR emissions contain carbon tetrachloride. The release of carbon tetrachloride is due to technological processes: laboratory tests, cleaning and degreasing of equipment. The source of CFC emissions is compressing-condensing units (refrigerators) and multi-split systems, which use ozone-depleting substances.

In 2018, the average annual indicator of purification of the enterprise

atmospheric emissions from polluting substances received at the purification plant made up 88 %. There were no peak and emergency emissions of pollutants into the atmosphere. The quantitative determination of emissions is based on calculation methods in compliance with the techniques approved under the law-established procedure, with the use of the specific indicators and balance method.

Data on ozone-depleting substances for 2018

Substance	Mass, kg		
	At the beginning of year	Consumed	At the end of year
Carbon tetrachloride	368.6	283.0	85.6

GRI 201-2
305-6
305-7

3.32.1 Mass of pollutant emissions into atmosphere per years, t

Substance	Hazard class	2016	2017	2018
Gaseous and liquid:	-	4.496	4.496	4.496
Incl.:				
Sulfur dioxide	III	0.096	0.096	0.096
Carbon oxide	IV	1.577	1.577	1.577
Nitrogen oxides (in NO ₂ equivalent)	III	1.298	1.298	1.298
Volatile organic compounds	-	1.421	1.417	1.417
Others	-	0.104	0.108	0.108
Solid:		3.356	1.267	1.267
Incl. suspended substances	III	0.017	0.017	0.017
Total	-	7.852	5.763*	5.763

* In Report 2017 there was an uncertainty resulted from a technical mistake.

GRI 307-1 416-2 Amount of penalties for adverse environmental impact per years, k RUB

Type of fees	2016	2017	2018
Fees for allowable emissions (discharges) of pollutants and emplacement of production and consumption waste:	104	5.2	4.6
to water bodies	8	5.2	4.3
to air	-	-	-
for emplacement of waste	96	-	-
Fees for excess emissions (discharges) of pollutants and emplacement of production and consumption waste:	365	1 965.2	121.0
to water bodies	165	4.4	-
to air	103	7.4	-
for emplacement of waste	97	1 953.4	121.0
Total	469	1 970.4	125.6
including:			
to water bodies	173	9.6	4.3
to air	103	7.4	0.3
for emplacement of waste	193	1 953.4	121.0

GRI 308-2

3.30.1

GRI 305-7

GRI 102-11
201-2
305-1
305-2
305-3
305-4
305-5
305-6

GRI 201-2, 307-1, 413-2
Fines and penalties for breaching environmental legislation and regulatory requirements

In 2018, the following administrative measures were applied to JSC "SSC RIAR": administrative liability for violating the requirements of the environmental legislation of the Russian Federation that cover the protection of water body and atmospheric air and management of production and consumption waste; an administrative fine at the rate of 20 thousand rubles was imposed on a legal entity. In 2018, there were no non-financial sanctions imposed on JSC "SSC RIAR" for non-compliance with environmental legislation and regulatory requirements.

In the reporting year, the payment for negative impact on the environment amounted to 125.6 thousand rubles, while emissions of pollutants into the air amounted to 0.2 % of the total, discharges to water facilities – 3.4 %, waste disposal – 96.3 %. JSC "SSC RIAR" does not dispose waste into underground horizons.

Minimized environmental impact

To minimize the environmental risks resulted from the RIAR activities, the Environmental Policy was brought into force. More details can be found in Sub-section 4.6 "Natural Capital" of the present Section and in Reports on Ecology of JSC "SSC RIAR" on http://niiar.ru/annual_report.

GRI 102-11, 304-2

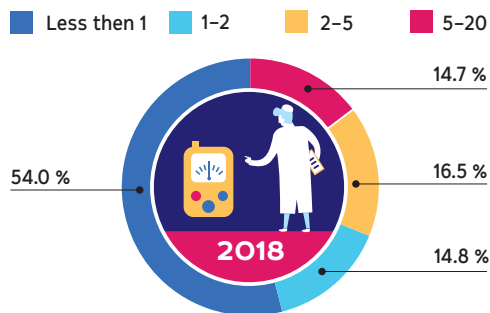
NUCLEAR AND RADIATION SAFETY

GRI 102-11, 403-3, 416-2
Dosimetric control

A dosimetric control of the staff exposure is carried out under the requirements of the radiation safety standards, principal radiation safety rules, and methodological guidelines of the Federal Medical and Biological Agency of Russia. In 2018, all Group A personnel was subject to individual dosimetric control. In the reporting period, the average annual effective dose of the personnel is 2.46 mSv. In the year 2017, it was 2.84 mSv. A decrease in the average effective exposure dose of the personnel by 13% is explained by the reduction in its number when carrying out the volume of radiation hazardous work at reactor facilities during the scheduled preventive repair. There were no cases of exceeding the effective dose of 50 mSv per year or 20 mSv on average for five consecutive years that indicates the implementation of the principles of radiation safety personnel at RIAR.

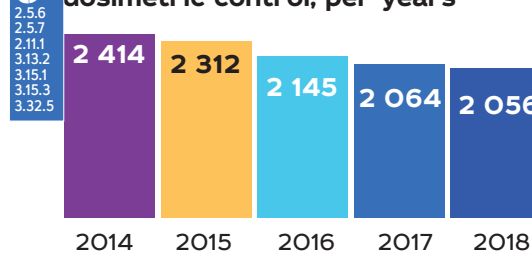
In the reporting year, the Laboratory for Radiation Monitoring of the Radiation Safety Division took part in the interlaboratory comparative tests related to the individual

Effective dose for Group A personnel, mSv*



* Limited value is 50 mSv according to the radiation safety standard.

GRI 403-3, 416-2
Number of JSC "SSC RIAR" employees under the individual dosimetric control, per years




dosimetric control to assess the quality of the measurements performed by the indicator "Individual dose equivalent of photon emission". The test provider (JSC "VNIINM") has issued a certificate No. O5-O67-2018-MSI on successful performance of interlaboratory comparative tests.

The system of nuclear and radiation safety assurance at the facilities is constantly being improved. In 2017, JSC "SSC RIAR" introduced new guidelines on the radiation monitoring developed by the Federal Medical

and Biological Agency of Russia. JSC "SSC RIAR" annually issues:

- a report containing information on individual and collective doses of external and internal exposure of personnel and public, the results of monitoring of radioactive substances emissions into the atmosphere, as well as other information; Based on the report results, measures are being developed to improve the radiation safety system and reduce the risks of nuclear and radiation safety;
- a nuclear safety report for nuclear facilities and nuclear-hazardous objects of JSC "SSC RIAR", which analyzes comments on the state of nuclear safety in accordance with the guidance on safety when using nuclear energy "Determination of the causes and conditions of safety requirements violations when using nuclear energy" (RB-O83-13).

The level of nuclear and radiation safety achieved in RIAR is acceptable. This is confirmed by inspections of RIAR-level commissions on nuclear and radiation safety, and by the ROSATOM general inspection commission.



Indicators of nuclear and radiation safety assurance during the operation of JSC "SSC RIAR" facilities:

- non-exceedance of the basic dose limits for personnel exposure;
- compliance with emission standards for radioactive substances in the atmosphere;
- absence of violations in the work of the RIAR facilities characterized by level 1 and higher according to INES scale

The achieved level of radiation safety in JSC "SSC RIAR" allows assuring the public radiation safety in the supervised area. The Institute implements a set of measures to prevent the radiation exposure to humans: monitoring of radionuclide

emissions is carried out in order to prevent their entering in the human body with food and drinking water as well as the significant contamination of the public habitation territory.

The stations for radiation monitoring are organized in the supervised area. They provide for comparative measurements of the effective dose rates of gamma-radiation from the territory surface,

the specific activity of cesium-137 and strontium in the samples of the atmospheric air, soil, water from surface water bodies, drinking water, agricultural products of local production.

Activity of the key man-made radionuclides

Monitored object	Radionuclide	Admissible level	Values per years		
			2016	2017	2018
Radionuclide surface activity, Bq/km²					
Precipitations	Cesium-137	Not normalized	(0.8–4.0)10 ⁶	(0.6–2.1)10 ⁶	(0.8–3.2)10 ⁶
	Strontium-90		(5.0–20.0)10 ⁵	Not provided for by JSC "SSC RIAR" radiation monitoring regulations	
	Plutonium-239		(15.0–25.0)10 ⁴	1.6·10 ⁴	Not provided for by JSC "SSC RIAR" radiation monitoring regulations
Snow	Cesium-137		(0.5–3.1)10 ⁶	(0.4–2.3)10 ⁶	(0.6–1.1)10 ⁶
	Strontium-90		(10.0–38.0)10 ⁵	Not provided for by JSC "SSC RIAR" radiation monitoring regulations	
	Plutonium-239		(0.13–0.45)10 ⁵		
Soil*	Cesium-137	3.7·10 ¹⁰	(0.13–2.9)10 ⁹	(0.23–2.2)10 ⁹	(0.17–1.3)10 ⁹
	Strontium-90	1.1·10 ¹⁰	(0.68–12.0)10 ⁸	(1.5–3.6)10 ⁸	(1.0–3.5)10 ⁸
	Plutonium-239	3.7·10 ⁹	(0.26–1.1)10 ⁸	(0.41–7.1)10 ⁸	(1.5–1.9)10 ⁷
Radionuclide specific activity, Bq/kg					
Vegetation*	Cesium-137	6.0·10 ²	0.07–9.1	0.2–4.2	0.15–0.6
	Strontium-90	1.0·10 ²	1.2–7.2	0.3–1.4	0.9–7.3
Crops*	Cesium-137	60	0.1–0.9	0.07–0.43	0.12–0.45
	Strontium-90	Not normalized	0.11–0.48	0.23–0.46	There is no standard
Milk*	Cesium-137	100	0.14–0.24	0.06–0.23	0.035–0.090
	Strontium-90	25	0.04–0.07	0.04–0.49	There is no standard
Fish*	Cesium-137	130	0.25–2.5	0.47	No more than 0.35
	Strontium-90	100	0.2–1.4	0.2	There is no standard

* The acceptable levels are set by the following regulatory documents:

- For soil – Methodology "Criteria for assessing the environmental situation of territories to determine the environmental disaster zones" (approved by the Ministry of Natural Resources of the Russian Federation, dated on November 30, 1992);
- For vegetation – Instruction No. 13-7-2/216 on radiological control of feed quality. Control levels of cesium-134, cesium-137 and strontium-90 radionuclides content in feed and feed additives (approved by the Ministry of Agriculture

and Food of the Russian Federation, dated on December 1, 1994);

- For crops, milk and fish – Decree No.36 of the Chief State Sanitary Doctor of the Russian Federation dated on November 14, 2001 "On the Introduction of Sanitary Rules into Effect" and "SanPiN. 2.3.2.1078-01 2.3.2. Food raw materials and food products. Hygienic requirements of safety and nutritional value of food products. Sanitary and Epidemiological Rules and Standards" (approved by the Chief State Sanitary Doctor of the Russian Federation, dated on November 06, 2001).

The Laboratory for Radiation Monitoring of the Radiation Safety Division performs the samples measurements according to the certified methods and in compliance with the approved regulations for radiation monitoring of territories and periodicity of sampling and conducting measurements in the sanitary protection area and supervised area of JSC "SSC RIAR". According to the results of the control carried out using the federal methods, the activity of the key normalized man-made radionuclides in environmental objects in the supervised area for the period from 2016 to 2018 was one or two orders less than the regulatory values.

The values of the collective effective annual radiation dose and the average individual effective annual radiation dose of the population living in Dimitrovgrad in the supervised area have been less than the minimal significant one for a number of years (1 person/Sv and 10 μSv, respectively) and may not be taken into account.

The results of radiation and hygienic certification of JSC "SSC RIAR" and Dimitrovgrad territory for 2015–2018 (in accordance with NRB-99/2009) are as follows:

- Quantitative indicators of individual risk related to the group A personnel exposure stochastic effects do not exceed individual life-long risk 1.0·10⁻³;

- Quantitative indicators of individual and collective risks related to stochastic effects of the public exposure are less than the regulated level of negligible radiation risk (10⁻⁶) of stochastic effects – harmful biological effects (especially oncological malignant diseases) caused by ionizing radiation.

Stochastic effects are non-specific, in other words they are practically undistinguishable from the similar effects initiated by the non-radiation factors, so it is almost impossible to establish the causal relation between the ionizing radiation and the diagnosis of malignant neoplasms.

Based on the results of monitoring of radiation situation in Dimitrovgrad and indicator analysis of the radiation risk related to the public exposure stochastic effects, it can be concluded that the production activity of RIAR's radiation facilities does not have a significant negative impact on human habitat and health of the town population.



2018 – A Year of Science in the Rosatom State Corporation

A scientific truth is established neither by a logical proof and nor by rationalistic way, but by the experience and observation in nature and reality.

V. Vernadsky

In 2018, activities at the nuclear hazardous areas of JSC "SSC RIAR" as well as the operation of nuclear research facilities were conducted WITHOUT ACCIDENTS

GRI 413-2 416-2



Improving the safety and efficiency of the reactor experimental base

Provision of accident-free, safe and sustainable operation of nuclear and radiation hazardous objects is the main goal of RIAR activities. RIAR systematically monitors their state and implements a set of engineering measures to ensure accident-free operation of nuclear research facilities and nuclear hazardous areas (modernization of the process equipment and compliance with current standards in production and technological processes when operating

nuclear facilities); activities are carried out in full compliance with standards and taking into account changes in the existing Russian legislation. Information on the risks of nuclear and radiation safety can be found in Sub-section 2.4 "Risk management".

The project "Production Funds of the Company" ensures the modernization of the reactor experimental base, of which improvement is necessary not only because of physical and moral obsolescence of equipment, but also in connection with the new requirements of federal regulations for assuring safe operation of nuclear facilities.

In 2018, the following activities were implemented under the project:

- purchase of containers for transferring radioactive waste to the solid radioactive waste container storage area as well as a radioactive waste shredder;
- development of concept of the VK-50 reactor decommissioning;
- purchase of three beryllium blocks for the MIR reactor;
- purchase of a sealing ring and a centrifugal pump for the VK-50 reactor facility cooling system;
- replacement of the compressor cryogenic system with the air separation equipment;
- purchase of equipment for radiation monitoring system of the critical stands of the MIR and SM reactors;
- purchase of equipment to update the automated radiation monitoring system;
- commissioning of the automated radiation monitoring system of the Reactor Materials Testing Complex and the alarm system at the nuclear-hazardous areas of the Radionuclide Sources and Radiochemicals Department and the Radiochemical Technology Department;
- update of ionizing radiation sources physical protection system equipment.

The investment project "Production Funds of the Company" allowed increasing the level of nuclear and radiation safety of research nuclear facilities, scientific methodological and instrument support for their operation, R&D and technological work carried out to solve the problems of the industry and international cooperation.

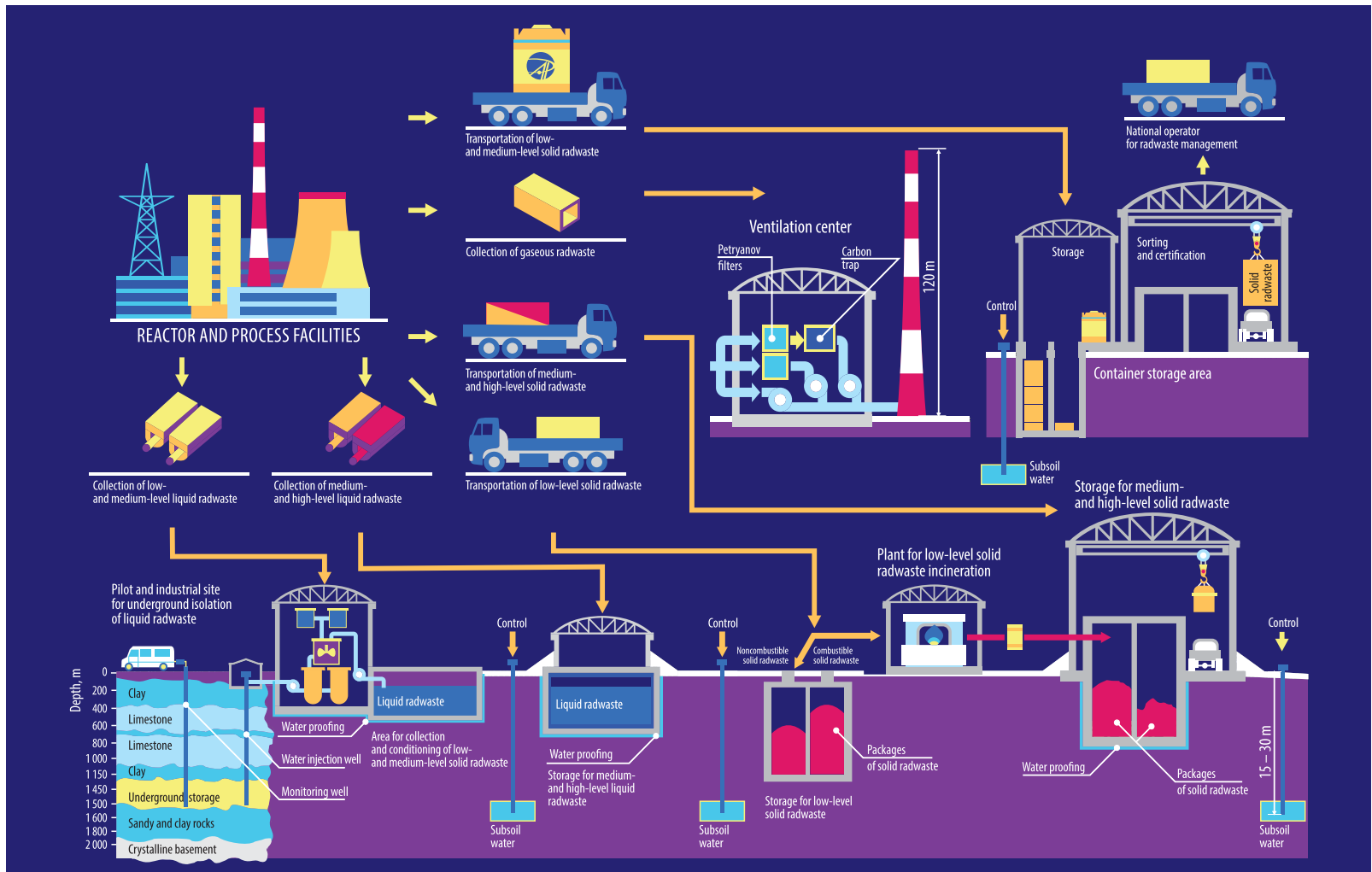
Strategy to manage the radioactive waste

In 2018, JSC "SSC RIAR" updated the local strategy for radioactive waste management. The strategy is a key element for adapting the company to the requirements of a unified state radioactive waste management system. It contains a plan for the transformation of the existing waste management scheme and basic indicators of this transformation for the period up to 2025, as well as the target state of the system, the main directions and terms to solve the accumulated problems.

Expected results of radioactive waste management are as follows:

- Partial disposal of medium-level solid radioactive waste and safety assurance during the additional lifetime of the facility;
- Progressive increase in the proportion of processed, conditioned and disposed radioactive waste generated in the Institute;
- Justification and making decisions on classification of all accumulated radioactive waste as special or removable and implementation of work on decommissioning of facilities for non-conditioned radioactive waste storage;
- Reduction in expenditures for radioactive waste long-term storage ;
- Ensuring the financial and economic independence of the safe and effective functioning of the radioactive waste management system in the Institute.

Radioactive waste management scheme



GRI 102-11
1.2.10
2.5.6
3.14.1

Glossary

Absorbing element – a) is an assembling unit of a nuclear reactor that has a strong sealed cladding, usually in the form of a cylinder or ball, and an absorbing material embedded into it to control the reactor reactivity; b) is a key construction part of a control rod that contains absorbing material.

Activity – is a measure of radionuclides radioactivity equal to the number of radioactive decays occurred in the given amount of a radionuclide per time unit.

Affiliate – is a physical or legal person who can affect the activities of the physical and/or legal persons conducting the entrepreneurial activities.

A-group personnel contains persons working with man-caused emission sources and getting an average annual effective emission dose of 2.3 mSv/year.

B-group personnel contains persons working at a radiation object or within its sanitary-protective territory and being under the effect of man-caused emission sources and getting an average annual effective emission dose of 0.8 mSv/year.

Business model – is an integrated organizational and financial chart of company activities, which describes comprehensively the creation of enterprise value (added value), reveals capital transformation processes and results and their influence on the stakeholders.

Classes of hazardous substances – a conventional degree intended to simplify the classification of potentially hazardous substances. The hazard class is set according to industry-oriented regulatory documents. In the Russian Federation there are five hazard classes of industrial and bio waste by its environmental impact and harmful effect: Class I – extra hazardous waste: the harmful effect on the environment is estimated as extra high; accumulation of such waste results in irreversible damages of the ecosystem with no recovery period; Class II – highly hazardous waste: the harmful effect is estimated as high, the balance of ecosystem is greatly disturbed, and the period for system and its components recovery is not less than 30 years after the entire elimination of the exposure source;

Class III – moderately hazardous waste: a medium degree of the harmful effect with a period of self-recovery at least 10 years after the exposure level is reduced; Class IV – low-hazard waste: the low degree of harmful effect on the environment with the minimal period of recovery to be three years; Class V – virtually non-hazardous waste: the exposure effect is very low, ecological system and its components are not violated.

Closed nuclear fuel cycle – is a nuclear fuel cycle, in which spent nuclear fuel is reprocessed to recover uranium and plutonium to refabricate nuclear fuel.

Discharge of radioactive substances – is a controlled discharge of radionuclides to tanks with liquid radwaste at a nuclear facility.

Division – is a business entity that has an established procedure of relationships with the corporation; according to this procedure this entity is defined as a division managing other business entities within the management circuit of such division.

Enrichment – a) is a content of atoms of a specific isotope in a mixture of isotopes of the same element if this content increases the fraction of this isotope in a mixture occurring in nature (expressed in percentage); b) is a process resulting in the increase of a specific isotope in a mixture of isotopes.

Enterprise value – is the whole of produced products, results of production activities and implementation of projects aimed at achieving strategic goals, improving efficiency and competitiveness, as well as economic, environmental and social mutual influence between the company and stakeholders.

Fast neutrons – are neutrons with kinetic energy exceeding the given value. In reactor physics this value is usually equal to 0.1 MeV.

Fuel assembly – is a set of fuel elements (rods, rodlets, plates, etc.) fixed together by a spacer grid and other structural components that are non-dismountable during the transportation and irradiation in a reactor. Fuel assemblies are inserted in the nuclear reactor core.

Fuel element – is the smallest structural unit of a reactor or fuel assembly containing nuclear fuel and/or breeding material and located either in the reactor core or breeding zone to produce thermal energy and transfer it to coolant as well as accumulate secondary nuclear fuel.

Global Reporting Initiative (GRI) – is a reporting system accepted in international practice and concerning economic, environmental and social efficiency; it is based on Sustainability Reporting Guidelines.

HR-functions – are functions accomplished by a specialist in human resources.

IAEA Safeguards – is a system of inspection and verification of the peaceful uses of nuclear energy established under the international non-proliferation policy and supervised by the International Atomic Energy Agency.

Impact factor (IF) – is a formal numerical indicator of a scientific journal importance. It is calculated as a number of references in a specific year divided into a number of articles published in the journal for three previous years and is a characteristic of the journal credibility to a certain extent.

Internal control and audit system – is a set of organizational structure, inspection and monitoring methods and procedures adopted by the management of an economic entity as the mechanisms to conduct financial and economic activities (business processes) in an effective and arranged manner. These activities are performed by the economic entity and aimed at identifying, correcting and preventing significant errors and misrepresentation of accounting information.

International Standard Book Number (ISBN) – is a unique identification number of an edition used worldwide in book business, publishing and librarianship.

Isotopes – are variants of atoms and nuclei of a chemical element which have the same atomic (ordinal) number and different mass numbers.

Mission – is one of the basic terms used in strategic management; the main objective of a company, reason for its existence from the viewpoint of meeting customers' needs, competitive advantages and motivation of company's employees.

MOX fuel – is a nuclear fuel that contains several oxides of fissile materials.

Nuclear fuel – is a material containing fission radionuclides that allows a nuclear chain reaction loaded in a nuclear reactor.

Nuclear fuel cycle – is a chain of operations to ensure nuclear reactor operation from mining of uranium to radwaste disposal.

Nuclear medicine – is a branch of medicine involving the application of radioactive pharmaceuticals in diagnosis and treatment of a disease; methods of remote X-ray therapy.

Nuclear power engineering – is a branch of power engineering concerned with the application of nuclear energy for heat and electricity supply purposes.

Nuclear safety – is a general term describing the characteristics of a nuclear facility under normal operation and accidental conditions to minimize the radiation exposure on personnel, population and environment within the admissible limits.

Operator – is an organization that has an approval from the regulatory authorities to operate a nuclear facility.

Person Sievert (Sv) – is a unit to measure the collective radiation dose

Pool – is a form of companies association, characterized in that the profits of all pool members are transferred to a common fund (pool) and then distributed among them according to a predetermined proportion.

Radiation monitoring – is obtaining data on radiation situation in an organization, environment and people irradiation levels (includes dosimetric and radiometric control).

Radiation safety – activities to minimize radiation exposure on personnel and population to the lowest possible values using the means acceptable to the public in order to prevent early radiation effects and minimize late radiation effects to the admissible level; the level of protection of present and future generations of people against the harmful effects of ionizing radiation on their health.

Radioactive waste – nuclear materials and radioactive substances for which no future is foreseen and the radionuclides content exceeds the levels determined in accordance with the criteria established by the Government of the Russian Federation.

Radionuclide – is an atom with a specific mass number, atomic number and nuclei energy state that has the lifetime sufficient for observations.

Release of radioactive substances – is the release of radionuclides in the atmosphere as a result of a nuclear facility operation, from a radiation source or nuclear materials and radioactive substances storage facility.

REMIX (regenerated mixture) – is the Russian innovative nuclear fuel for the VVER type reactors; it is produced from a non-separated mix of regenerated uranium and plutonium obtained when reprocessing spent nuclear fuel.

Reprocessing of spent nuclear fuel – is a set of chemical and technological processes to remove fission products from spent nuclear fuel and regenerate fissile material for re-use.

Reprocessing of radioactive waste – is process operations to change the aggregate state and / or physical and chemical properties of radioactive waste to convert them to conditions acceptable for transportation, storage and/or disposal.

Research reactor – is a nuclear reactor intended for generating data on reactor physics and technologies required to design and develop reactors of such type or their components.

Risk management – is a process to make and implement management decisions focused on minimizing a probability of unfavourable results and potential losses caused by its implementation.

Russian Science Citation Index is a national information and analytical system accumulating more than 2 million publications of Russian authors, as well as information on citing these publications from more than 2,200 Russian journals; the main criterion for assessing is the relative index of citations of articles published in a particular journal – impact factor.

Safety of nuclear facilities – is a property of nuclear facilities to provide radiation safety both under normal operation and in case of accident for the personnel, population and environment within the designed limits.

Science Citation Index – is the scientifically accepted indicator of the significance of the scientist's works, which is the number of references to scientific publications in the refereed scientific periodicals.

Science Index – is the information-analytical system built on the basis of data from the Russian Science Citation Index and offering a whole range of additional services for authors of scientific publications, scientific organizations and publishing houses.

SMART – is a mnemonic abbreviation used in management and project management to determine goals and objectives: S – specific; M – measurable; A – attainable; R – relevant; T – time-bounded. The very word "smart" in Russian means "very clever". Thus, the correct goal setting means that the goal is concrete, measurable, achievable, meaningful and correlates with a specific time frame.

Stakeholder – is a physical and / or legal person and groups of persons who affect or can be affected by organization's activities.

Supply chain – is a system of relations with counterparties (suppliers, contractors and consumers), which is an integral component of the business model of the enterprise and has a direct impact on the process of creating value (value added) in the short, medium and long term.

Web of Science – is a multi-disciplinary abstract-bibliographic database of the Institute for Scientific Information (ISI), which is based on: Science Citation Index Expanded (natural sciences) – the citation index for natural and exact sciences (natural sciences, technical and medical journals); Social Sciences Citation Index (social sciences) – index citation in social sciences (journals in economics and social sciences); Arts & Humanities Citation Index (Humanities) – the index of citation on art and humanities (magazines on archeology, architecture, all kinds of art, literature, history, philosophy, religion).

LIST OF ABBREVIATIONS

AA1000 – a generally applicable standard to assess an organization's reporting in terms of its sustainable development, as well as to assess the sustainable development fundamental processes, systems and level of competence.

AA1000 APS – a standard that reveals the basic principles of efficiency, responsibility and sustainability.

AA1000 AS – an assurance standard for social and sustainable development information.

AA1000 SES – a stakeholder engagement standard.

B2B-Center – Russian IT company that develops software for corporate purchases and sales.

BN – a fast sodium-cooled reactor.

BOR-60 – a fast research reactor (60 MW).

CIAE – China Institute of Atomic Energy.

CIS – the Commonwealth of Independent States.

CJSC – Closed Joint Stock Company.

CJSC "Isotope technologies" – Belarus and Russian Closed Joint Stock Company "Isotope Technologies".

EBITDA – Earnings before Interest, Taxes, Depreciation and Amortization.

FA – a fuel assembly.

FAA – a fuel assembly of an alternative design with a rigid skeleton formed by six corners and spacer grids. It has an increased fuel burn-up, improved operational reliability and enhanced bending stiffness.

FE – a fuel element.

FSBE – Federal State Budgetary Enterprise.

FSBE "NRC "Kurchatov Institute" – Federal State Budgetary Enterprise "National Research Center "Kurchatov Institute".

FSBE "PNPI" (NRC "Kurchatov Institute") – Federal State Budgetary Enterprise "Petersburg Nuclear Physics Institute named after B.P. Konstantinov".

FSUE – Federal State Unitary Enterprise.

FSUE CRISM "Prometey" – Federal State Unitary Enterprise "Central Research Institute of Structural Materials "Prometey" named after Academician I.V. Gorynin".

FSUE "NII NPO "Luch" – Federal State Unitary Enterprise "Research Institute – Research and Production Association "Luch".

FSUE "NITI" – Federal State Unitary Enterprise "Technology Research Institute named after A.P. Alexandrov".

FSUE "NO RWM" – Federal State Unitary Enterprise "National Operator for Radioactive Waste Management".

FSUE "PA "Mayak" – Federal State Unitary Enterprise "Production Association "Mayak".

GOST – a state standard of the Russian Federation.

GOST RV – a state military standard of the Russian Federation.

GRI – Global Reporting Initiative.

HSNP – a heat supply nuclear plant.

HTGR – a high temperature gas-cooled reactor.

IAEA – International Atomic Energy Agency.

IEC – International electro-technical commission.

INES – International Nuclear Event Scale.

InPO CDC – Independent Non-Profit Organization "Center for Development of Nuclear Innovative Cluster of Dimitrovgrad, Ulyanovsk region".

INR RAS – Federal State Budgetary Enterprise "Institute for Nuclear Research of the Russian Academy of Sciences".

International <IR> Framework – International Standard Integrated Reporting.

ISBN – International Standard Book Number.

ISEA – Institute of Social and Ethical Accountability.

ISO – International Organization for Standardization.

IT – information technology.

JSC – Joint Stock Company.

JSC "AEM-technology" – Joint Stock Company "AEM-technology Engineering Company".

JSC "Afrikantov OKBM" – Joint Stock Company "Afrikantov Experimental Design Bureau for Mechanical Engineering".

JSC "ATA" – Joint Stock Company "Alyanstransatom".

JSC "Atomenergoprom" – Joint Stock Company "Atomic Energy Power Corporation".

JSC FCS&HT "SNPO Eleron" – Joint Stock Company 'Federal Center for Science and High-Technologies "Special Scientific & Production Enterprise "Eleron".

JSC "GSPi" – Joint Stock Company "State Specialized Design Institute".

JSC "IRM" – Joint Stock Company "Institute for Reactor Materials".

JSC "IRC – R.O.S.T." – Joint Stock Company "Independent Registrar Company R.O.S.T.".

JSC "L.Ya. Karpov NIFKhl" – Joint Stock Company "L.Ya. Karpov Research Institute of Physics and Chemistry".

JSC "NIKIET" – Joint Stock Company "N.A. Dollezhal Research and Development Institute of Power Engineering".

JSC "NIKIMT-Atomstroy" – Joint Stock Company 'Research and Design Institute for Assembly Technology "Atomstroy".

JSC 'OKB "Gidropress" – Joint Stock Company 'Experimental Design Office for Water and Steam Press Equipment".

JSC "OTEK" – Joint Stock Company "Integrated Thermal Power Company".

JSC "Rosenergoatom Concern" – Joint Stock Company "Concern for Generation of Electric and Thermal Power at NPPs".

JSC 'SPA "TsNIITMASH" – Joint Stock Company 'Scientific Production Association "Central Research Institute for Machine Building".

JSC 'SPb "IZOTOP" – Joint Stock Company 'Saint Petersburg "IZOTOP".

JSC "SSC RF – IPPE" – Joint Stock Company "State Scientific Center of the Russian Federation – Institute for Physics and Power Engineering named after A.I. Leypunsky".

JSC "SSC RIAR" – Joint Stock Company "State Scientific Center – Research Institute of Atomic Reactors".

JSC "TVEL" – Joint Stock Company "TVEL".

JSC "VNIKhT" – Joint Stock Company "Leading Research Institute for Chemical Technology".

JSC "VNIINM" – Joint Stock Company "A.A. Bochvar High-Technology Research Institute for Inorganic Materials".

LBC – Library Bibliographic Classification.

LLC – Limited Liability Company.

LTIFR – Lost Time Injury Frequency Rates.

MBIR – a multi-purpose fast reactor.

'MC "UES", LLC – Limited Liability Company 'Management Company "Uralenergostroy".

MIR – a multi-loop research reactor for material testing.

MOX-fuel – mixed uranium plutonium oxide fuel.

NOPAT – Net Operating Profit after Tax.

NPP – a nuclear power plant.

NP – norms and regulations.

NRB – Radiation safety norms.

NRHF – a nuclear- and radiation-hazardous facility.

NSR – nuclear safety regulations.

OGRN – primary state registration number.

OJSC – Open Joint Stock Company.

OJSC "STC RATEC" – Open Joint Stock Company "Scientific and Technical Center RATEC".

OST – an industry-specific standard.

PJSC – Public Joint Stock Company.

PJSC "IDGC of Volga" – Public Joint Stock Company "Interregional Distribution Grid Company of Volga".

PJSC "MSZ" – Public Joint Stock Company "Mashinostroitelny Zavod".

PJSC "NCCP" – Public Joint Stock Company "Novosibirsk Chemical Concentrates Plant".

PJSC "TGC-14" – Public Joint Stock Company "Territorial Generating Company No. 14".

PRC – the People's Republic of China.

PUREX process – plutonium-uranium recovery by extraction; nuclear fuel recycling procedure.

QMS – Quality Management System.

R&D – Research and development.

RBT – a pool-type reactor.

RS – radiation safety.

RSCI – Russian Science Citation Index.

PWR – pressurized water reactor.

RF – the Russian Federation.

RIAR – Research Institute of Atomic Reactors.

Rosatom State Corporation – Rosatom State Nuclear Energy Corporation.

Rosprirodnadzor – Federal Service for Supervision of Natural Resource Usage.

Rostekhnadzor – Federal Environmental, Industrial and Nuclear Supervision Service of Russia.

RW – radioactive waste.

SCSTI – State Classifier of Scientific and Technical Information.

SAP – System Analysis and Program Development; a German company that makes software for enterprises, the most famous product is SAP ERP.

SFA – a spent fuel assembly.

SHF – super-high frequencies.

SM – a high-flux vessel-type pressurized-water reactor; according to its name in Russian it is translated as the most powerful reactor due to a high density of thermal neutron flux.

STO – company standard.

TCM – total cost management.

TIN – a taxpayer identification number.

UDC – universal decimal classification of books used worldwide; its index is an obligatory imprint element.

"Uralenergostroy", LLC – Limited Liability Company 'Managing Company "Uralenergostroy".

USA – the United States of America.

USSR – the Union of Soviet Socialist Republics.

VAT – a value added tax.

VK-50 – a boiling water reactor.

VVER – a water-water energy reactor.

InPO CDC – Independent Non-Profit Organization "Center for Development of Nuclear Innovative Cluster of Dimitrovgrad, Ulyanovsk region".



Appendices

Appendix 1

About Report, its issuing and information materiality

Report description

The present Report is the eighth integrated report that covers the key financial, economic and production results of JSC "SSC RIAR" performance over the calendar year. The Report also presents the results of the sustainability-related activities and management approaches allowing the efficiency to be improved in accordance with the strategic objectives of ROSATOM State Atomic Energy Corporation.

The level of information disclosure in the Report complies with the Sustainability Reporting Guidelines GRI and ROSATOM requirements in public reporting.

The Report is addressed to a wide audience of stakeholders, it has been translated into English and it is available on the JSC "SSC RIAR" website (<http://www.niiar.ru>) and on website "Interfax — Center for corporate information disclosure" (<http://www.e-disclosure.ru/portal/files.aspx?id=18477&type=1>).

The key objectives of the Report are as follows:

- to sustain a recognized image of JSC "SSC RIAR" as the largest research center for provision of science-intensive services, development and production of innovative high-technology products in Russia and in the world;
- to inform the target audience and public in general about the results of RIAR's activities over the year, development strategies and plans for the short- and mid- term, sustainability of the company;
- to improve the investment attractiveness;

- to enhance the transparency and accountability;
- to provide communications between JSC "SSC RIAR" and customers;
- to improve the stakeholders engagement.

The previous annual report was issued on May 2018.

Report outline

The Report covers the whole scope of the JSC "SSC RIAR" activities from January 1 to December 31, 2018 and discloses the information about the Company to the maximum extent, state and commercial secrets being kept. The Report presents the dynamics of the key indicators for a three-year period, plans for 2019, medium- and long-term purposes as well as the information on strategic objectives and actions to create the basis for the long-term sustainable development. No changes in the scope and boundaries of aspects as compared to the previous reporting periods. The aspect relevance boundaries were defined based on the rank map and with the account of the JSC "SSC RIAR" top-management's opinion. No new verbiage of aspects is given in the previous reports. All the given data match the previous ones.

Regulatory documents

The Report has been issued in compliance with the following regulatory documents:

- International standards and guidelines:
 1. AA1000 series standards (Institute of Social and Ethical Account Ability).

2. Global Reporting Initiative Sustainability Reporting Standards (GRI Standards).
3. International Integrated Reporting Standard (International <IR> Framework)
 - Documents of the Russian Federation:
 1. Federal Law of the Russian Federation No. 208-FZ "On Joint Stock Companies" dated December 26, 1995 (revised June 29, 2015).
 2. Provision No.454-P of the Bank of Russia "On Information Disclosure by Registrable Security Issues Bodies" dated December 30, 2014.
 3. Letter No. 06–52/2463 of the Bank of Russia "On Corporate Governance code" dated April 10, 2014.
 4. Federal Law No. 5485-1 "On State Secrets" dated July 21, 1993.
 5. Federal Law No. 98 "On Commercial Secrets" dated July 29, 2004.
 6. Federal Law No. 149-FZ "On Information, Information Technologies and Protection of Information" dated July 27, 2006.
 7. Federal Law No. 129-FZ "On Accounting" dated November 21, 1996.
 - Industry-specific documents:
 1. the Public Reporting Policy of ROSATOM State Atomic Energy Corporation;
 2. the Public Annual Reporting Standard of ROSATOM and its enterprises.
 - documents of JSC "SSC RIAR":
 1. Provision on the JSC "SSC RIAR" Stakeholder Commission in Public Reporting.
 2. Provision on the JSC "SSC RIAR" Committee for Public Annual Reporting.
 3. Standard of Enterprise STO O86-202-2016 "The Integrated Management System of JSC "SSC RIAR". The Integrated Annual Report Issuing Procedure" (revised November 26, 2018).
 - Recommendations of the Russian Union of Industrialists and Entrepreneurs to be used in the management practice and corporate non-financial reporting (effectiveness basic indicators).

Priority topic

Events occurred in JSC "SSC RIAR" within the reporting period and their impact on the development strategy, efficiency and effectiveness of the JSC "SSC RIAR" performance were reviewed in order to select the priority topic of the Report ("Improvement of efficiency, extension of international cooperation and growth of industry-specific cooperation are priorities of RIAR's sustainable development"). All groups of stakeholders were greatly involved in direct discussions and survey. The key information about covering the priority topic is given in Chapter 3 "Governance" and Chapter 4 "Outputs", as well as in the other Report chapters and sections in part.

Determination of relevance

When developing the Report in accordance with the Sustainability Reporting Guidelines and International Integrated Reporting Standard the JSC "SSC RIAR" activity relevant aspects were determined. The work was carried out in several stages:

- 1) drawing up a list of the RIAR activity relevant aspects by the working group;
- 2) questioning (offline and online at the corporate site) and surveying the main stakeholders including the foreign partners and the company top-management in order to update and determine the RIAR activity relevant aspects;
- 3) assessing the importance of every aspect proposed by the members of JSC "SSC RIAR" Committee for Public Annual Reporting;
- 4) making the JSC "SSC RIAR" activity relevant aspects rank map.

GRI
102-50
102-51
102-52
102-54

GRI
102-46
102-48
102-49

GRI
102-47

Figures on the rank map correspond to the following topics (in bold are RIAR's aspects to compliment the GRI):

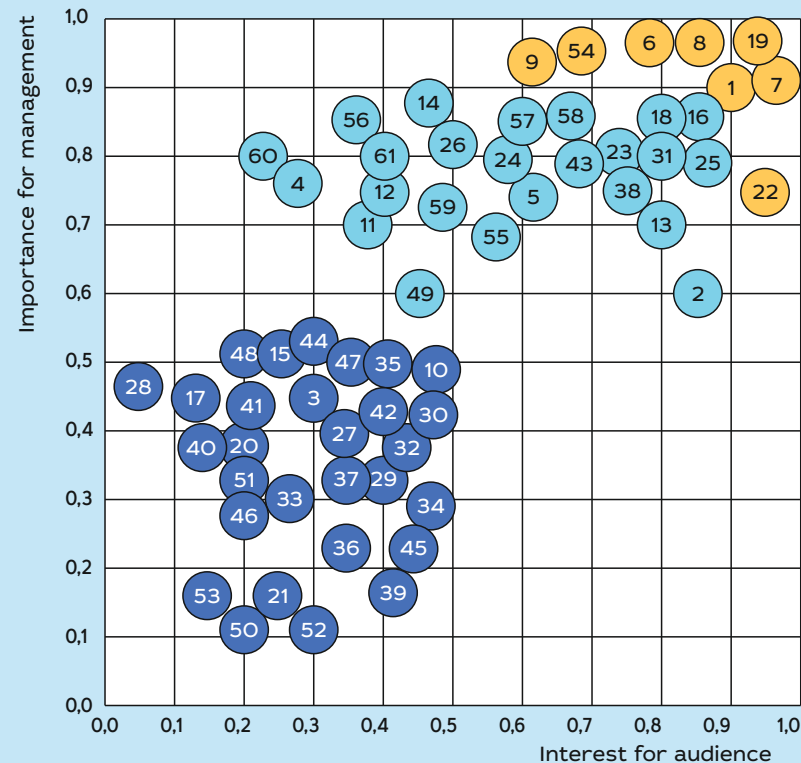
1. Economic efficiency.
2. Market presence.
3. Indirect economic effects.
4. Purchase practice.
5. Investment activities.
6. Key activities results.
7. Quality and safety.
8. Optimization of production processes.
9. Innovative activities.
10. Materials consumption.
11. Energy consumption.
12. Water consumption.
13. Discharges.
14. Effluent and waste.
15. Transport.
16. Conformity to ecological requirements.
17. Bio-diversity.
18. Products and services.
19. Ecology.
20. Ecological assessment of suppliers.
21. Mechanisms to settle ecological disputes.
22. Labor remuneration.
23. Employment.
24. Relations between employees and administration.
25. Health care and safety at a workplace.
26. Training and information.
27. Diversity and equal opportunities.
27. Assessment of the supplier's HR practice.
28. Mechanisms to settle labor disputes.
29. Equal labor remuneration for men and women.
31. Personnel training.
32. Consumer's privacy.

33. Investment practice.
34. No discrimination.
35. Freedom of associations and collective bargaining.
36. Employment of children by a company or subcontractor.
37. Forced and compulsory labor used by a company or subcontractor.
38. Safety provision approaches.
39. Assessment of human rights observance.
40. Assessment of human rights observance by suppliers.
41. Mechanisms to settle human rights observance disputes.
42. Local community.
43. Anti-corruption practice.
44. Competitive barriers.
45. Conformity to community requirements.
46. Assessment of suppliers' community interaction practices.
47. Mechanisms to settle disputes related to community interaction.
48. Labeling of products and services.
49. Conformity to products requirements.
50. Infringement of native and low-numbered peoples' rights.
51. State policy.
52. Consumer's health and safety.
53. Marketing communications.
54. International cooperation.
55. Interaction during the report issuing.
56. Interaction with suppliers.
57. Corporative communications.
58. Board of directors.
59. Organizational management model.
60. Inside monitoring and audit.
61. Risk management.

The preliminary list of the activity relevant aspects was determined in 2015 in accordance with the technique for relevance assessment (http://www.niiar.ru/sites/default/files/riar_annual_report_2015small_O.pdf)

The detailed information on principles to make the relevance rank map and to divide it into zones is given in the annual report 2016 (http://niiar.ru/sites/default/files/riar_annual_report_2016_fonts_links-final_O.pdf)

JSC "SSC RIAR" activity relevant aspects rank map



● Detailed disclosure ● Sufficient disclosure ● Not disclosed in the report

GRI 102-43 Stakeholders' engagement



To enhance the transparency and accountability and to determine the materiality of the disclosed information the Report was prepared in interaction with the stakeholders in accordance with the international standard AA1000SES. The following activities were conducted: the analysis of the reporting system and the previous integrated report issuing quality; questionnaire surveys including those concerned the Report concept;

dialogue and public consultation; the investigation to determine the activity relevant aspects to be disclosed in the Report.

Concurrently, the best world's practices in public reporting and annual reports of nuclear enterprises were reviewed (see the details in section 4.5 "Stakeholders engagement"). Based on the stakeholders engagement results the priority topics and information contents were selected, a stakeholder ranging chart was generated, and proposals on public annual reporting

and the information to be presented in the Report were considered. When submitting the Report draft to the Stakeholders Commission and Committee for Public Reporting in the course of the dialogues and public consultations with stakeholders' representatives, the JSC "SSC RIAR" has an opportunity to get the feed-back in the matter of completeness and coverage of the essential topics and indicators in the Report.

Verification of information

Following the Resolution of the ROSATOM Operations Committee as of December 16, 2013, an independent audit of the Report cannot be conducted. The members of the Public Annual Reporting Committee of JSC "SSC RIAR" were involved in all the key milestones of Report issuing. One of the main objectives of the Committee is the assessment of accuracy and completeness of the disclosed information. The accuracy of the information published in the Report is confirmed by as follows:

- Annual financial reporting audit by the FBK Company, which is an independent auditing company;
- Statement of the Internal Control and Audit Department of JSC "SSC RIAR";
- Public assurance statement in accordance with the AA1000AS Standard (appendix 2).

Statement on liability limit for publishing prognosticative information

The Report contains prognosticative statements regarding future events or financial indices of JSC "SSC RIAR". Their feasibility depends as well on a number of economical, political and legislative factors being outside of the company's control (global financial, economic and political situation, key market situation, changes in fiscal, custom and ecological law etc.) Therefore, the actual activity results to be presented in the forthcoming reports may differ from the prognosticative ones provided in this Report. JSC "SSC RIAR" does not represent or warrant that the activity results as well as any indicators and events specified in prognosticative statements will be achieved or will occur.

Additional relevant information about JSC "SSC RIAR" activities is available at the official website (<http://www.niiar.ru>)

Public Assurance Statement

The management of Joint Stock Company "State Scientific Center – Research Institute of Atomic Reactors" (hereinafter JSC "SSC RIAR") offered us to verify integrated Annual Report 2018 (hereinafter Report) in terms of completeness and materiality of the disclosed information related to the most important issues for the stakeholders. In doing so, we and our representatives were given an opportunity to participate in discussion of the Report concept (in absentia), meetings and public consultations on the Report draft during November 2018 – April 2019, and freely express our opinion on the issues under discussion. We also took part in identifying important aspects / topics to be disclosed in the Report. Our statement is based on a comparative analysis of two Report revisions: Report draft and Report final revision, comments made by RIAR managers and employees during the dialogue and assurance statement as well as provided information based on the results of the activities (dialogue minutes, table with stakeholders' proposals accounted). During this assurance procedure we were not focused on checking the data acquisition and analysis system, nor did we study in a special way the data and management processes. The reliability of the actual data presented in the Report was not as well the subject of public assurance. All the undersigned persons had all opportunities to freely express their opinion, and did not receive from RIAR any reward for participation in the Report assurance procedure.

Assessments, comments and recommendations

We share a common positive attitude to Annual Report 2018, its format and scope of the information provided. RIAR has prepared an informative and well-arranged document that meets our expectations. It is particularly important that the Report has been issued on a voluntary basis, and is a good illustration of a transparency and openness principle of RIAR policy, thus showing both a high level of information disclosure and willingness to conduct an open dialogue with the stakeholders on different issues related to multiple activities including safe operation of research reactors and other facilities. We consider that due to more detailed information about RIAR risk-management model, the Report could clearly reflect the relation between strategic objectives and management approaches and sustainable development objectives. A full picture of RIAR activities including socially important activity aspects, social, ecological and economic impact factors, challenges and mid- and long-term plans is presented to the Report readers.

The Report has an indisputable advantage that lies in applying Russian and international standards in public reporting. We have a positive attitude towards the RIAR's management decision to continue issuing annual reports in Russian and in English as well as in a short (presentation) version.

It was highlighted that in contrast to public reports issued by different ROSATOM's enterprises, the Annual Report of JSC "SSC RIAR" is an official publication: it was assigned an ISBN; the information presented in the Report was edited, thus ensuring its high quality.

We believe that the information has been disclosed sufficiently both in terms of taking into consideration the recommendations made by the stakeholders during the Report drafting activities. In our opinion, it is an integrated Report that should present an official viewpoint of RIAR's management on all key issues and activities. The following conclusions can be drawn from our analysis.

Materiality of information

We believe that RIAR has taken into consideration international standards to identify materiality of information. After conducting a questionnaire survey among top managers and Stakeholder Commission members, and identifying the material aspects of its activity, RIAR has fully and comprehensively disclosed the relevant information in the Report. The Report provides the information important both for RIAR and its stakeholders. We consider the priority topic of the Report ("Improvement of efficiency, extension of international cooperation and growth of industry-specific cooperation are priorities of RIAR's sustainable development") has been rightly chosen because they have been attracted the most readers' interest.

Completeness of information

In our viewpoint, the information related to the key aspects and provided in the Report is complete and allows

the readers to draw the conclusions on RIAR performance during the reporting year. We believe that the reduced Report scope in disclosing all material aspects complies with best international reporting practices and gives an opportunity to show a complete picture of RIAR activities. References to other information sources enable obtaining all the necessary data. At the same time, they do not unduly burden the Report with extra data presented both on RIAR's official website and in recent annual reports.

Response to requests, offers and recommendations of the stakeholders

We believe that once again RIAR has shown major progress in developing stakeholder engagement system. The stakeholders traditionally become engaged at the stage of concept development before Report drafting. The stakeholders had an opportunity to voice their proposals and recommendations on information disclosure and public reporting system development. Upon the stakeholders' request RIAR has updated and provided additional information in the final revision of the Report, or it has explained the reasons why the requested information can't be disclosed. In Report drafting RIAR has shown its readiness to provide a constructive response to the stakeholders' requirements and proposals. We hope that RIAR will continue implementing the principles of good corporate conduct by developing the public reporting system and stakeholder engagement.

Annual Report 2018 assurance statement approvals page

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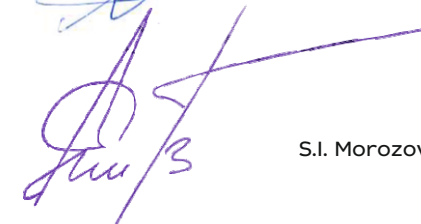
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Appendix 10

Head of the Government
of Ulyanovsk region



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Director of Center for Development
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Head of Department for the Main Activities
of the Regional Autonomous Agency
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S.E. Knyaginina

Feedback Questionnaire

Dear Reader,

You have read the public annual report of JSC "SSC RIAR" intended for a wide audience of stakeholders. It is highly important to us to receive your opinions. Your comments and suggestions will contribute to improving the quality, informativity and relevance of our future reports.

We would appreciate your sending the completed questionnaire by mail (433510, Russian Federation, Ulyanovsk region, Dimitrovgrad, Zapadnoye Shosse, 9) or e-mail niiar@niiar.ru, marked "Public Report".

Please, tick the category of the stakeholders you belong to:

- | | | |
|------------------------------------|--------------------------|--|
| ROSATOM State Corporation | <input type="checkbox"/> | Regional authorities |
| JSC "SSC RIAR" | <input type="checkbox"/> | Local authorities |
| Business partner | <input type="checkbox"/> | Educational institutions of various levels |
| Contractor / Supplier | <input type="checkbox"/> | Mass media |
| Receiver of the goods and services | <input type="checkbox"/> | Voluntary organization |
| Federal authorities | <input type="checkbox"/> | Other stakeholders (please specify) |

Make an objective assessment of the report with respect to the following criteria:

Criterion	EXCELLENT	GOOD	SATISFACTORY	BAD
Timeliness and essentiality of the disclosed topics	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information reliability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structure and ease of searching for information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Design	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Does the report contain answers to your questions of concern?

- Yes, in full
- Yes, in part
- No

Please, specify sections useful and essential for you

What information would you add to the next Report?

Your comments and recommendations:

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Information Edition

JSC "SSC RIAR" Annual Report 2018

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