



ROSATOM



PERFORMANCE OF THE
POWER ENGINEERING
DIVISION IN 2020

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Message from the Head of the Division

Dear colleagues,

In 2020, despite a pandemic-related decrease in electricity demand, the Division achieved targets set by the government for power generation, giving the highest priority to safety.

In 2020 marking the 75th anniversary of the Russian nuclear industry, Russian NPPs demonstrated safe and reliable performance and reached a new all-time high in the history of the Russian and USSR nuclear power industry – 215.7 billion kWh, exceeding the 2019 level by more than 6.9 billion kWh. Performance against the balance target set by the Federal Antimonopoly Service (FAS) of Russia (207.6 billion kWh) totalled 104%. In 2020, 42 repairs were carried out at NPP power units, with a total repair time optimisation of 130.5 days against the target. Over the past 20+ years, no incidents affecting safety were recorded at Russian NPPs.

The Division’s financial and economic indicators are also growing steadily. In 2020, the Division’s consolidated revenue equalled RUB 592.7 billion, which is more than in 2019 by 8.4%. Rosenergoatom’s investment programme performance rate reached 103%.

This success is especially valuable as it was achieved in a difficult global epidemiological situation caused by the spread of COVID-19. In the shortest time possible, we transitioned more than 6,000 employees to remote work in accordance with all safety requirements, which allowed us to maintain uninterrupted, safe and reliable operation of NPPs, as well as to build and commission new generating facilities as scheduled.

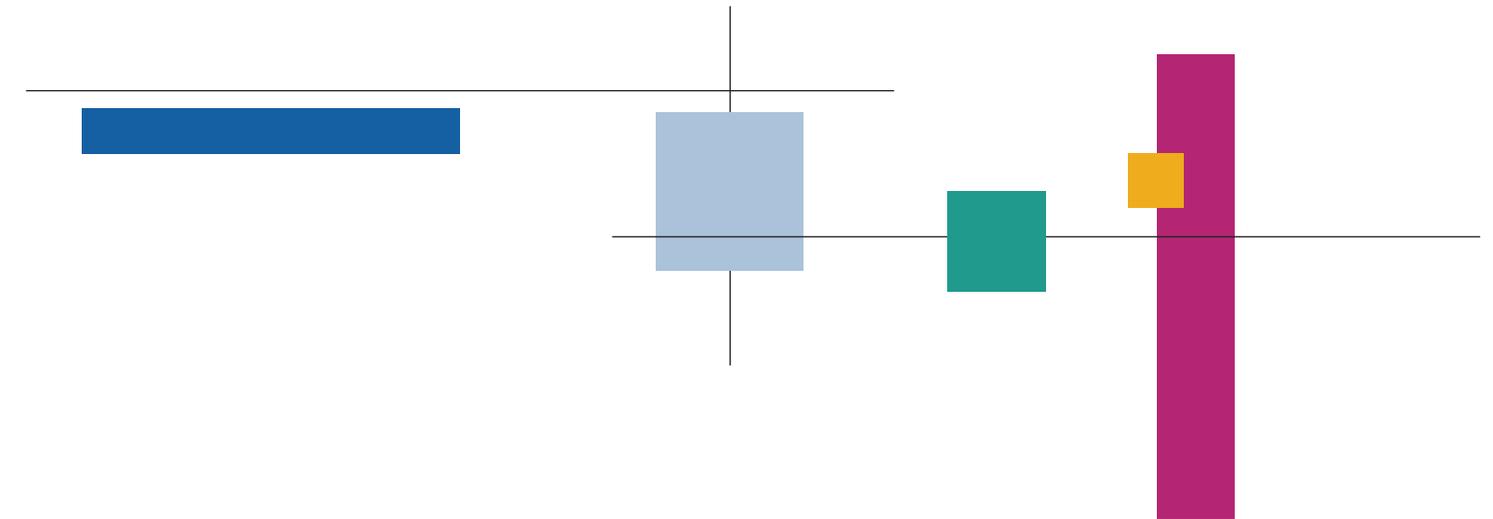
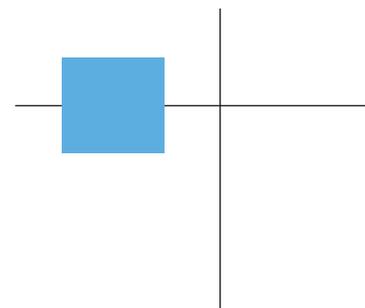
The unique floating thermal nuclear power plant (FTNPP), Russia’s 11th NPP, in Pevek, Chukotka Autonomous District, commenced commercial operation. Innovative power unit No. 2 equipped with a new-generation VVER-1200 reactor was connected to the grid at Leningrad NPP-2 in 2020 and successfully commissioned in 2021. New power units No. 1 and 2 are under construction, and some milestones set by the government were reached ahead of schedule.

The Division actively creates and introduces new products. It prepared a data centre development strategy according to which Rosenergoatom should make the top five data centre market participants by 2025. The Division started to implement an R&D investment project to develop nuclear hydrogen energy technologies for large-scale hydrogen production and consumption, a very promising area both in Russia and abroad.

The Division’s strategic priorities focus on safe NPP operation and take into account the Division’s significant economic, environmental and social impacts. Ambitious goals set by ROSATOM and successfully achieved by the Division’s team are aimed at further development of Russia’s economy and power industry and sustainable development of the Division and its regions of operation.

Andrey Petrov

Director General of JSC Rosenergoatom, the holding company of the Power Engineering Division
Head of the Power Engineering Division



Response to the Pandemic

ROSATOM's Power Engineering Division (the Division) was actively involved in fighting against the spread of the COVID-19 novel coronavirus infection, the main global challenge of 2020, ensuring safe operation of production facilities (NPPs), and supporting the regions of operation. Measures taken allowed the Division to minimise risks of a massive COVID-19 influx in the regions of operation and successfully accomplish production tasks.

To prevent the rapid spread of coronavirus in the regions of operation and at the Division's enterprises, it was decided to temporarily isolate critical NPP personnel at health resort and rehabilitation centres of NPPs. After infection rates went down in the regions and employees were vaccinated, the restrictions were removed, which allowed the Division to protect critical personnel, meet electricity output targets set by the government, and, hence, maintain energy safety in Russian regions. In 2020, since the vaccination campaign was launched in the Division, 1,650 employees have been vaccinated with the Sputnik V vaccine.

Due to the COVID-19 pandemic, in 2020, in all of the 11 municipalities where Rosenergoatom operates, i.e. NPP host towns and cities, and in its Central Administration, the Company established COVID-19 response crisis centres, took measures to prevent the spread of the virus and protect the Division's employees, and introduced daily epidemic tracking and response monitoring in host towns and cities. Online dialogues were held to discuss relevant issues with heads of the municipalities, chief sanitary inspectors in the regions of operation, and other stakeholders.

The Division allocated more than RUB 500 million to fight against the spread of coronavirus in the regions of operation, including to purchase PCR laboratory equipment and ambulance vehicles in all host municipalities. Initiated by ROSATOM and Russia's Federal Medical Biological Agency (FMBA), the Lean Polyclinic project aimed at improving health services has been implemented at adult and pediatric polyclinics in all host NPP towns and cities (excluding Bilibino and Pevek, Chukotka Autonomous District) since 2017. In 2020, top-priority pandemic-related projects were determined jointly with the FMBA. The Division allocated RUB 50 million to implement them.

Instructed by ROSATOM's Director General, the Division allocated RUB 37 million for targeted assistance to people affected by the pandemic in host NPP municipalities. In addition, the Division devoted more than RUB 20 million to provide housing for personnel of FMBA's medical facilities in Sosnovy Bor, Leningrad Region.

The Division's pandemic response expenses totalled RUB 2.1 billion (including RUB 114 million of capital expenditures: for purchasing computers for remote work, thermal imaging equipment, etc.).

Despite inevitable unforeseen pandemic-related expenses, Rosenergoatom's branches and subsidiaries made efforts to rank measures, which helped the Company to meet key targets for 2020.

In 2021, the Division plans to spend RUB 1.9 billion on anti-coronavirus activities.

Information technology

In March 2020, due to the pandemic, Rosenergoatom's Central Administration and branches implemented a VDI-based (Virtual Desktop Infrastructure) remote work project in the shortest time possible and in compliance with all information security requirements. Thanks to this, more than 6,000 employees of the Division were transitioned to remote work with no negative impacts on operations. To hold online meetings, the Division used existing video conference tools and introduced import-substituting TrueConf software.

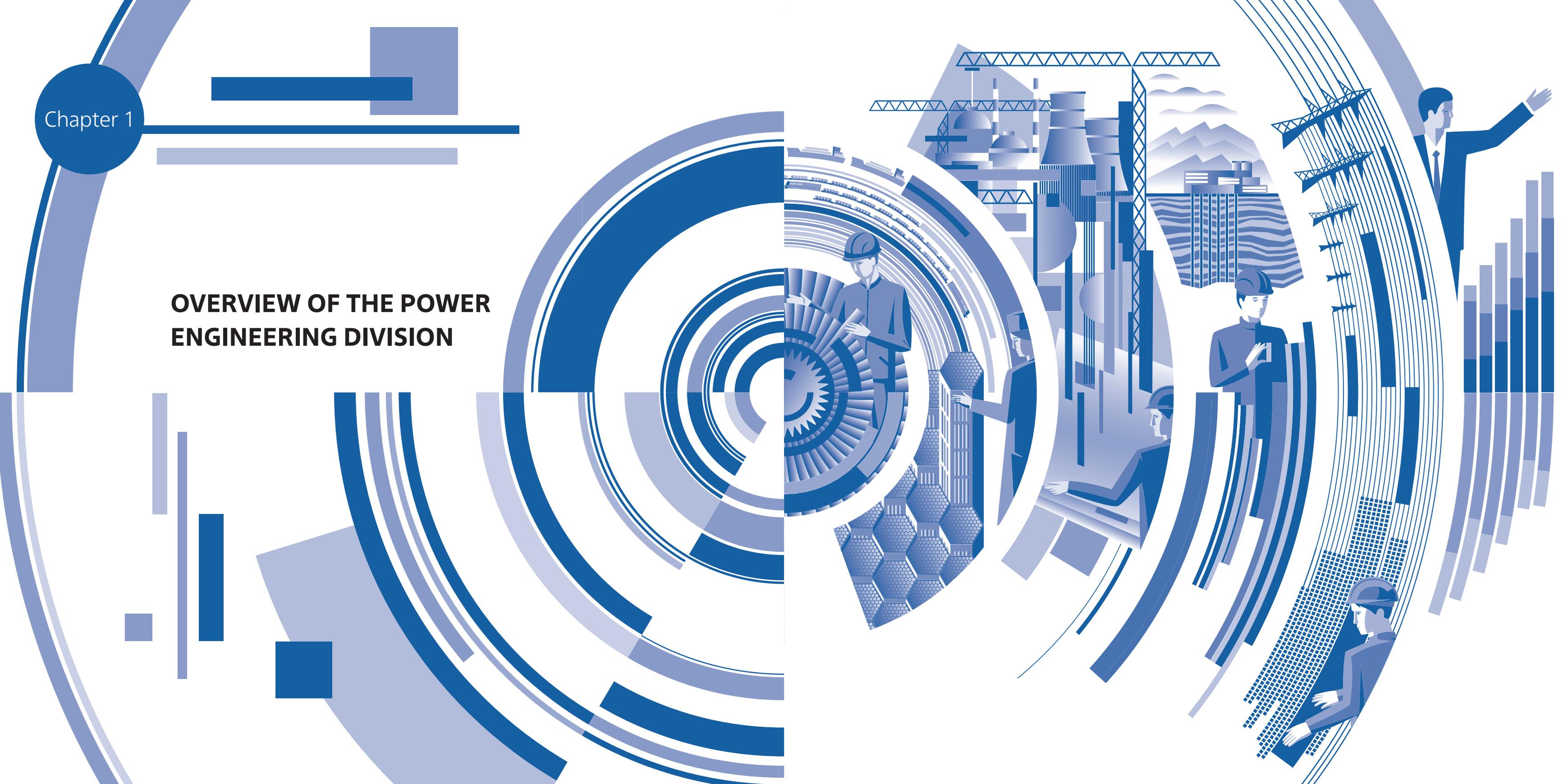
Jointly with SmartMed, Rosenergoatom provided an IT platform free of charge for the XI Congress of CIS and Eurasia Oncologists and Radiologists (April 22 – 25, 2020) held online for the first time due to the epidemiological situation. With Kalinin Data Centre's capacities, organisers of the congress managed to gather about 10,000 leading Russian and foreign medical professionals through video conferencing.

Procurement

To fight against the pandemic, ensure continuity of procurement and logistics support and a reliable and uninterrupted supply chain, the Division introduced and takes the following measures:

- An analysis (assessment) was conducted for risks of non-performance of centralised functions related to providing enough material resources to allow the Division to perform its functions and select NPP contractors and service providers;
- Current agreements were analysed to reveal risks of delays in import equipment deliveries; compensatory measures were developed and taken;
- Special procurement conditions were adopted to prevent the import and spread of coronavirus;
- A programme for partnership between Rosenergoatom and small and medium-sized businesses was developed in accordance with the Plan of Preliminary Measures (Actions) to Ensure Sustainable Development of the Economy Given the Degradation of the Situation due to the Spread of the Novel Coronavirus Infection approved by the Government of the Russian Federation on March 17, 2020;
- A list of critical equipment needed for continuous operation of NPPs was prepared; production milestones were determined;
- Uninterrupted current procurement was ensured in a remote access mode with information resources and electronic trading platforms;
- A transition to remote work was completed for collegial bodies that deal with procurement and logistics support of ROSATOM, Rosenergoatom, general contractors and select suppliers of equipment for NPP power units under construction, as well as for supervising and controlling bodies.

OVERVIEW OF THE POWER ENGINEERING DIVISION





Role of the Division in the structure of ROSATOM

- GRI 102-1
- GRI 102-2
- GRI 102-4
- GRI 102-6
- GRI 102-5
- GRI 102-7
- GRI 102-9

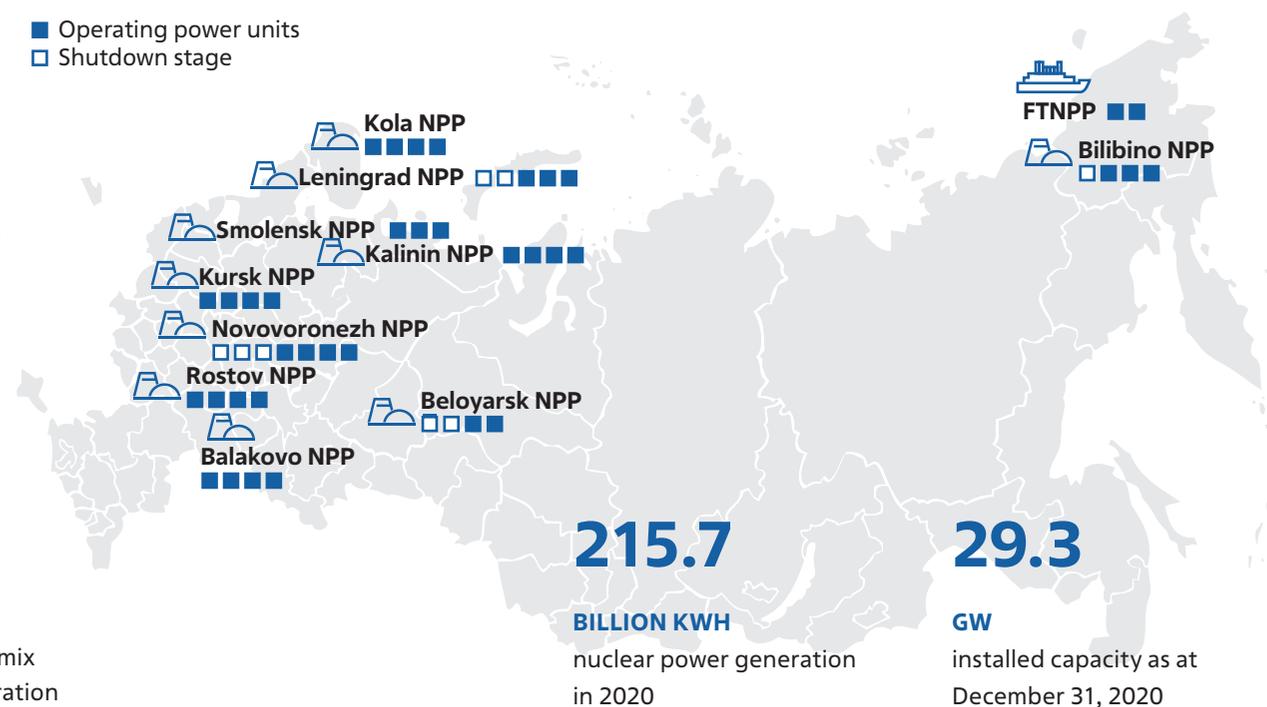
JSC Rosenergoatom is the sole operator of NPPs in Russia and one of the largest players on the Russian electricity market. The Company is a part of ROSATOM's Power Engineering Division.

The Division includes operating nuclear power plants, directorates of NPPs under construction, the Capital Projects Implementation Branch Office, the Technology Branch Office, Pilot and Demonstration Engineering Centres (PDEC) for Decommissioning of VVER and RBMK Reactors, a branch located in Bangladesh, and the Akkuyu Engineering Centre; they all have the status of the Division's affiliates.

Rosenergoatom ranks first in terms of total electricity output among the largest power generation companies of Russia and second in the world in terms of total installed capacity of NPPs.

Business geography

- Operating power units
- Shutdown stage



36

operating NPP power units (including FTNPP power unit with two reactor units)

3

power units under construction

20.3%

share in the energy mix of the Russian Federation

Rosenergoatom's core businesses are power and heat generation at its nuclear plants, and operation of nuclear power plants, radiation sources and facilities storing nuclear materials and radioactive substances in accordance with Russian legislation.

Rosenergoatom's operations are closely linked to the business priorities of ROSATOM and are underpinned by its strategic goals:

- To increase the international market share;
- To reduce production cost and lead time;
- To develop new products for the Russian and international markets;
- To become a global leader in advanced technologies.

Under the resolution of the Board of Directors of Rosenergoatom, these goals have been supplemented with the following commitments underpinning its safety priorities:

- To reduce the risk of accidents involving damage to the reactor core across the nuclear reactor fleet;
- To prevent workplace fatalities at NPPs;
- To prevent accidents at NPPs resulting in employee radiation exposure exceeding individual exposure limits;
- To prevent accidents at NPPs resulting in radioactive releases and discharges exceeding permitted limits.

JSC Rosenergoatom's shareholders (as at December 31, 2020)

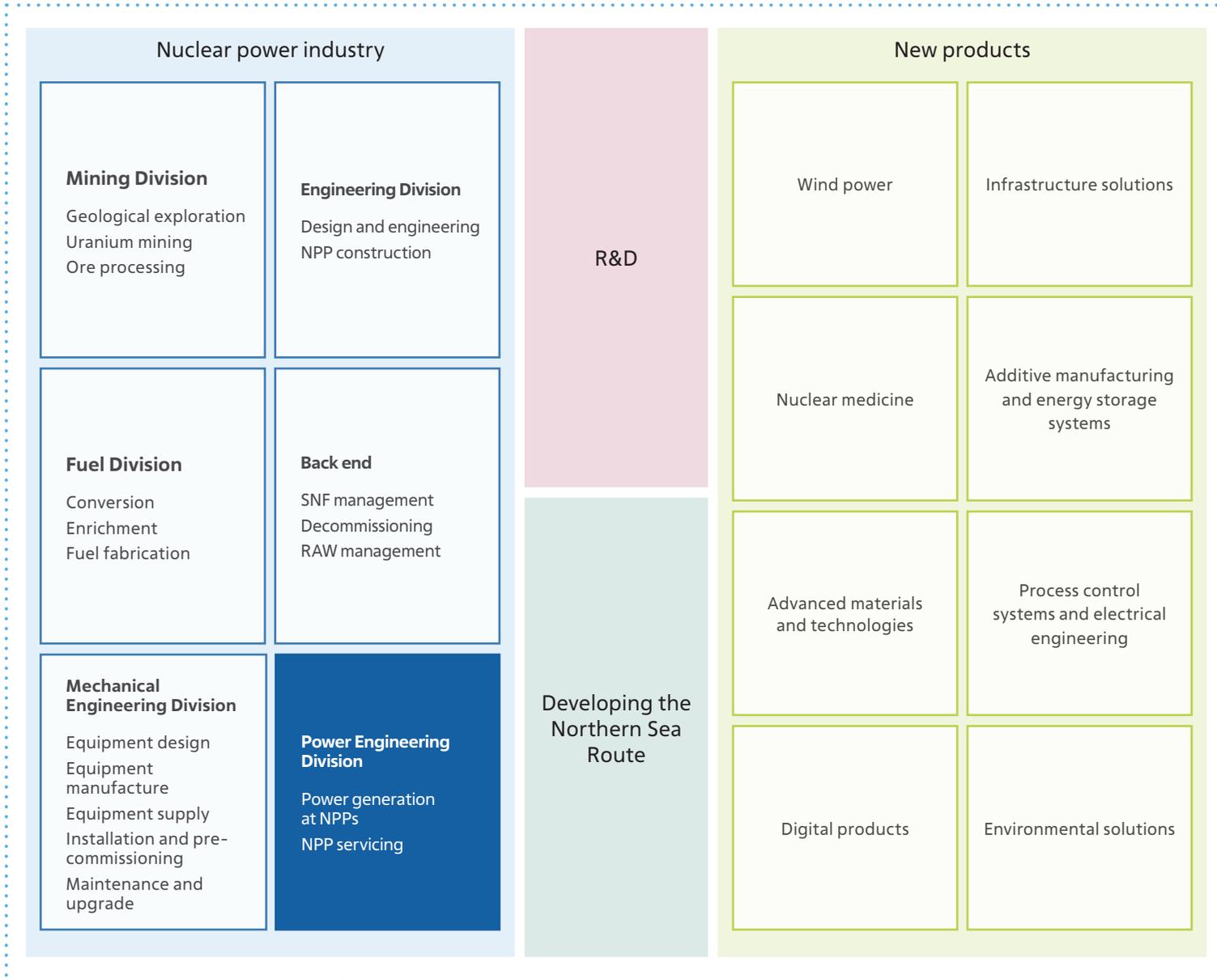
State Atomic Energy Corporation Rosatom	JSC Atomenergoprom
14.0074%	85.9926%

Rosenergoatom ranks first among the largest generating companies in Russia in terms of total electricity output. Below are data as at December 31, 2020:

Company	Electricity output, billion kWh			Installed capacity, GW		
	2018	2019	2020	2018	2019	2020
JSC Rosenergoatom	204.3	208.8	215.7	30.1	30.3	29.3
PJSC RusHydro	144.3	142.8	151.5	39.4	39.7	38.1
INTER RAO (Russian generation)	121.8	120.5	100.9	29.5	29.1	28.3
LLC Gazprom Energoholding	146.6	143.1	98.7	38.8	38.7	36.2
PJSC T Plus	55.1	53.9	51.4	15.5	15.5	15.7

Sources: energoholding.gazprom.ru, www.rushydro.ru, irao-generation.ru, www.tplusgroup.ru.

Nuclear industry structure



Corporate governance system

Rosenergoatom's corporate governance system is based on the requirements of Russian legislation; its aim is to enable efficient management, ensure compliance with the principles of transparency and availability of information, and safeguard the rights of shareholders and other stakeholders.

Key documents regulating the observance of shareholder rights in Rosenergoatom include Rosenergoatom's Articles of Association, the Regulation on Rosenergoatom's General Meeting of Shareholders, the Regulation on Rosenergoatom's Board of Directors. Rosenergoatom's internal regulations can be found on the corporate website¹.

Governance principles and governing bodies

The General Meeting of Shareholders is the highest governing body. The activities of the General Meeting of Shareholders are governed by Russian legislation, Rosenergoatom's Articles of Association, and the Regulation on Rosenergoatom's General Meeting of Shareholders. In 2020, three general meetings of shareholders were held, and the following issues were reviewed:

- Distribution of JSC Rosenergoatom's profit and losses for 2019;
- Election of members of Rosenergoatom's Board of Directors;
- Approval of amendments to Rosenergoatom's Articles of Association;
- Election of Rosenergoatom's sole executive body.

The Board of Directors is a collective governing body in charge of overall management of the Company. It is responsible for the development of the strategy and monitors the activity of executive bodies in order to safeguard the rights and legitimate interests of Rosenergoatom's shareholders. The activities of the Board of Directors are governed by Russian legislation, provisions of Rosenergoatom's Articles of Association, and the Regulation on the Board of Directors.

¹ <https://www.rosenergoatom.ru/shareholders/raskrytie-informatsii/ustav-i-vnutrennie-dokumenty/>.

As per the resolution of the Annual General Meeting of Shareholders of Rosenergoatom dated August 12, 2020, the following members were elected to the Board of Directors:

- Alexander Lokshin, Chairman of the Board of Directors:
- Sergey Adamchik:
- Vladislav Korogodin:
- Boris Silin:
- Andrey Petrov.

Members of the Board of Directors do not have an interest in Rosenergoatom's authorised capital, do not hold Rosenergoatom's ordinary shares, and have not entered into transactions involving the acquisition or sale of the Company's shares. Rosenergoatom's Board of Directors has no committees.

Director General

The Director General is the sole executive body. As per the resolution of the Extraordinary General Meeting of the Shareholders of Rosenergoatom (Minutes No. 32 dated October 6, 2020), Andrey Petrov was elected as the Director General of JSC Rosenergoatom on October 7, 2015 for five years.

Improving the corporate governance system in 2020

In order to effectively prepare and agree on resolutions to be approved by Rosenergoatom's Director General and related to conditions for increases in authorised capitals of organisations, contributions to their assets, all transactions affecting the enterprise architecture, as well as other corporate governance issues, Rosenergoatom established a Corporate Governance Committee.

To reduce risks of violations, the Division conducted a random check to verify the compliance with requirements stipulated by Rosenergoatom's Articles of Association in terms of approval of transactions made by Rosenergoatom's branches from governing bodies.

To ensure the membership of Rosenergoatom's representatives in governing bodies of non-profit organisations, the Company developed and approved a procedure for the preparation of corporate documents of non-profit organisations in which Rosenergoatom acts as a member/participant. This procedure regulates the preparation of the representatives' position on the agenda.



Compliance and introduction of quality management systems and standards

The Division gives the highest priority to quality assurance at all stages of the NPP life cycle. It follows a quality policy aimed at achieving cost-efficient power generation and providing reliable heat and power supply to consumers in full compliance with nuclear and radiation safety requirements.

The quality management system is a core subsystem of the Division's Integrated Management System (IMS) compliant with the requirements of the ISO 9000 Series of Standards, Federal Rules and Regulations NP-090-11 Requirements for Quality Assurance Programmes for Nuclear Facilities, and IAEA General Safety Requirements No. GSR Part 2 Leadership and Management for Safety.

Rosenergoatom developed a dedicated system to monitor IMS process indicators and implemented safety management². Operator guidelines and standards were updated and brought into force in 2020 to support the development of a quality management system compliant with NP-090-11 and GOST R ISO 9001-2015, and to maintain the quality of products supplied to NPPs.

In 2020, a three-year certification cycle (2020-2022) involving verification of compliance of Rosenergoatom's quality management system with the GOST R ISO 9001-2015 (ISO 9001:2015) standard was completed in the area of design and construction management for nuclear facilities, power generation and supply management, and power generation and supply. Certificate of compliance No. 318192 QM15 will be valid until December 25, 2023.

The certification covered 16 branches: ten NPPs, the Floating Thermal Nuclear Power Plant, Technology Branch Office, Capital Projects Implementation Branch Office, Pilot and Demonstration Engineering Centre for Decommissioning, Pilot and Demonstration Engineering Centre for the Decommissioning of NPP Power Units with Channel-Type Reactor Units, and Akkuyu Engineering Centre.

²Requirements of NP-001-15 General Provisions for NPP Safety and IAEA General Safety Requirements No. GSR Part 2 Leadership and Management for Safety.

GRI 103-1

GRI 103-2

Certification activities included (remote) training of 680 executives and employees of Rosenergoatom's Central Administration, Balakovo, Smolensk and Kalinin NPPs, the Capital Projects Implementation Branch Office, and the Technology Branch Office in the application of the GOST R ISO 9001-2015 (ISO 9001:2015) standard and the methodology of internal quality system audits.

The Division fulfilled a plan of integrated internal audits aimed at verifying compliance of the Central Administration's units and Rosenergoatom's branches with GOST R ISO 9001-2015, NP-090-11, and IAEA General Safety Requirements No. GSR Part 2.

In the reporting period, a system monitoring all IMS process indicators was developed at ten NPPs on the basis of QlikView specialised software. The system shows actual indicators of IMS processes, and its results are monitored by top management of operating companies and NPPs.

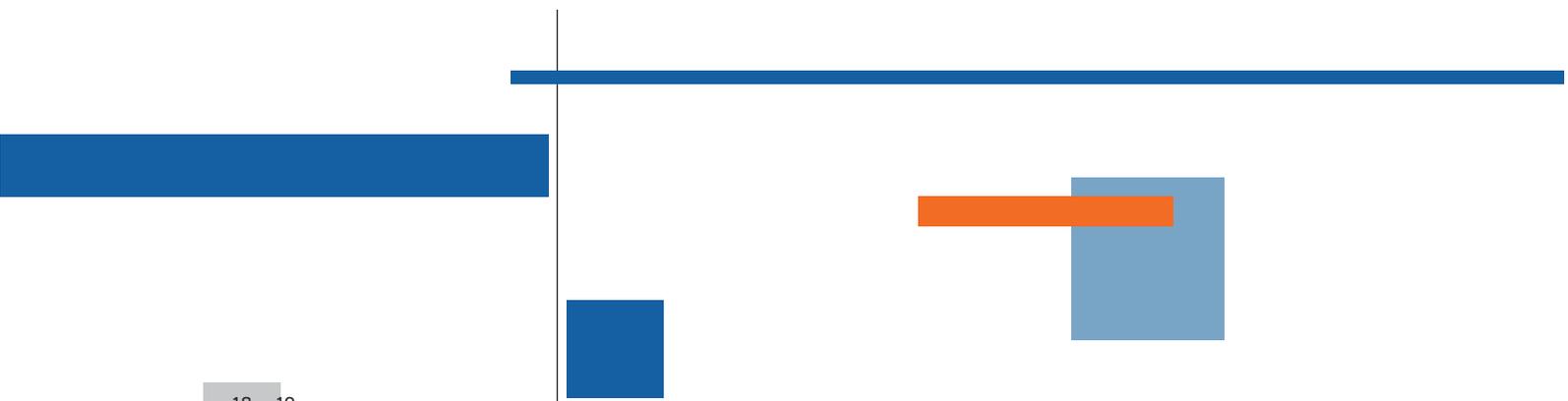
In 2020, scheduled audits were conducted at Kursk, Novovoronezh, Bilibino, Smolensk, Leningrad and Beloyarsk NPPs to verify their compliance with Quality Assurance for Safety in Nuclear Power Plants (General), Quality Assurance for Safety in Nuclear Power Plants (Operational), GOST R ISO 9001-2015, and IAEA General Safety Requirements No. GSR Part 2. In 2020, the Division also focused on audits at organisations performing work for and providing services to the operating organisation.

Sixteen audits were conducted in organisations performing work for and providing services to Rosenergoatom to verify their compliance with NP-090-11 and GOST R ISO 9001- 2015.

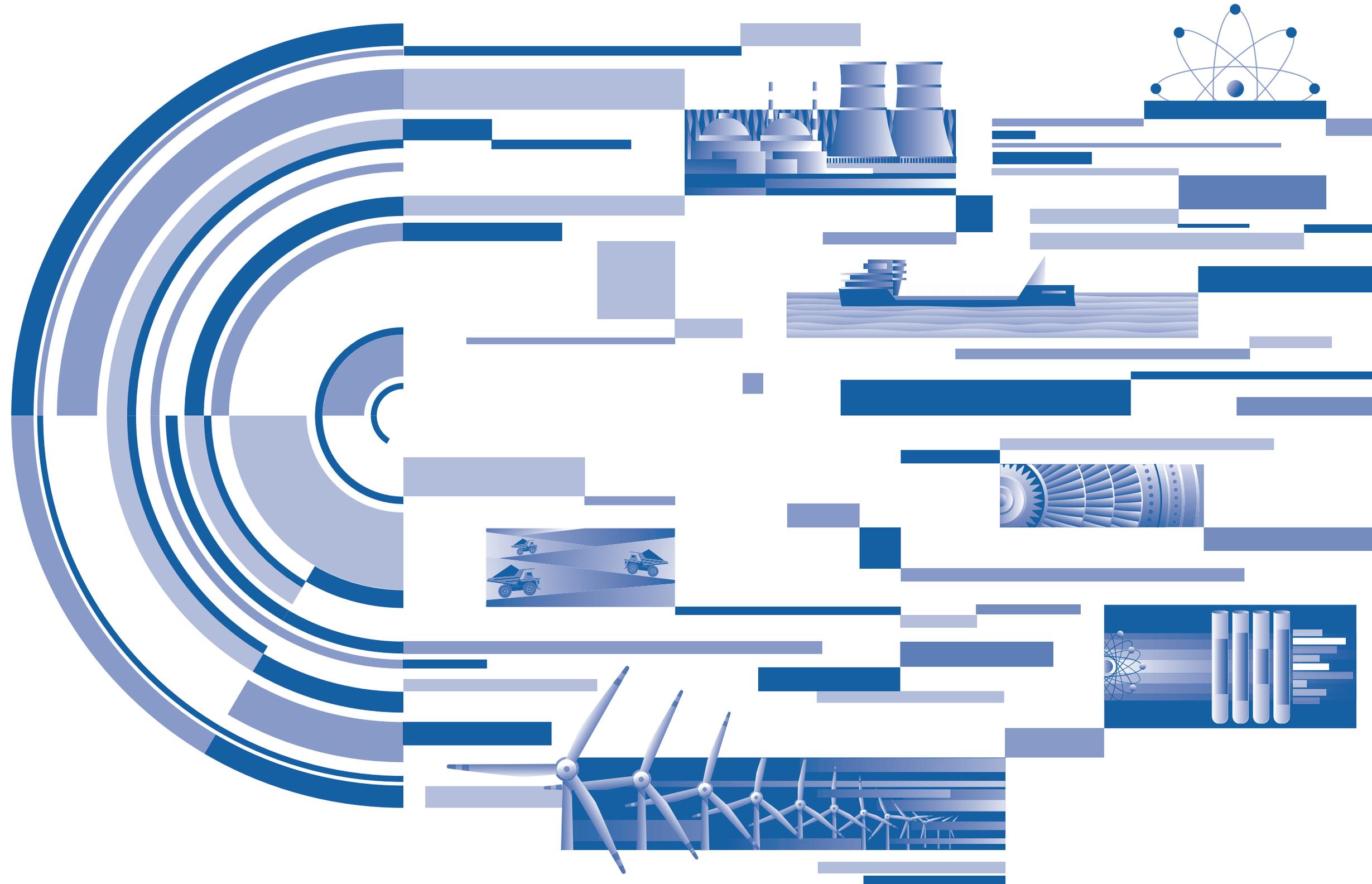
The quality of products for NPPs is monitored through continuous data collection, processing, storage and analysis with software, hardware, and methodological tools (Equipment Quality Database, UIS-Quality) to make sure that equipment supplied and used at NPPs in operation and under construction comply with federal regulations and rules and GOST requirements.

As part of compliance and implementation of quality management and assurance systems, the Division's suppliers are certified and audited as prescribed in regulations of ROSATOM and Rosenergoatom. Quality management system requirements for suppliers and contractors (quality management, environmental management, industrial safety, occupational health and safety, energy efficiency, etc.) are standardised and included in contract and procurement documents in accordance with quality, logistics support, contracting and procurement regulations of ROSATOM and Rosenergoatom.

GRI 103-3



**KEY RESULTS
AND EVENTS
OF THE REPORTING
YEAR**





Key results in 2020

In 2020, electricity output at NPPs totalled 215.745 billion kWh, which is 103.9% of the balance target set by the Federal Antimonopoly Service (FAS) of Russia and 103.3% of the actual electricity output for 2019. The NPP capacity factor stood at 81.07% in 2020. The share of NPPs in electricity output in Russia totalled 20.28%.

The electricity output target set by the FAS was exceeded by 8.13 billion kWh, mainly thanks to the following factors:

- Safe and stable operation of NPPs (output losses caused by irregularities decreased by 2.9 billion kWh as compared to 2019);
- Provision of a rationale for safe operation of the repeated forced circulation circuit of power unit No.1 at Smolensk NPP with optimised repairs of 13 Du-800 welding joints (+2.5 billion kWh);
- Reduction of the duration of graphite stack upgrading at power units with RBMK reactors by 70 days when managing service life characteristics and conducting in-core monitoring (+1.8 billion kWh);
- RPS projects implemented by NPP executives to reduce the duration of repairs by 60 days, (+1.4 billion kWh).

As at December 31, 2020, the Division operated 35 NPP power units and a floating thermal nuclear power plant (FTN-PP) with two reactor and generation units with a total installed capacity of 29.3 GW³, including:

- 21 power units with VVER reactors (including 13 power units with VVER-1000, three power units with VVER-1200, five power units with different versions of VVER-440). Twelve power units with channel-type reactors (nine power units with RBMK-1000 reactors and three power units with EGP-6 reactors);
- Two power units with sodium-cooled fast-neutron reactors (BN-600 and BN-800);
- One power unit of the FTNPP with two KLT-40S reactor and generator units.

On May 22, 2020, the FTNPP with an installed capacity of 70 MW was put into operation in Pevek.

New power unit No. 2 with a VVER-1200 reactor at Leningrad NPP-2 was connected to the grid on October 22, 2020. The power unit was put into pilot operation on November 6, 2020, and into commercial operation on March 18, 2021.

On November 10, 2020, power unit No. 2 at Leningrad NPP (RBMK-1000) with an installed capacity of 1,000 MW was shut down for decommissioning.

Key performance indicators of the Division in 2018–2020

GRI 102-7

Indicator	2018	2019	2020
Nuclear power generation, billion kWh	204.275	208.785	215.745
Capacity factor, %	79.90	80.41	81.07
Division's consolidated revenue, RUB million	466,622	546,851	592,702
Taxes payable to budgets, RUB million	55,444	67,809	75,953
<i>incl. Rosenergoatom⁴, RUB million</i>	48,947	58,736	65,196
Division's average headcount, people	51,512.51	54,411.93	56,951.77
<i>incl. Rosenergoatom, people.</i>	33,923.5	34,346.6	35,312.86
Division's LTIFR	0.08	0.04	0.03



Key events of 2020

May 22	A floating thermal nuclear power plant (FTNPP, Pevek, Chukotka Autonomous District) started commercial operation.
June 30	Heat was supplied to Pevek's heating system from the FTNPP for the first time.
July 18	A power start-up (nuclear fuel loading) was completed at power unit No. 2 equipped with a VVER-1200 reactor at Leningrad NPP-2.
September 10	ROSATOM's project was launched to create a Data Centre in the Republic of Tatarstan.
October 22	Power unit No. 2 with a VVER-1200 reactor at Leningrad NPP-2 was connected to the grid and started to generate electricity.
November 10	Power unit No. 2 with an RBMK-1000 reactor at Leningrad NPP was permanently shut down after 45 years of safe operation.
December 21	Russian NPPs reached an electricity output target (207.614 billion kWh) set by the FAS ahead of schedule.

³As at December 31, 2020, installed capacity of NPPs was 29.347 GW. The installed capacity of 29.39 GW (as at January 1, 2021) takes into account installed capacity of power unit No. 1 of Rostov NPP that was adjusted to 1,041.65 MW following the certification conducted in December 2020. With power unit No. 2 commissioned at Leningrad NPP-2 with an installed capacity of 1,188.15 MW, the capacity of Russian NPPs reached 30.6 GW in March 2021.

⁴Rosenergoatom's indicators include taxes (penalties, fines) paid to budgets less refunds, excluding income tax across the Consolidated Taxpayer Group (CTG), for which payments to the budget system of the Russian Federation are made by the designated member of the CTG.

**SUSTAINABLE
DEVELOPMENT**





Sustainable development management system

GRI 102-16
GRI 103-1

The Division is fully aware of its economic, social and environmental responsibility towards society and is strongly committed to the UN Sustainable Development Goals (SDGs), which can only be achieved through collaborative efforts of governments, the private sector, civil society and the global community.

GRI 103-2

The Division supports ROSATOM's Unified Industry-Wide Sustainable Development Policy⁵ and makes efforts to ensure the sustainable development of the company and positive impacts on the environment and the regions of operation. The Division approved⁶ and adopted ROSATOM's Methodological Sustainable Development Guidelines⁷.

The nuclear power industry fully meets the targets for a sharp reduction of CO₂ emissions and carbon-free energy. Russian NPPs globally help to prevent emissions totalling more than 100 million tonnes of CO₂ equivalent per year. In 2020, Russian NPPs prevented 108.3 million tonnes of emissions (CO₂ equivalent), which is more than in 2019 by almost 4 million tonnes of CO₂ equivalent⁸.

Division's indicator	2018	2019	2020
Environmental costs (Rosenergoatom), RUB billion	4.25	4.3	5.5
Occupational safety and health costs, RUB billion	3.5	3.9	4.5
Social expenditure, RUB billion	3.275	3.388	3.693
Social expenditure per employee, RUB '000	63.58	60.03	64.99

⁵ Approved by Order No. 1/800-P of ROSATOM dated July 27, 2020.

⁶ By Order No. 9/01/2221-P of Rosenergoatom dated December 30, 2020.

⁷ Approved and adopted by Order No. 1/1623-P of ROSATOM dated December 25, 2020.

⁸ Alternative emissions of CO₂ equivalent have been calculated based on an assumption that 100% of nuclear power generation is replaced with other electricity sources in proportion to their shares in the global power generation structure, with emissions of CO₂ equivalent reassessed accordingly under ROSATOM's methodology available on the web portal at <http://report.rosatom.ru>.



Key sustainable development projects

Support for personnel during the pandemic

All nuclear industry enterprises established volunteering centres, conducted related training, and started to accept requests for assistance. At year-end, 153 volunteers of the Division processed more than 2,000 requests from veterans, families of isolated employees, etc. NPPs organised psychological counseling and supported hospitals, doctors, and nurses.

For details on pandemic-related activities, see the Response to the Pandemic chapter.

Participation in the Anatoly Alexandrov Corporate Social Responsibility and Volunteering Competition

About 60 applications were submitted for the competition. Employees of the Division won several awards: the silver award in the Best CSR Project category for the Development of an Energy Consumption Culture Among Young People project (Galina O., JSC Atomenergobyt), the bronze award in the Best Idea for a Social or Environmental Project category for the Ecocity – the Organisation of MSW Sorting (Korolev V., Leningrad NPP), four employees received For the Implementation of Important Social Projects certificates.

Formula of Professionals (SkillsNight)

On November 5, an event was held on atom-event.ru to engage personnel in competitions held in accordance with WorldSkills standards and announce the REASkills-2021 contest featuring top managers of ROSATOM and Rosenergoatom and special guests – Alexey Popov (Formula 1 commentator) and Sergey Sirotkin (Formula 1 driver). The event was viewed by 5,000 people on various platforms and social media.

IV REASkills2020 Divisional Professional Skills Competition (February 17–21)

The competition covered 18 competences, including three new categories: Ecologist, Maintenance and Repairs of Relay Protection and Automation Equipment, and Decommissioning of Nuclear Installations. About 300 employees, including 160 competitors and 138 experts, took part in the event. Leningrad and Kola NPPs and Atomenergoremont received the highest number of awards (seven medals per enterprise). Leningrad NPP led the gold medal count (four competences).

Achievements in industry-wide and national rounds of the WorldSkills competition:

- V AtomSkills 2020 Industry-Wide Professional Skills Competition (July 25 – August 9): 196 representatives of the Division, 17 competences, 52 medals, first place in the gold medal count among nuclear enterprises (9 medals), 21 silver and 22 bronze medals;
- VII WorldSkills Hi-Tech 2020 National Competition of Cross-Industry Skilled Professions for Workers in High-Technology Industries (October 23–30). The first teams: Life Cycle Management – gold, Network and System Administration – silver. 50+ category: Network and System Administration – gold, Welding Technology – bronze, a special prize from the Industry Development Fund for the competence with the highest number of points (first time for ROSATOM) – RUB 1 million – to the Life Cycle Management winning team and RUB 1 million to its experts.

III Convention of Safety Culture Officers ‘Guards of Safety: Fresh Look’ (August 19, online)

The convention brought together people responsible for a safety culture (712 people), as well as participants from other divisions. Key objectives of the convention were to discuss expectations of executives and safety culture officers, determine development areas of the safety culture officer institution throughout 2022, share best practices, and hold a best practices competition.

II Safety Culture Development Forum

Forum participants summed up the results of 2019, shared best practices, discussed the development of an atmosphere of trust while playing a business game, the integration of an executive leader model into the development of a safety culture, as well as measures for 2020. Directors of Balakovo and Kola NPPs winning the Best Safety Culture Among Russian NPPs received the awards.

Responsible consumption

Over three years, Rostov NPP sent 90 tonnes of wastepaper and more than 800 kg of batteries for recycling.

As part of the Ecocity project, employees of Leningrad NPP collected over a tonne of plastic waste in the town of Sosnovy Bor and sent it for recycling. At the Atomdrive festival, in the settlement of Lebyazhye, Leningrad Region, more than 2 m³ of plastics were collected during a three-hour eco shooting game. The project won awards at the competition ‘Clean Energy. Nuclear Context’ held as part of the celebration of the 75th anniversary of Russia’s nuclear industry and the Anatoly Alexandrov Corporate Social Responsibility and Volunteering Competition.

To minimise industrial (non-radioactive) waste to be disposed at Balakovo NPP’s special landfill site, an industrial waste sorting hub was opened. It is equipped with modern Russian units that allow better waste reception and recycling and a higher environmental safety level. The waste sorting hub includes two automated lines: one for recycling and one for solid waste shredding. The new equipment significantly decreases the amount of non-radioactive waste as early as at the sorting stage.

**DIGITISATION:
TECHNOLOGIES
AND PRODUCTS**





4.1 Digitisation management system

At the end of 2020, Rosenergoatom adopted a new digitisation strategy taking into account strategic goals of the Russian Federation (including digital transformation), as well as global objectives of ROSATOM, such as to develop new products for Russian and international markets and to reduce the prime cost of products and the lead time. The new strategy is aimed, mainly, at enhancing internal performance and transforming Rosenergoatom into a global centre of expertise and one-stop supplier of infrastructure, technologies, and solutions for effective and safe operation of complex engineering facilities in Russia and abroad. Key areas of the strategy are digital manufacturing, digital energy, information security, digital infrastructure, and digital products.

Data centres and cloud services remain the Division’s main digitisation areas. According to a related development strategy, Rosenergoatom should make the top five data centre market participants by 2025.

In 2020, external digital revenue exceeded RUB 650 million, and Kalinin Data Centre’s commercial revenue totalled more than RUB 1.5 billion since its launch in 2019.

Another important area of digital development is the Digital Pattern of NPP Operation. This integrated set of digital platforms and tools optimises NPP processes, from the design stage to decommissioning. The pattern will be implemented at all Russian NPPs and offered as a new product to foreign NPPs constructed by ROSATOM based on the BOO (build-own-operate) model and other complex industrial facilities. In 2020, the Division developed a concept and development map of the product and determined a basic set of the Digital Pattern. An IT project for the commoditisation of the pattern will be launched in Q1 2021.

Data centres

Development strategy	Development concepts were approved for new data centres located in Moscow, St Petersburg, and Innopolis. A project was created to develop a network of infrastructure platforms connected directly to power facilities.
Kalinin Data Centre	The first infrastructure platform was launched to place modular and containerised data centres with a total capacity of 32 MW.
Innopolis Data Centre	A project was launched to create Innopolis Data Centre with a capacity of up to 16 MW, which will become the largest data centre in Volga Federal District.
Moscow Data Centre	Rosenergoatom and Rosseti Group signed an agreement for planned construction of a new data centre in Moscow.

Corporate cluster of subsidiaries for management and development of a data centre network programme	Rosenergoatom established the following subsidiaries: Atomdata Centre, an integrator for commercial data centre infrastructure; Atomdata, a cloud integrator; Atomdata-Innopolis, a resident of the Innopolis special economic zone (Republic of Tatarstan).
Awards	Kalinin Data Centre was recognised the best data centre of 2020, and the infrastructure platform project became the project of the year at the TsODY.RF national awards.



4.2 Key digitisation projects

Cloud services and products

In addition to the construction of new data centres, the Division actively develops its portfolio of cloud services based on ROSATOM’s secure commercial cloud: placement and management of virtual IT infrastructure on the ATOMCLOUD platform, remote workplace services, etc.

ATOMCLOUD	The ATOMCLOUD public research cloud was deployed on the basis of Kalinin Data Centre for universities and other educational institutions.
Digital assistant	A remote maintenance and installation monitoring service was piloted for clients of Kalinin Data Centre.
RPA solutions	More than 50 software robots were implemented to automate routine procurement, HR, electronic document flow, and other business processes.
Mobile apps	The ATOMSTART onboarding app and the ATOMEVENT event management app were developed and piloted at the Division’s organisations and are expected to enter the market in 2021.
Catalogue of digital services: https://catalog.atomdata.ru	The catalogue is designed for external and industry clients so that they can view Rosenergoatom’s digital services and send an application. The catalogue currently includes cloud services and products, data centre services, and IT services from subsidiaries. In the future, it will cover all of the Division’s digital solutions.

Digital projects

In 2020, the Division also focused on R&D in digital technologies, systems, and tools for better internal performance. In the reporting year, 31 studies were conducted to research digital technologies and systems and prospects of their use in the nuclear power industry.

Project	Outcome
Smart AI-based video analytics for the monitoring of compliance with occupational and fire safety rules	The system was successfully implemented at Kola NPP and will be rolled out at other NPPs in 2021. It will allow a better culture of PPE use at enterprises and minimisation of injuries.
Predicative analytics for generation equipment	The pilot project was completed at Novovoronezh NPP. The system allows prompt detection of latent defects of equipment and, hence, fewer penalties due to unscheduled shutdowns.
VR simulator of KRU-10kV electrical equipment	A prototype was created at Leningrad NPP-2 to help employees practice equipment operation and repairs scenarios, pass an exam, and start to work with real equipment on their own. Simulation-based training will enhance safety of work and quality of training.
NPP operation support system (NPP OSS)	In October 2020, a digital project was launched to develop the unified information platform that will combine operation, maintenance and repairs, engineer support, HR and documentation management. The project will be implemented in 2021–2024 at nine Russian NPPs and, in the long term, foreign Russian-design NPPs.
Programme for the implementation of the automated engineering documentation system (AEDS)	Processes were automated for 14 types of technical documents totalling more than 50 TB; the number of users exceeded 32,000 people.
Automated system for construction cost and schedule management (ASCCSM)	The system continues to be developed as the unified digital tool for managing capital projects. In 2020, functionality was expanded, with a data consistency monitoring tool implemented to detect a lack or inconsistency of data across the ASCCSM process model and promptly remove errors.
Industry-wide dataset register	A new pilot solution was launched to collect and store data for predictive analytics and AI training. This solution will become a basis for corporate AI-based platforms using experience of the nuclear industry.
Cloud NPP simulator for the preparation of students from specialised universities	JSC VNIIAES completed the pilot project. The simulator imitates neutronic processes in a reactor core, thermohydraulic processes in one or two circuits, and electrical processes in power supply systems. The simulator will improve the training of students and the preparation of NPP employees.

Implementing the Digital Energy Programme

Digital energy is a result of the digital transformation of the traditional power industry, which is based on data collection and processing technologies, for improving performance of industry representatives, reducing barriers to and creating conditions for the development of new business models, and creating services to meet consumer requirements⁹.

The Digital Energy Programme approved by Rosenergoatom is implemented according to the Energy Strategy 2035 of the Russian Federation and the Digital Transformation Strategy of the Digital Energy Association as part of ROSATOM's Unified Digital Strategy.

Seven projects under the Digital Energy Programme are being actively implemented:

Development of synchronised phasor measurement (SPM) technology	The project is aimed at applying SPM data at NPPs to solve technological tasks for more reliable operation of equipment and shorter downtime of generation equipment. After the design stage, procurement procedures were initiated to purchase equipment and order system development works. Plans for 2021 include the completion of equipment acquisition and supply, first-stage installation, and the launch of system software (in test mode).
Development of digital models for better performance in WECM	The project is aimed at applying AI methods to work in the wholesale electricity and capacity market (WECM). In 2020, digital models were prepared to predict parameters of NPP performance in WECM. Plans for 2021 include the optimisation of developed models and their verification for further use in Rosenergoatom's distribution and sales activities.
Creation of a Decision-Making Centre (DMC) in the Division	The project is aimed at accelerating data analysis and managerial decision-making through digitisation of data collection and processing at each decision-making level. The DMC was piloted.
Demand response	Rosenergoatom and JSC Atomenergobyt are actively involved in the pilot retail demand response project. During the project term, agreements were concluded with five consumers (total capacity of 15 MW).
Digital substation	The project is aimed at creating a test rig on a switching device at an NPP (without control actions) to test equipment of the digital substation. In 2020, the Division completed design works, approved project and work documentation. In 2021, the equipment is expected to be supplied and installed.

⁹ As defined by Russia's Ministry of Energy.

Flexibility management platform for Russia's Unified Energy System

Jointly with the Energynet National Technology Initiative, the Division is working on creating an 'active power industry' to implement a pilot project. The active phase of the project is expected to be implemented in 2021–2022.

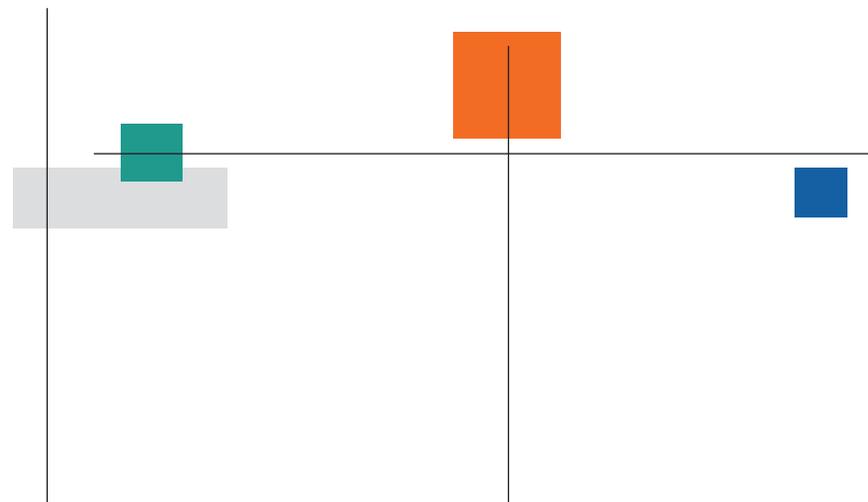
Charging infrastructure for electric vehicles

Current stages cover the determination of the business model and implementation capabilities, as well as market analysis.

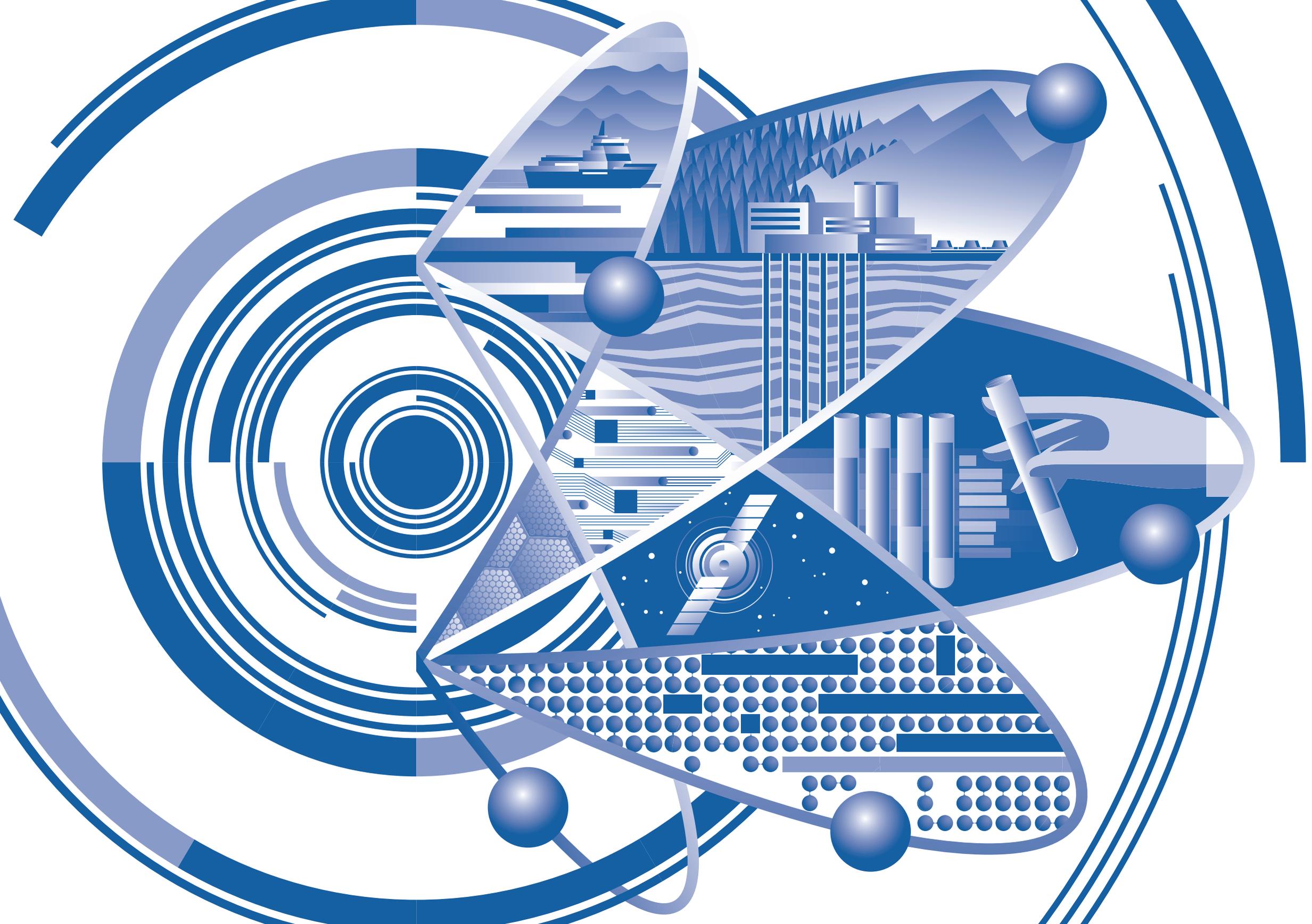
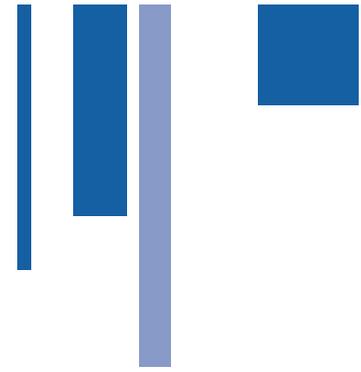


4.3 Import substitution

Experts from Rosenergoatom's Digital Technology Centre actively solved strategic tasks on import substitution and digitisation of Russia's power industry as part of the Digital Energy Association's activities. The Division implements a programme for import substitution of key IT systems, including AEDS, a system for collecting and displaying technological parameters for the Crisis Centre, etc. Import-substituting data protection hardware was supplied. In 2020, more than 5,000 users started to work on import-substituting workplaces based on Astra Linux Common Edition (ORYOL) and adapted to Rosenergoatom's requirements by employees of the enterprise and JSC CONSIST-OS according to industry standards. In the shortest time possible, VDI infrastructure was designed and deployed to operate Astra Linux amid the pandemic and remote work conditions. The number of users of import-substituting workplaces is expected to reach 18,000 people by the end of 2021 across the Division.



**INNOVATION
AND DEVELOPMENT
OF SCIENCE**



GRI 103-1

In innovative activities, the Division strives to achieve the goal set by the government – to strengthen the innovative potential of Russian nuclear technologies and extend the scope of their application. Innovative development is a prerequisite for maintaining the technological leadership of both Rosenergoatom and the national nuclear industry.

One of the key objectives of the Division's innovative development is to make products and services more competitive in nuclear power markets through upgrading current technologies and reequipping production facilities in accordance with the Forecast for the Scientific and Technological Development of the Russian Federation until 2030 approved at the end of 2016.

GRI 103-2

The main innovation management tool is the Innovative Development and Technological Modernisation Programme of ROSATOM until 2030 (in the civilian sector) updated and approved by the Supervisory Board of ROSATOM as amended in 2020 (Minutes No. 38 dated December 28, 2020).

The Division manages technologies as part of the innovation management process of the Integrated Management System (IMS). This process is aimed at ensuring an optimal portfolio of technologies and innovative products with protected IP rights for further implementation. The development of new technologies is planned on the basis of an analysis of scientific and technological development priorities of ROSATOM and its competitors, business objectives, a search for technology ideas, expert support, as well as a patent search allowing the assessment of a rationale and risks for new technologies. Based on ROSATOM's development strategy, the Division's strategy, and Rosenergoatom's business plan, the portfolio of technologies and innovative projects are formed, annually updated, and included in the Medium-Term Plan for the Implementation of the Innovative Development Programme.

In the course of its activities, Rosenergoatom uses various forms of innovation implementation, with a focus on innovative development through technologies and capabilities created, mainly as part of R&D ordered by the Company. Rosenergoatom's R&D plans are prepared in accordance with the Strategy for the Development of the Nuclear Power Industry until 2050 and in the Long Term until 2100¹⁰, and the Comprehensive Programme titled 'Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024,' the Unified Industry-Wide Subject-Specific Plan for R&D and Industry Pilot Projects. The R&D plans are fulfilled as part of Rosatom's Capital Investment Programme (CIP). Based on the CIP, Rosenergoatom prepares annual R&D plans. In 2020, the Company allocated RUB 2.2 billion for R&D.

The pressurised water-cooled reactor (VVER) technology provides a practical basis for the nuclear power industry in the coming decades and will remain its integral part until the end of the century both in Russia and in terms of promoting the Russian reactor technology on the international market.

As part of forming a technology basis for a two-component nuclear energy system, the Division started to implement the Programme for the Improvement of Design Solutions Using Conventional VVER Technology. The programme includes a range of R&D initiatives to further improve VVER technology taking into account lessons learnt from the construction, commissioning and operation of new power units with 1,200 MW VVER reactors at Russian sites.

The Division has also initiated pilot studies of another promising technological solution: VVER based on spectral regulation, which enables full involvement in the CNFC through the use of MOX fuel along with fast neutron reactors. An investment project titled 'R&D. Development of VVER Spectral Regulation Technology' was included in Rosenergoatom's Capital Investment Programme for 2021–2026. R&D is expected to be conducted for a medium-scale NPP project at Kola NPP-2.

A comprehensive programme titled 'Optimisation of Design Solutions for Better Performance of a Turbine Island of a VVER Power Unit' was developed and implemented. This programme is aimed at enhancing the performance of VVER power units of NPPs and the competitiveness of Russian technologies in foreign markets. The Division continues to implement the Integrated Programme of R&D and Measures Ensuring Hydrogen Explosion Safety and Enabling the Management of Severe Accidents at NPPs with VVER Reactors.

Based on the deliverables, a set of technical and organisational measures will be developed to manage beyond-design-basis accidents at NPPs with VVER reactors and mitigate hydrogen safety impacts, taking into account further development of Russian and international legal NPP safety frameworks. These deliverables will enhance safety at Russian-design NPPs and could become a new international safety standard for new NPPs, which will significantly improve the export potential of Russian projects.

In January 2020, the Division commissioned the virtual NPP software and hardware system (VNPP) that allows:

- Expert review of design solutions for new Russian-design units and existing ones under modernisation;
- Computer verification of process control system projects for power units with VVER reactors, including cyberattack protection analysis of process control subsystems;
- Upgrading of current training VNPP-based tools and the development of new ones;
- Design analysis and optimisation of guidelines for the management of beyond-design-basis/severe accidents and anti-accident instructions of other levels.

In order to apply the VNPP to validate the safety of NPP power units, an R&D programme titled 'Preparation and Expert Review of Components of the Virtual and Digital NPP with VVER Reactors Software and Hardware System, and Their Certification by Rostekhnadzor' was developed. The programme is expected to be implemented under Rosenergoatom's investment programme.

¹⁰ Adopted by ROSATOM in 2019.

The Division continues to conduct R&D to create new radiation-hardened steel for VVER reactor internals. The key outcome of 2020 is a comparative assessment of new and current (08H18N10T) steels for VVER reactor internals based on their performance after neutron irradiation and the preparation of a conclusion on the utilisation of the new steel as a material for baffles of VVER reactor internals as compared to the 08H18N10T steel.

The Energy Strategy 2030 of the Russian Federation covers the following promising objectives: to develop hydrogen production and consumption and become a global leader in hydrogen production and exports. Key measures contributing to achieving these objectives include the scaling-up of hydrogen production from natural gas with nuclear power and the development of domestic low-carbon technologies for hydrogen production through reforming, methane pyrolysis, electrolysis, etc. An action plan titled ‘Development of Hydrogen Energy in the Russian Federation until 2024’ was approved by Order No. 2634-r of the Government of the Russian Federation dated October 12, 2020. The centralised large-scale environment-friendly hydrogen production requires nuclear power engineering plants combining technologies of high-temperature gas-cooled reactors and steam natural gas reforming technologies. The Division intends to become a leader in this sector in Russia and significantly enhance its export potential in hydrogen energy, a promising and fast-growing segment of the world economy. ROSATOM decided to include an investment project titled ‘R&D of Atomic Hydrogen Energy Technologies for Large-Scale Hydrogen Production and Consumption’ in Rosenergoatom’s investment project. The project implementation was initiated.

The Division started to implement an industry-wide pilot project titled ‘Construction of a Small-Scale Nuclear Power Plant with a RITM-200N Reactor Unit in Russia’ (SNPP with RITM-200N). The project aims to construct an SNPP in Russia and launch it in 2027, receive references for the expansion into external markets, as well as take measures from federal project No. 5 ‘Design and Construction of Reference Power Units of Nuclear Power Plants, Including Small-Scale Nuclear Power Plants’ in relation to SNPP with RITM-200N under the Comprehensive Programme titled ‘Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024.’

In order to increase the share of intellectual products in the final cost of R&D deliverables, Rosenergoatom constantly takes measures to create and detect registrable intellectual property (IP) (continuous technology audit). Rosenergoatom’s IP portfolio includes exclusive rights over 505 intellectual property items, including:

inventions	71
utility models	10
computer software programmes and databases (including those with official registration certificates from the Federal Service for Intellectual Property)	353 (81)
trademarks	13
trade secrets (know-how)	58

**NEW PRODUCTS
AND BUSINESSES**



GRI 102-10
GRI 103-1
GRI 103-2

Development of new businesses for Russian and foreign markets and an increase in the international market share are strategic goals of ROSATOM. In accordance with ROSATOM's strategy, it is intended that new products will make up 40% of the total revenue by 2030.

To meet this target, the Division's organisations develop new businesses and create conditions to use the potential and capabilities of companies in current and emerging markets. In 2020, the Division's portfolio covered projects implemented in 15 countries.



6.1 International and new businesses

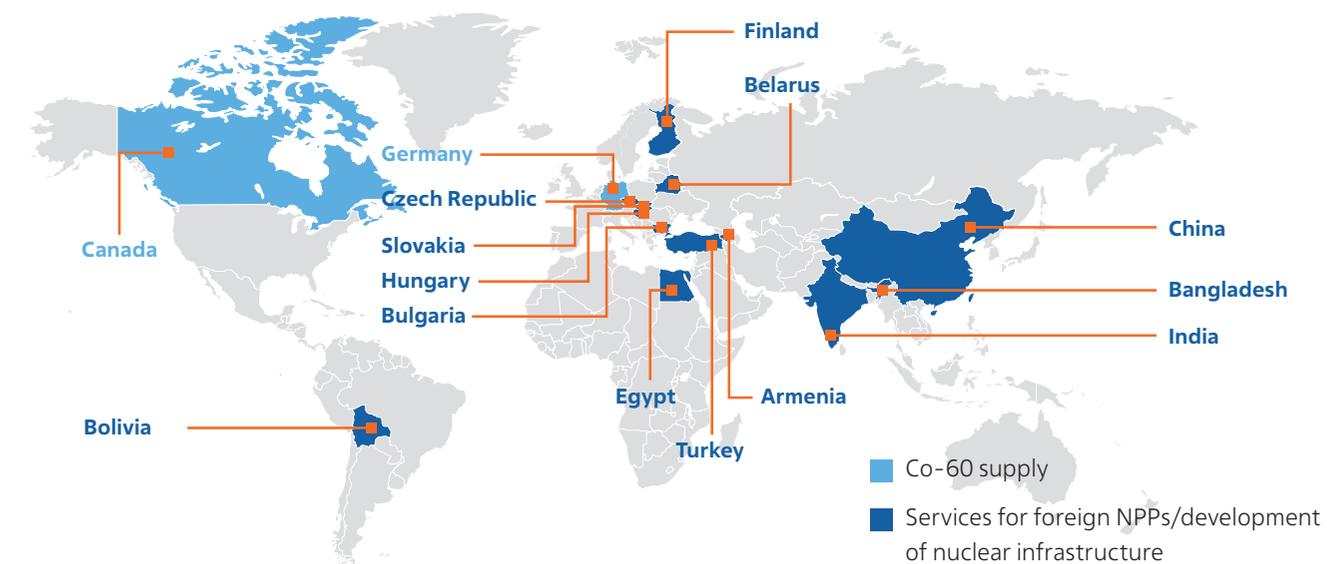
In 2020, the Division's portfolio included projects in ten business areas: services covering the entire life cycle for foreign NPPs, construction of NPPs abroad, electricity distribution, isotope production, energy service, engineering and maintenance services in the non-nuclear markets, fullerene and polymer production, sorbent production, digital products, and data centres.

For details, see the chapter Digitisation: Products and Technologies.

GRI 102-2

GRI 102-4

The Division's new business geography in 2020



GRI 201-1

Financial results for international and new businesses

Indicator	2019	2020
Revenue from new products beyond the scope of consolidation of the Corporation, RUB billion	75	77
Portfolio of orders for new products beyond the scope of consolidation of the Corporation, RUB billion	253	264
Overseas revenue, USD million	229	638
Ten-year portfolio of overseas orders, USD million	11,329	11,129



6.2 Projects for foreign NPPs in 2020

GRI 102-10

- Rosenergoatom and its subsidiaries – JSC Atomtekhexport, JSC Atomtekhenergo, JSC Atomenergoremont, JSC ZAES – took part in the commissioning of power unit No. 1 at the Belarusian NPP. Personnel training, start-up and commissioning works, including equipment inspection and repairs, were completed, with technical commissioning support provided.
- As part of the Akkuyu NPP project, TITAN2 IC ICTAS INSAAT ANONIM SIRKETI, a joint venture of JSC CONCERN TITAN-2 and Turkey's IC ICTAS INSAAT, reached some key milestones in the construction of Akkuyu NPP. Jointly with experts from the Capital Projects Implementation Branch Office (CPIBO) and Rosenergoatom's companies, the Akkuyu Engineering Centre (Rosenergoatom's branch) continues to provide Engineer/Owner services to Akkuyu NPP.
- JSC Rusatom Service continued to prepare personnel for foreign Russian-design NPPs under construction. More than 450 specialists from Bangladesh and Turkey underwent training at ROSATOM's Technical Academy and Russian NPPs.
- JSC Rusatom Service concluded and is executing a contract for the training of administrative personnel of Hanhiki-vi NPP.
- JSC ITC JET joined the Division. The company deals with the development, supply and modernisation of various full-scale and analytical simulators for NPPs and combined heat and power plants. In 2020, a contract was signed to upgrade full-scale simulators for power units No. 1–4 at Tianwan NPP.
- European Power Services Zrt. (EPS), a joint venture of JSC Rusatom Service and MVM Group (Hungary), was registered and launched to implement servicing projects for Paks and Paks 2 NPPs and work in other markets of Hungary and Central and Eastern Europe.

- JSC Rusatom Service signed a long-term contract for servicing Kudankulam NPP and a contract for upgrading neutron flux control equipment for power units No. 5 and 6 at Kozloduy NPP.
- JSC Rusatom Service and JSC Atomenergoremont reached the final stage of a project aimed at extending the life of power unit No. 2 at the Armenian NPP. In 2020, the companies completed the preparation for reactor vessel annealing and upgrades to the emergency core cooling system and started to upgrade a reliable power supply system at the Armenian NPP.
- With support from JSC Rusatom Service, industry experts assessed the national nuclear infrastructures of Egypt and Bangladesh and prepared nuclear infrastructure development road maps and assistance plans.
- CPIBO signed a contract with JSC ASE EC for the commissioning of power units No. 1 and 2 of Rooppur NPP, as well as consultancy contracts as part of projects for the construction of El Dabaa (Egypt) and Rooppur NPPs. Rosenergoatom's branch was established in Bangladesh to commission Rooppur NPP.
- In 2020, ROSATOM's Technical Academy and the International Atomic Energy Agency (IAEA) expanded their cooperation as part of the IAEA Collaborating Centres Programme. The Academy became an IAEA Collaborating Centre and now works with the IAEA in three programme areas: nuclear sciences and applications, nuclear security, and the nuclear power industry. Among 46 IAEA Collaborating Centres, the Academy is the only centre that cooperates with three IAEA departments.

In order to make training more effective for foreign specialists at Russian NPPs, Rosenergoatom introduced and registered a copyright for its Mobile IT Interpreter. This new digital product allows Russian-English/English-Russian simultaneous interpretation taking into account nuclear industry terms, works offline, complies with all security requirements, and can be used at operating NPPs.



6.3 Development of new businesses

- The Division started to implement its isotope business development programme until 2030 included in the Development of Nuclear Medicine and Technology Product Area strategy programme and ROSATOM's Unified Industry-Wide Isotope Business Strategy.
- JSC Atomenergobyty increased the share of electricity bills paid by people and over 50,000 organisations in Kursk, Smolensk, Tver and Murmansk Regions to more than 99%. The positive dynamics are driven by comprehensive customer interaction and a wide range of available services. The key trend of 2020 is related to the development of digital services: out of 5 million enquiries, 76% were conducted via remote channels, which ensured high quality and prompt feedback.

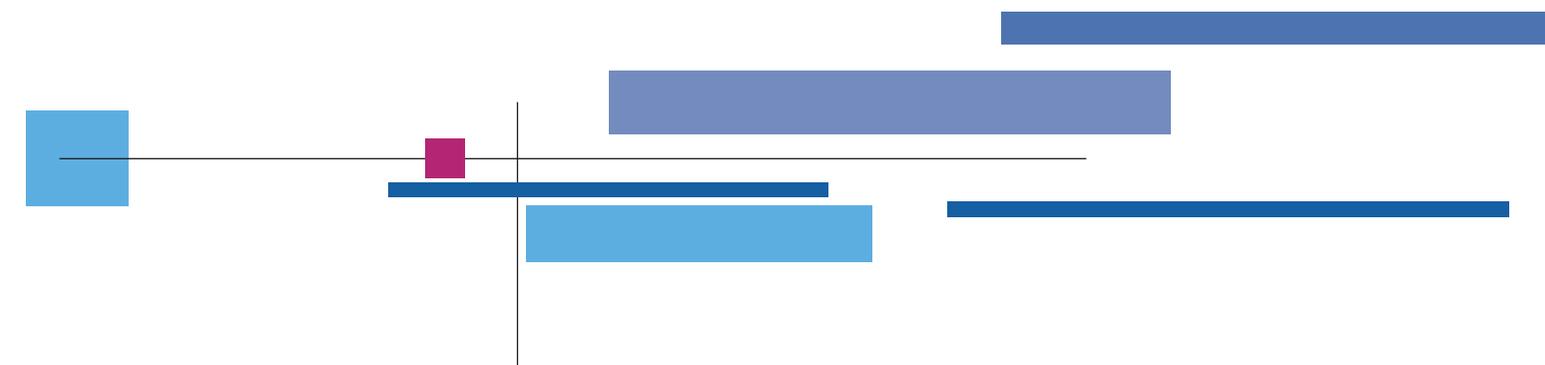
- JSC Atomenergobyty acquired LLC REK, the power supplier of last resort in Zheleznogorsk, Kursk Region.
- JSC CONCERN TITAN-2 continued its successful cooperation with the Vishnevsky National Medical Research Centre for Surgery. In 2020, a project was developed to create an innovative surgical centre that will be one of the best-equipped medical facilities in the world.
- JSC CONCERN TITAN-2 also signed contracts with the Russia – the Country of Opportunities Autonomous Non-Profit Organisation for the first-stage construction of the Senezh Management Lab.
- JSC AtomTechEnergobyty completed a set of pre-commissioning activities at the Adygea Wind Power Plant, the largest wind power plant in Russia.
- JSC Electrogorsk Research and Development Centre for Nuclear Power Plants Safety (JSC ENIC) diversified its portfolio, created the Department for Integrated Project Engineering and successfully launched two businesses: Integrated Project Engineering and Consulting on the Modelling of Power Systems and Consumer Power Supply Systems.
- LLC C-plus continued to develop its energy service business, providing services to branches of PJSC ROSSETI to improve energy efficiency and reduce losses during electricity transmission to end users.



6.4 Plans for 2021

- To perform key installation operations at power units No. 1 and 2 and start to build power units No. 3 and 4 in 2021 as part of the Akkuyu NPP construction project;
- To launch power unit No. 2 at the Belarusian NPP;
- To carry out reactor vessel annealing, upgrade the emergency core cooling system, reliable power supply system, and other equipment and systems to extend the life of power unit No. 2 at the Armenian NPP.

Plans for 2021 also include the signing of contracts for servicing foreign NPPs and performing works at non-nuclear facilities.



**DEVELOPING
THE HUMAN CAPITAL**



GRI 103-1



HR system

The objective of the Division's human resource policy is to provide the business in a timely and cost-effective manner with the required number of employees who are engaged and have appropriate qualifications. The Division's personnel management system is based on shared industry-wide values of ROSATOM and its organisations, which all employees are required to know and adhere to.

GRI 102-7

GRI 102-8



Key personnel characteristics

Division's average headcount in 2018–2020

Enterprise	2018	2019	2020
Branches of Rosenergoatom			
Balakovo NPP	3,278.9	3,216.2	3,258.16
Beloyarsk NPP	2,522.0	2,554.9	2,558.52
Bilibino NPP	705.7	693.8	687.43
Kalinin NPP	3,251.5	3,225.9	3,311.57
Kola NPP	2,097.0	2,102.4	2,134.79
Kursk NPP	4,182.2	4,329.0	4,561.41
Leningrad NPP	5,604.2	5,661.1	5,848.57
Novovoronezh NPP	3,887.1	3,889.7	3,937.28
Rostov NPP	3,004.6	3,053.0	3,163.48
Smolensk NPP	3,564.2	3,631.2	3,682.26
VVER Pilot and Demonstration Centre	331.9	332.3	341.46
RBMK Pilot and Demonstration Centre	0	0	10.25

Enterprise	2018	2019	2020
Directorate for Construction and Operation of FTNPPs ¹¹	173.8	310.6	439.94
Technology Branch Office	153.8	156.2	160.40
Capital Projects Implementation Branch Office	237.6	236.5	239.80
Akkuyu Engineering Centre	0	23.6	35.66
Central Administration (excluding small branches)	812.2	835.3	863.83
Directorate of Voronezh Thermal Nuclear Power Plant (under construction)	29.8	26.9	27.16
Directorate of Baltic NPP (under construction)	57.2	53.5	50.90
Directorate of Kostroma NPP (under construction)	29.5	14.5	0.00
Total in JSC Rosenergoatom	33,923.5	34,346.6	35,312.87
Subsidiaries			
JSC CONCERN TITAN-2	2,594.81	4,361.25	4,849.79
JSC Atomenergoexport	135.97	172.35	167.06
JSC AtomTechEnerg	2,096.26	2,127.68	2,283.68
JSC Atomenergoremont	8,918.97	9,286.35	9,565.05
JSC Atomenergobyty	2,117.76	2,143.38	2,118.62
JSC VNIIAES	534.84	534.91	562.52
JSC ZAES	194.17	221.14	264.72
JSC CONSYST-OC	769.41	855.66	1,094.35
JSC Rusatom Service	174.25	212.42	223.10
LLC C-plus	52.25	94.75	112.80
TITAN2 IC ICTAS INSAAT AN	-	55.83	397.18
Total across subsidiaries	17,588.69	20,065.72	21,638.87
Total in the Division	51,512.51	54,411.93	56,951.77

¹¹ The Floating Thermal Nuclear Power Plant has been Rosenergoatom's branch since 2020.



Personnel training

In order to form a talent pool and perform strategic tasks, the Division adopted professional training, development and psychological aid systems.

GRI 404-1

Aggregated data on personnel training across the Division in 2020

Indicator	Total	Per employee
In-house training, hours	3,964,036	69.6
Training provided by external organisations, hours	1,930,090	33.9
Total number of training hours, including:	5,894,126	124.2
Executives	968,637	110.9
Specialists and white-collar workers	2,260,148	91.5
Blue-collar workers	2,665,341	113.4

Expenditure on training and certification of the Division's employees in external organisations in 2020 totalled RUB 446.055 million (an average of RUB 7,810 per person per year).

As part of the E-Learning 2020 strategy, the Division continued to introduce e-learning; the share of e-learning in 2020 reached 37%. In order to study experience and best practices in the development of remote training tools, as well as to develop the RECORD Mobile platform and create an e-learning development road map, the Division's experts took part in the KomandOR international project and studied the experience of PwC, Russian, French, and American teams.

GRI 403-5

As part of its personnel training programmes, the Division places special emphasis on topics related to a safety culture and behavioral skills of executives and safety culture development leaders. The following training programmes were developed in 2020: Safety Culture, Psychological Aspects of Managerial Work with Personnel, Self-Assessment of the Safety Culture Status in Nuclear Enterprises and Organisations; educational materials: Behaviour Pattern of a Leader-Manager in Safety Culture Development; Psychological Aspects of Managerial Work with Personnel; Preparation of Employees Responsible for a Safety Culture. For the Safety Culture and Psychological Aspects of Managerial Work with Personnel programmes, e-courses were developed and uploaded to the Record and Record Mobile systems. 21,387 NPP employees underwent training in Safety Culture in 2020. In order to minimise employees' misactions, the Methodology for Risk Propensity Assessment Among NPP Employees was developed and introduced.

The Division is actively involved in personnel development and performance assessment. In 2020, training was provided under both industry-specific programmes, such as a programme for the development of leadership capabilities (development of the executive succession pool), Global Professionals, New Products, the HR School and the Project Management School, and other programmes aimed at promoting corporate values and English language learning.

NPP personnel are provided with professional training by the Division's education and training departments (centres) (ETDs). A schedule for equipping (upgrading, modernisation) ETDs with technical training aids was updated in 2020 to provide employees with professional training in the safe operation of power unit equipment and balance-of-plant systems.

In 2020, the Division developed and reviewed 2,556 educational materials, 2,131 position-specific training programmes, and 49 computer educational materials. The implementation of the Visualisation Software and Hardware in VR project was continued in 2020 as part of the digitisation programme.

In order to standardise approaches to professional training for personnel, a School for Instructors has been established in the Division. In 2020, 323 NPP instructors completed professional development courses.

NPP personnel training includes psychological training provided by specialists from a psychophysiological laboratory. 11,265 NPP employees underwent psychological training totalling 35,000 hours in 2020.

Certain operations can be performed only by employees holding the required permits from Rostekhnadzor (Russia's Federal Service for Environmental, Technological and Nuclear Supervision). In 2020, a total of 1,675 NPP employees of the Division had the relevant permits. To regulate relations with holders of Rostekhnadzor's permits, the Division updated lists of job positions requiring permits from Rostekhnadzor and adopted the Methodological Guidelines for the Provision of Rosenergoatom with Employees Having Permits from Rostekhnadzor in 2020. In order to improve training of employees who hold licensed positions on a permanent or temporary basis, in 2020, the Division developed and adopted training programmes for personnel holding licensed managerial positions at NPPs, introduced a training programme, e-course, and electronic educational materials to prepare executives and specialists of the FTNPP for certification at supervisory bodies, and updated electronic educational materials for high-level executives at NPPs for certification at supervisory bodies.

In 2020, the Division continued to develop and promote the industry-wide system of professional qualifications. Five professional standards were developed for the nuclear power industry. Twenty-four educational programmes for employees in the industry were accredited. Thirty-three employees passed qualification exams as part of a pilot project aimed at conducting independent qualification assessment.

To provide a practical solution for a range of tasks related to improving and maintaining the required level of human reliability, including psychological and teaching assistance in professional training, psychophysiological laboratories (PPLs) have been established. In 2020, psychophysiological examination covered 9,175 employees; 567 opinions were issued in order to obtain and renew permits from Rostekhnadzor. In 2020, courses and guides were developed in the following areas: cognitive performance, mobilisation, and relaxation. The courses are available on the Record Mobile platform. Experts of the psychological relief room conducted 1,068 counseling sessions, including those aimed at minimising coronavirus impacts.



Cooperation in education

Cooperation with universities

In 2020, due to the high-alert mode, the format of cooperation with universities changed: events were held online. In the reporting year, Rosenergoatom's organisations hired 647 university graduates. Six scholarships worth RUB 150,000 were granted to first-year students who were enrolled for the Nuclear Power Plants: Design, Operation and Engineering programme and received the highest test scores.

In 2020, Rosenergoatom's branches and organisations participated in university career events: National Research Nuclear University MEPhI's (NRNU MEPhI) Career Forum and job fairs held by Tomsk Polytechnic University, Moscow Power Engineering Institute, etc.

Following a meeting of the Association of Core Universities, an internship plan was developed. In 2020, internships at NPPs were organised, mainly, in a remote format, and 1,086 students completed internships.

Five-year agreements were concluded with core universities to implement internship programmes at all operating NPPs. Forty-eight people went to university under employer-sponsored education contracts, with a total of 283 students covered by Rosenergoatom's employer-sponsored contracts.

Following a competition held in 2020, 40 grants worth RUB 200,000 and 86 scholarships worth RUB 100,000 were given to professors and students respectively. Rosenergoatom develops and implements road maps for cooperation with all universities that prepare specialists for the Division.

University	Cooperation areas
Alekseev Nizhny Novgorod State Technical University	Cooperation agreement (all areas), granting scholarships following competitions
Yeltsin Ural Federal University	Cooperation agreement (all areas)
Tomsk Polytechnic University	Cooperation agreement (all areas), giving scholarships to students and grants to professors following competitions
National Research Nuclear University MEPhI	MEPhI (industry-wide) development programme, giving scholarships to students and grants to professors following competitions
Volgodonsk Engineering and Technical Institute (branch) of the National Research Nuclear University MEPhI	Funding for purchasing a bus, giving scholarships to students and grants to professors following competitions
Yeltsin Ural Federal University	Upgrading the university's facilities and resources, giving scholarships to students and grants to professors following competitions
Lenin Ivanovo State Power Engineering University	Modernisation of the university's Nuclear Neutron Physics and Dosimetry laboratory, facilities and resources, giving scholarships to students and grants to professors following competitions
Obninsk Institute for Nuclear Power Engineering (branch) of the National Research Nuclear University MEPhI	Giving scholarships to students and grants to professors following competitions

Thanks to cooperation with MEPhI, Russia's leading nuclear power university, diagnostic tools were developed and commissioned at NPPs in 2019–2020. These tools improve the quality of diagnostics and detect defects of diesel generator units and electrically-driven equipment of NPPs at early stages.

Currently, Rosenergoatom is preparing and conducting R&D jointly with MEPhI and other Russian universities. Cooperating with universities and, above all, MEPhI, the Company can engage high-experienced nuclear power specialists and students who will join its team after graduating from MEPhI with valuable real-life experience.

JSC VNIIAES and MEPhI developed design documentation for a prototype of the base module of the coordinate plane of a muon scintillation detector. Research results proved the operability of the prototype.

A prototype of the coordinate track plane of drift chambers was developed and tested; related design documentation was prepared. Testing results proved the operability of the prototype.



Implementation of the social policy

The Division implements its social policy in accordance with its strategy and the Uniform Industry-Wide Social Policy of ROSATOM in order to make it more attractive as an employer on the labour market, enhance employee loyalty, attract and retain competent young specialists, preserve the occupational health of employees and improve the quality of their lives.

Social expenses of the Division in 2018-2020, RUB '000

	2018	2019	2020
Expenses per employee	63.57	62.23	64.99
Total expenditure on the implementation of the social policy	3,274,676	3,385,952	3,693,386
including key programmes:			
Healthcare programmes (VHI+accident insurance)	538,960	628,681	667,308
Private pension plans	56,410	59,392	152,545
Health resort treatment and wellness	488,856	527,909	292,599
Support for retirees	414,350	436,118	406,993
Providing better living conditions for employees	302,087	305,135	399,612
Cultural and sporting events	693,342	696,105	743,120*

* including mass anti-pandemic events

Voluntary health insurance (VHI)

Apart from regional compulsory health insurance programmes and state benefits, Rosenergoatom provides VHI and accident and illness insurance to its employees. Employees can obtain insurance for their family members at a discount. VHI covers the provision of specialised information, consultations and medical care for employees and their family members not only in regional healthcare institutions but also in Moscow and Saint Petersburg.

Health resort treatment for employees

Rosenergoatom annually implements measures to improve employees' health in healthcare centres affiliated with the industry and in Russian health resorts. In 2020, 3,829 employees received health resort treatment in ten healthcare centres affiliated with NPPs, and 4,145 employees received treatment in 34 health resorts on the Black Sea coast, in the Caucasian Spas and Central Russia.

Providing better living conditions for employees

The provision of housing for Rosenergoatom's employees is a very important prerequisite for attracting skilled personnel, which is especially needed as new power units are being actively constructed. The Division builds housing and assists employees in buying a permanent home as part of a housing programme adopted in Rosenergoatom. Construction of a nine-floor residential building in Desnogorsk was completed in 2020.

In 2020, 263 employees were given interest-free loans to make a down-payment on mortgages; 3,426 people received compensation for interest on mortgage loans, and 1,050 people, including 841 employees under 35 years who live in temporary housing were provided with assistance. In addition, 202 apartments were acquired in Kurchatov to station employees involved in the construction of Kursk NPP-2.

In 2020, Rosenergoatom transferred 33 apartments to medical units and other federal state healthcare organisations in the regions of operation for further provision to health professionals.

Sports and cultural activities

The most significant cultural and sporting activities conducted for the Division's employees in 2020 included:

- Implementation of the Comprehensive Programme of the Planet of Basketball – Orange Atom sporting and social project (2018-2020);
- Construction/upgrading of modern multi-purpose sports grounds in host NPP towns and cities (Balakovo, Novovoronezh, Kurchatov, Volgodonsk, Desnogorsk, Sosnovy Bor, Udomlya, Zarechny);

- Basketball camps with FIBA referees in host NPP towns and cities;
- Basketball competitions at NPPs, with the live-streamed final round involving all NPPs and the Central Administration's team.

Private pension plans (PPPs)

Rosenergoatom offers PPPs for employees through the Atomgarant industry-wide Non-State Pension Fund in accordance with the Regulation on the Co-financing of Non-State Pension Plans for Rosenergoatom's Employees and pension agreements concluded between the Company and the Fund. Pension obligations are covered in full using Rosenergoatom's shared resources under a retirement benefit scheme; the value of obligations in 2020 was estimated at RUB 128 million (RUB 114 million in 2019). Upon retirement of an employee of Rosenergoatom, the scope of their participation in the pension plan is determined based on the length of employment in the nuclear power industry, which must total at least 15 years at the time of reaching retirement age.

	2019	2020
Total number of Rosenergoatom's retirees who receive a private pension through the Atomgarant Non-State Pension Fund, people	13,687	13,397
Average non-state pension, RUB	2,263	2,280
Funds paid by the Atomgarant Non-State Pension Fund as non-state pensions to retirees, RUB million	286.6	283.3

In 2020, the number of members of co-financing pension plans equalled 7,951 people (8,428 people in 2019).

Members' age	Pension contributions (% of an employee's monthly salary)	
	Employee	Employer
18–29	0.8	1.6
30–35	1	2
36–39	1.3	2.6
40–44	1.5	3
45–49	1.7	3.4
50+	2	4

Veterans' movement

Care for veterans is one of the most important areas of the social policy. In 2020, the actual number of retirees participating in the Inter-Regional Public Organisation of Rosenergoatom's Veteran Employees (IRPORVE) totalled 18,029 people (18,318 people in 2019). Using funds allocated by Rosenergoatom under the Charitable Contribution Agreement, IRPORVE provided retirees in need with financial assistance totalling RUB 71.6 million (RUB 92.6 million in 2019) and funding for health and wellness totalling RUB 56.9 million (RUB 81.6 million in 2019).

The Division spent RUB 12.9 million on health resort treatment and cultural events (compared to RUB 15.5 million in 2019).

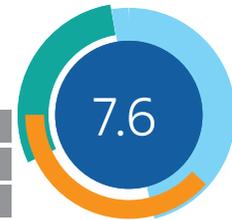
Veterans are provided with home care. Financial assistance was provided to a total of 48,158 retirees (44,327 in 2019).

Youth engagement

In 2020, the number of youth events held by Rosenergoatom at the level of the Division and higher increased by 230%, i.e. almost by a factor of 2.5, with total coverage of 5,000 people. In 2020, Rosenergoatom's young people participated in two federal projects: the CASE-IN International Engineering Competition and Youth Global Energy Outlook. The Division adopted new youth programmes: corporate film screening, the Division-wide Youth Awareness Day, the Best Scientific and Technology Report open competition, and online team building.

Youth events held by the Division in 2020:

- II Divisional Youth Convention (July 16–17, online). The event involved statements and reports from nuclear industry top managers and youth leaders, panel discussions, team building. The Convention's coverage grew by 30%: over 300 young employees from 24 organisations of the Division. Young people worked in groups and dealt with issues related to the perception of business challenges and the development of Rosenergoatom, professional development, and social interests. A best youth engagement practices contest was held;
- Science and Technology Conference for Young Specialists and Employees of the Division. Eighty-six reports were submitted from 15 organisations. Nine speakers from five divisions reached the final, with two finalists from the Power Engineering Division. The final of the Conference is expected to be held in 2021 as an open international competition;
- The Energy of Youth 2020 contest (October 26 – December 16). The key goal of the contest is to create a talent pool of young specialists. Participants from 17 branches and organisations of the Division submitted 331 applications.



Occupational safety and health

GRI 103-1
GRI 102-11
GRI 403-1

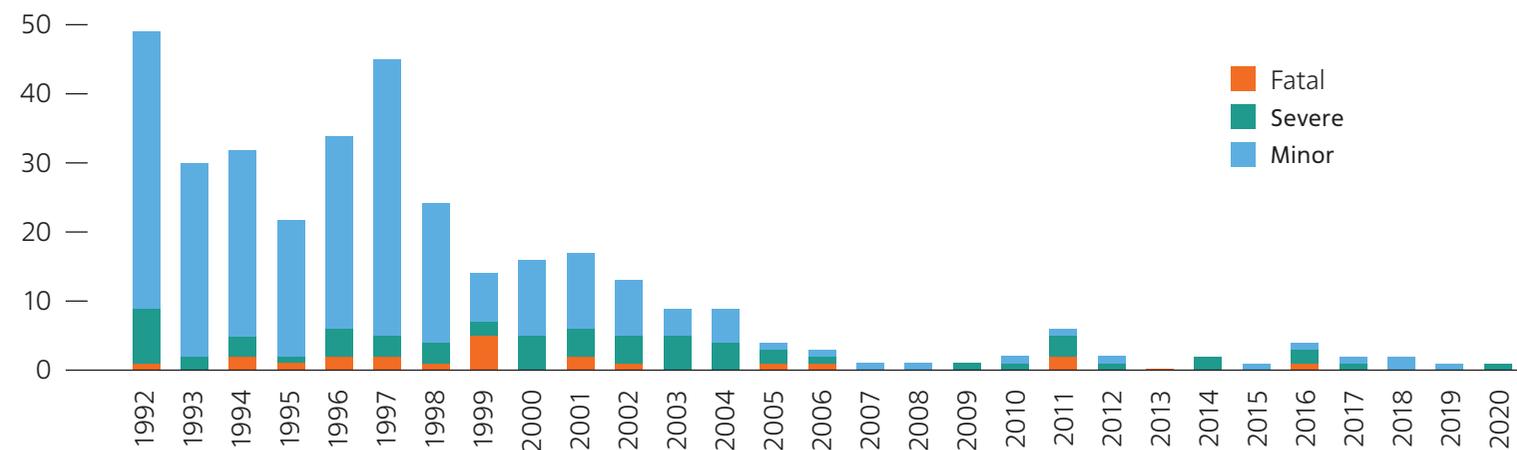
One of the strategic goals of Rosenergoatom is to prevent workplace fatalities at NPPs. The Division’s occupational safety and health policy is aimed at giving priority to protecting employees’ health and life in the workplace, consistently and continuously implementing measures to prevent accidents, workplace injuries and occupational diseases through occupational safety and health procedures, planning, funding and implementing measures to reduce injury and occupational disease rates, ensuring cooperation with contractors in the areas of occupational safety and health, and promoting social partnership with regard to occupational safety matters.

GRI 403-9

Injury rates

In 2020, there was one accident involving Rosenergoatom’s employees at operating NPPs (a severe accident at Kola NPP). No accidents occurred in 2020 involving employees working at power units under construction.

Changes in injury rates at operating NPPs between 1992 and 2020



Number of accidents at operating NPPs between 2018 and 2020

NPP	2018	2019	2020
Balakovo NPP	–	–	–
Beloyarsk NPP	–	1 m	–
Bilibino NPP	–	–	–
Kalinin NPP	–	–	–
Kola NPP	1 m	–	1 s
Kursk NPP	–	–	–
Leningrad NPP	–	–	–
Novovoronezh NPP	–	–	–
Rostov NPP	–	–	–
Smolensk NPP	1 m	–	–
Total	2 m	1 m	1 s

(s – severe, m – minor)

In 2020, the accident was caused by poor work management, namely:

- Non-compliance with safety rules by executives responsible for work management at NPPs;
- Non-compliance with requirements for positioning a load (a safe) on a pallet jack platform in a balanced stable way excluding falls on the move;
- Non-compliance with requirements for determining the actual mass of a load (a safe) before moving it.

The LTIFR¹² in the Division stood at 0.03 in 2020 (0.04 in 2019) against a KPI limit of 0.15.

¹²Lost Time Injury Frequency Rate.

Statistics on injury rates among contractor personnel

NPP	Total number of accidents		
	2018	2019	2020
At operating NPPs of Rosenergoatom			
Balakovo NPP	–	1m	1f
Beloyarsk NPP	–	–	–
Kalinin NPP	1f	–	–
Kola NPP	–	–	–
Kursk NPP	1s	–	–
Leningrad NPP	–	–	–
Rostov NPP	1g(3s) + 1m	–	–
Smolensk NPP	1f	–	–
Total	5	1	1
At Rosenergoatom's NPP construction sites			
Kursk NPP-2	1m	1f+ 1s + 1g(2s)	1f
Leningrad NPP-2	–	1f	–
Total	1	4	–
Bcero	6 (1 g (3s)+2f+1s+2m)	5 (1g (2s)+2f+1s+1m)	2f

(f – fatal, s – severe, g – group, m – minor)

The causes of accidents included:

- Poor work management, namely in terms of the occupational health and safety management system (provisions on work procedures in local regulations of LLC Balakovo NPP – Avto), and lack of control over contractor works (handling) by executives; injured employees' non-compliance with workplace discipline and safety rules;
- Personal negligence due to uncoordinated actions of a jib crane operator and a slinger when operating lifting devices.

To prevent injuries and eliminate the causes of accidents, the following measures were developed and taken:

- Enhancing safety of works performed by employees of NPPs and contractors;
- Implementing a plan to support employees involved in constructing Kursk NPP-2 in terms of effective fulfillment of procedures of the occupational health and safety management system.

There were no employees newly diagnosed with occupational diseases in Rosenergoatom and contractor organisations in 2020.

In 2020, Rosenergoatom's occupational health and safety costs totalled RUB 4,517.4 million.

Key occupational health and safety results in 2020:

- Implementation of a pilot project titled 'Openness KPI' involving the development and introduction of an incentive mechanism for executives at each level and employees of NPPs to adhere to the principle of openness, reduce injuries, and enhance occupational health and safety. A new occupational health and safety indicator, Accident Severity Prevention, was developed;
- Implementation of an increased-focus monitoring plan titled 'Safe Management of Contractor Works.'

The key objective in occupational health and safety for 2021 is to improve the contractor relations system as part of repairs through the implementation of the increased-focus monitoring plan titled 'Safe Management of Contractor Works' and investigation of the causes of unsafe actions and micro-injuries, and their elimination.

GRI 409-10

**DEVELOPING
THE REGIONS
OF OPERATION**





System for managing relations with the regions of operation

GRI 103-1
GRI 103-2

In order to create effective mechanisms restraining out-migration from strategic regions, form and implement a differentiated spatial-development model and develop high-tech territorial-production clusters, ROSATOM and the Division implement target programme measures in the regions of operation.

Since 2012, ROSATOM and Russian regional authorities have been fulfilling cooperation agreements to develop host NPP municipalities. As members of the consolidated taxpayer group, ROSATOM's enterprises pay additional taxes spent on improving social and engineering infrastructure, building sports facilities, and developing amenities in host towns and regions.

Under the agreements, additional tax payments to budgets of host NPP regions totalled RUB 38.3 billion in 2020 (RUB 25.07 billion in 2019), with RUB 2.61 billion spent on municipal initiatives (RUB 2.58 billion in 2019).

Key measures implemented in 2020 under agreements with regions

Territory (NPP)	Total amount, RUB million	Activities
Novovoronezh District, Voronezh Region (Novovoronezh NPP)	460	<ul style="list-style-type: none"> Construction of a sports and fitness centre Urban improvement (maintenance and improvement of yards)
Zarechny District, Sverdlovsk Region (Beloyarsk NPP)	795	<ul style="list-style-type: none"> Overhaul of a sports ground of school No. 1 Road maintenance and traffic safety activities Urban improvement and maintenance Repairs of water and sewer systems Provision of municipal guarantees to Municipal Unitary Enterprise Teplotsentral Repairs, equipping and maintenance of urban spaces
Polyarnye Zori, Murmansk Region (Kola NPP)	153.2	<ul style="list-style-type: none"> Overhaul of the Children's and Youth Sports School swimming pool (stage 1) Improvement and maintenance of yards Acquisition of equipment for an audience hall at the city's culture centre, overhaul of a big hall (stage 2) Road repairs
Volgodonsk, Rostov Region (Rostov NPP)	234.3	<ul style="list-style-type: none"> Construction of a school (for 600 children) Construction of a martial arts centre Introduction of the target model of a digital educational environment at educational institutions Acquisition of ambulance vehicles

Territory (NPP)	Total amount, RUB million	Activities
Desnogorsk, Smolensk Region (Smolensk NPP)	444.7	<ul style="list-style-type: none"> Repairs of kindergartens, roads Design, construction, installation and equipping of a PCR laboratory Development of design and estimate documentation for the city's cemetery Acquisition of cleaning equipment
Kurchatov, Kursk Region (Kursk NPP)	430.7	<ul style="list-style-type: none"> Construction of an overpass Improvement and maintenance of a promenade Repairs of yards and community facilities Overhaul of cultural and educational institutions, improvement and maintenance of yards (People's Budget project)
Sosnovy Bor District, Leningrad Region (Leningrad NPP)	84.6	<ul style="list-style-type: none"> Construction of a kindergarten for 240 children with a swimming pool Renovation of Koporskoye Highway Construction of a veterinary clinic

In 2020, the Division allocated RUB 377.2 million for the construction, renovation and upgrading of social facilities in host NPP towns and cities.

A project aimed at upgrading a stadium and swimming pool at the Energetik sports centre in Kurchatov reached the final stage (investment exceeded RUB 45 million in 2020).

In 2020, the Division started to implement a project to renovate playgrounds in host NPP towns and cities. Activities worth RUB 21.34 million were conducted in Desnogorsk, Novovorenezh, and Polyarnye Zori.

In the reporting year, the Division allocated RUB 50 million for a pilot project to create the Quantorium children's science park in Udomlya urban district. Design and estimate documentation was approved; construction and renovation works were initiated.

Supported by the Division, the ATR AES Fund held the 8th annual social project competition for non-profit organisations in host NPP towns and cities in 2020. Eighty-five projects totalling RUB 70 million were implemented.

In 2020, the 100 Urban Leaders Initiative was implemented jointly with the presidential Agency for Strategic Initiatives to Promote New Projects. The key part of this initiative was an accelerator of urban projects. In 2020, projects developed by teams from Desnogorsk, Zarechny (Sverdlovsk Region), Pevek, Sosnovy Bor, Novovoronezh, and Kurchatov jointly with 100 Urban Leaders participants won the Russian Ministry of Construction's Towns and Historical Settlements of Russia contest.

Town	Project	Non-budgetary funding (Rosenergoatom)	Federal grant (Ministry of Construction)	Consolidated regional and municipal budget	Co-funding with ASI
		RUB million			
Balakovo	Energetik park	–	–	–	2.5
Volgodonsk	Molodezhny park	12	–	–	2.5
Desnogorsk	AtomPark	11.9	70	20	1.6
Zarechny	Takhovsky boulevard	11.9	70	59	1.5
Kurchatov	Teply Bereg 2.0	2	70	10	0.5
Novovoronezh	Novopark	26.5	70	14	1
Polyarnye Zori	Severnoye Siyanie 2.0	4.5	–	–	–
Pevek	Promenade improvement	11.5	45	20	1
Sosnovy Bor	Sun for Everyone	12.9	90	29	1.6
Total:		93.2	415	152	12.2

On September 27, 2020, the Teply Bereg 1.0 (Warm Coast) area, the winner of the Russian Ministry of Construction's contest of 2019, was officially opened in Kurchatov.

In 2020, the ATR AES Fund and National Association of Territorial Public Self-Government, jointly with Rosenergoatom, held a contest of important social projects for territorial public self-government (TPSG) titled 'New Territory of Public Self-Government' in host NPP municipalities. Fifteen projects from nine territories won the contest with a total prize fund of RUB 33 million.

In 2020, the ATR AES Fund, jointly with the Division, held the Entrepreneurship Stars from Host NPP Towns and Cities contest for enterprises incorporated and operating in host NPP municipalities. Each of the 12 winners received RUB 2 million for their initiatives.

In order to improve municipal infrastructure management, Rosenergoatom supports the implementation of the ROSATOM's Smart Cities platform in host NPP municipalities. This platform is the information basis of digital urban services. It is aimed at implementing the state digital economy policy and covers all areas of recommended smart city components listed in the methodological guidelines for the preparation of the Russian Ministry of Construction's Smart Cities regional project. In 2020, six pilot modules were launched in host NPP towns and cities: Desnogorsk, Novovoronezh, Kurchatov, Udomlya, Polyarnye Zori, Balakovo, and Zarechny. The Division allocated RUB 12.5 million for the first stage of the implementation of the Smart City of Volgodonsk platform.

In 2020, supported by the Division, the Best Municipality annual contest was held by the ATR AES Fund. The winners will receive grants for important social projects in 2021: Zarechny (1st place) – RUB 50 million; Desnogorsk (2nd place) – RUB 40 million; Kurchatov (3rd place) – RUB 30 million.

In 2020, the Division supported the following projects implemented by the ATR AES Fund in host NPP regions: IV International Children Photography Contest titled 'Hugged by Nature', international children contests 'Atomny Pegasik,' 'Atom-cutur,' 'MultiKLIPatsiya,' and the Blogger Today youth contest. More than 3,500 children aged 10-17 were involved in the projects.

In 2020, the Division's PR projects took ten award-winning places in five federal competitions.

In the reporting year, the Division allocated RUB 32 million to implement the ROSATOM's School project and support atom classes in host NPP towns and cities.

In 2020, the Division supported a scientific contest titled 'Clean Energy. Nuclear Context' and held by the ATR AES for schoolchildren, students, experts and employees of research institutions and organisations in host NPP regions. Seventeen winners received research grants (from RUB 30,000 to RUB 100,000).

In 2020, works were completed to recover bearing and enclosing structures of stadium stands in Kurchatov, Kursk Region, with the total investment exceeding RUB 40 million.

In order to implement a joint co-financed project with the Government of Rostov Region to build a Martial Arts Centre in Volgodonsk, Rostov Region, Rosenergoatom allocated RUB 99.5 million.

As part of celebrations of the 80th anniversary of E. Ignatenko's birth, Rosenergoatom allocated RUB 70 million for the renovation of an assembly hall of School No. 54 in the village of Novy Egorlyk, Rostov Region in 2020.

In 2020, following meetings of ROSATOM's executives with residents of host NPP towns and cities, Rosenergoatom took part in the implementation of social and infrastructure support projects worth more than RUB 500 million.

For details on support for local communities during the pandemic, see the chapter Response to the Pandemic.



8.2 Volunteer projects and charity initiatives

The Division supports an important corporate tradition as part of the social policy, annually donating to charities. The relations between Rosenergoatom and donees are based on the co-financing model. Apart from Rosenergoatom's partnerships with other enterprises, employees of NPPs and the Central Administration are also involved in charity projects.

Project	Outcome
Beautification of a former military burial ground and a clean-up day in Obninsk (September 26-27)	Fifty employees of Rosenergoatom and students of MEFPI took part in the event. Young people and volunteers were involved in the beautification of a former military burial ground in the Old City where the Cranes installation, acquired thanks to assistance from Rosenergoatom, was placed. A memorial plate was placed on the façade of the house where A. Leypunsky lived.
Unveiling of a monument in Obninsk (October 30)	Rosenergoatom helped to install a monument on the site of a former Great Patriotic War burial. Volunteers will maintain the monument, with annual clean-up days to be organised.
STATION intensive course for volunteers (June 23 – July 4)	One hundred participants joined volunteer teams and obtained certificates.
Involvement in Volunteer School (September 9 – December 16)	A four-month intensive course (more than 100 participants from the Division) consisted of nine online lectures followed by practical assignments. The programme included a discussion of trends in volunteerism, charity, environmentalism, healthy living and mentoring.
Thank You to Doctors campaign (support for doctors) (November 10–12)	Rosenergoatom's volunteers thanked healthcare professionals who work at facilities with COVID-19 care units for their efforts and aid to everyone in need. Volunteers delivered groceries and bought a coffee machine for employees of FMBA hospitals No. 6, No. 83 and No. 85 and FMBA Burnasyan Federal Medical Biophysical Centre.



8.3 Communication with external stakeholders

When planning operations which can have a significant environmental and social impact, the Division initiates public consultations.

More than 100 events involving the general public, government agencies and the media are held in order to provide explanations concerning the planned operations and their safety for people and the environment.

In 2020, public discussions were held remotely in Polyarnye Zori, Murmansk Region (285 participants) to talk about the environmental impact assessment and supporting materials for licences for the operation of the Liquid Radioactive Waste Recycling Facility with a Solidified Radioactive Waste Storage at Kola NPP.

The Division's approach to media relations is based on a policy of maximum transparency and openness. Information on NPP operation and radiation levels in the towns and cities where NPPs are located is available on the official website of Rosenergoatom (www.rosenergoatom.ru), where press releases and announcements are posted in a timely manner. Furthermore, the findings of radiation monitoring at Russian NPPs are published at www.russianatom.ru in real time. In 2020, 46 media tours of Russian nuclear power plants were conducted for journalists and bloggers (more than 570 participants). More than 1,700 press releases were published on Rosenergoatom's website.

In 2020, the total number of Rosenergoatom followers on social media, excluding the pages of branches (operating NPPs), exceeded 50,000 people (+16% compared to 43,000 people in 2019). The Energetic People mobile app was launched in 2020 for Rosenergoatom's employees (approximately 2,000 subscribers).

**SAFETY
OF OPERATIONS**





Safety of nuclear technologies and nuclear fuel cycle products

GRI 103-1
GRI 103-2
GRI 102-11

Policy and fundamental principles underlying safe NPP operation

Safety is the top priority for Rosenergoatom as the Division's operator. The Division carries out its operations only if safety is guaranteed; this is its highest business priority. In the course of its operations, the Division is committed to fulfilling its obligations under the Convention on Nuclear Safety and complies with the recommendations given in the IAEA safety regulations and guidelines, as well as the provisions and principles set out in the documents of the International Nuclear Safety Advisory Group (INSAG), such as Basic Safety Principles for Nuclear Power Plants and Safety Culture.

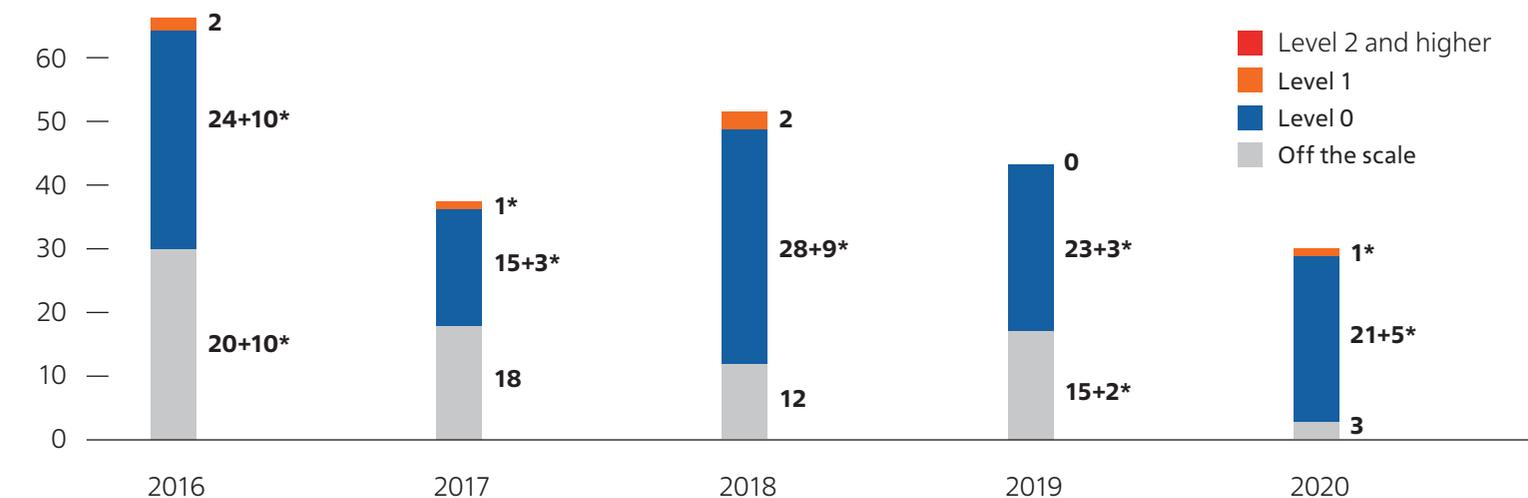
Rosenergoatom ensured sustainable and safe operation of Russian NPPs in 2020. Over the past 22 years, no incidents rated above Level 1 (Anomaly) on the International Nuclear and Radiological Event Scale (INES) were recorded at Russian NPPs.

Deviations		Unscheduled automatic shutdowns		Accidents		Fires/instances of ignition	
2020	2019	2020	2019	2020/2019		2020/2019	
23+6	38+5	7+1	7+3	1	1	0	0

In 2020, there was an incident rated at Level 1 on the INES scale at power unit No. 2 of Leningrad NPP-2 at the low-power testing and pre-commissioning stage. There were no fires or instances of ignition at operating NPPs. There was an accident at Kola NPP in 2020 and an accident at Beloyarsk NPP in 2019. In 2020, no emergencies or incidents were recorded at Rosenergoatom's hazardous production units.

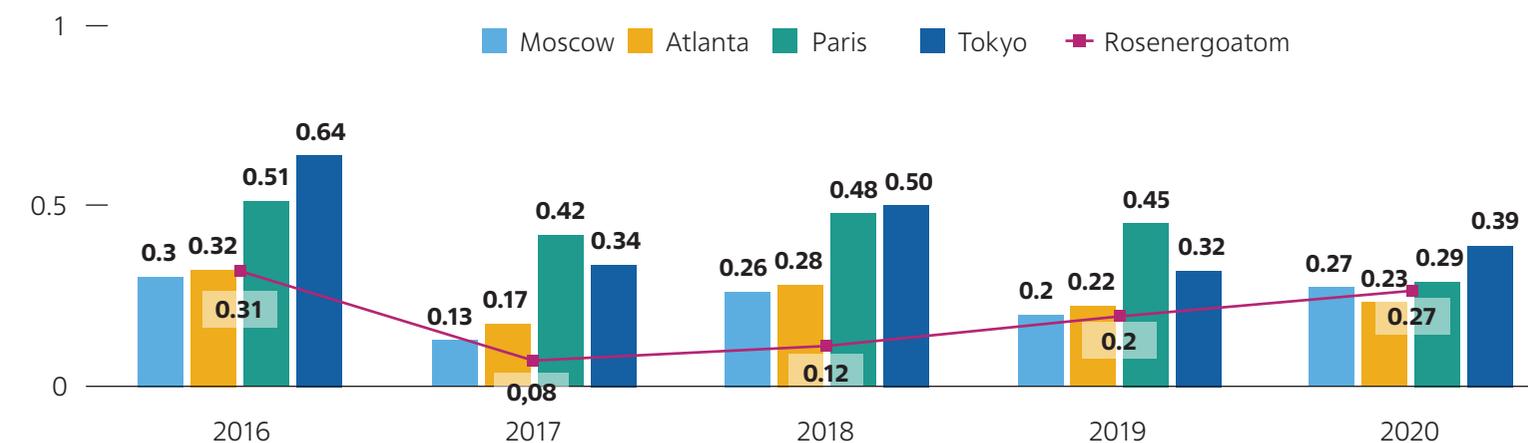
The average number of reactor shutdowns per 7,000 hours of critical operation at Russian NPPs (benchmarked against the average data of WANO regional centres in Moscow, Atlanta, Paris and Tokyo) between 2016 and 2020 remains lower than at NPPs in other regions of the world.

Changes in the number of INES incidents at NPPs



*Events related to low-power testing of power units during their commissioning

Changes in the number of unplanned automatic scrams between 2016 and 2020 (annual average unplanned automatic scrams)



Based on the findings of analysis of NPP safety performance and trends, *the safety performance of operating NPPs was assessed as acceptable; however, it was considered necessary and advisable to implement corrective measures in a number of functional areas both at individual NPPs and at the corporate level.*

GRI 103-2

NPP safety monitoring

The Division implements a wide range of internal and external measures to verify compliance with both Russian and international requirements for NPP safety. NPP safety monitoring includes comprehensive and targeted audits performed by Rosenergoatom's units; they are aimed primarily at:

- Assessing the current safety status of NPPs and detecting any possible common problems and negative tendencies during NPP operation;
- Developing and implementing corporate-level measures and recommendations for improving NPP safety;
- Efficient monitoring of timely implementation of measures to improve NPP safety and resilience;
- Identifying and analysing best practices and efficient work methods implemented at Rosenergoatom's NPPs in order to improve safety performance;
- Assessing NPP preparedness for emergencies caused by seasonal adverse weather conditions.

GRI 103-3

NPPs are audited in accordance with the annual work plan, the inspection schedule and instructions from the management of Rosenergoatom and ROSATOM. If NPP safety performance deteriorates, or if there is an increase in the equipment failure rate or in the number of deviations in NPP operation, targeted audits are conducted to examine the root causes of deterioration in safety performance and implement the necessary corrective measures to eliminate them. Based on the audit findings, improvement measures were developed, and their efficiency is monitored.

The findings of safety audits at operating NPPs and monitoring of implementation of corrective measures lead to the conclusion that the safety performance of Rosenergoatom's NPPs meets the current requirements of Russian regulations and standards governing the use of nuclear power, as well as international requirements and standards.

Improvement of NPP safety and resilience to extreme external impacts

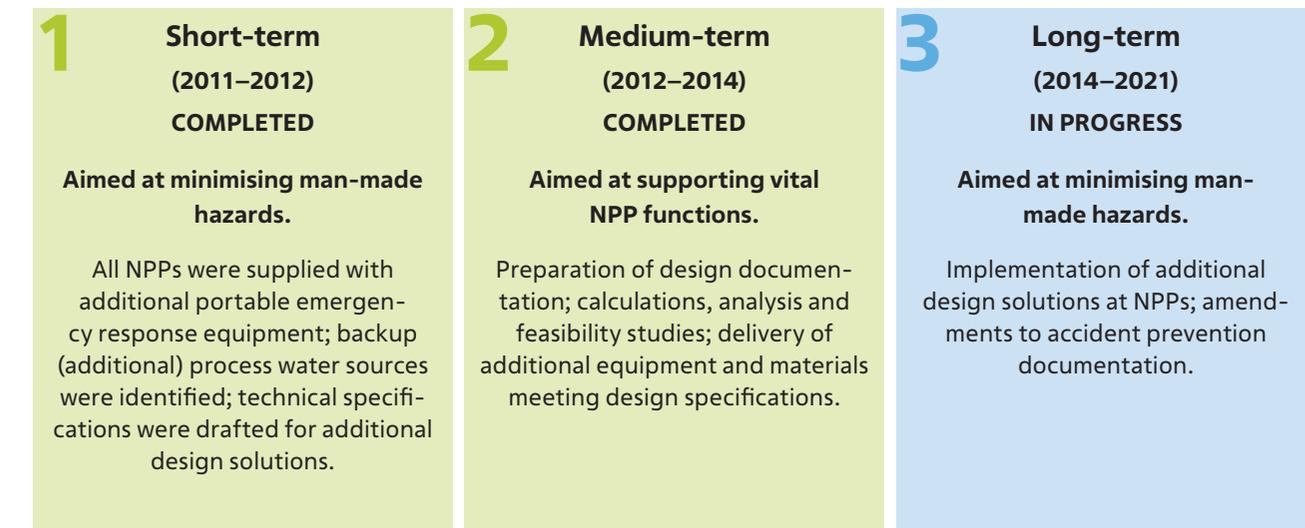
GRI 103-1

GRI 103-2

GRI 102-11

GRI 103-3

In response to events in Japan which led to the Fukushima Daiichi nuclear disaster, Rosenergoatom analysed scenarios of how an accident may occur at Russian NPPs under extreme external impacts and identified measures to mitigate the impact on local communities and the environment. Measures to improve the resilience of NPPs to the impact of natural and man-made disasters are implemented in three stages:



All measures scheduled for 2020 were implemented.

Safety culture

GRI 403-3

Safety culture is a set of characteristic features of organisational activities and individual behaviours which determine that matters related to NPP safety are given priority in accordance with their significance (NP-001-15). Safety culture is a fundamental principle of NPP safety management. The Division's safety culture policy defines the objective of safety culture initiatives: to shape and develop such features of the organisation's activities and employees' behaviour which help to prevent safety deterioration and enable continuous improvement of NPP safety performance.

Rosenergoatom has established a Safety Culture Council chaired by the Director General and Councils chaired by NPP directors at each NPP. During their meetings, the Councils review the performance of NPP managers and the Central Administration in terms of safety culture development, assessment and continuous monitoring of safety performance as part of NPP audits. The Division has introduced the practice of holding a safety culture round-up day, which includes expert assessment of safety culture and measures implemented at NPPs, identifying achievements and problems and sharing the experience of plants acknowledged as the top performers following the expert assessment.

Balakovo and Kursk NPPs were acknowledged as the top performers in terms of safety culture development during the safety culture round-up day in 2020.

Fire safety

Fire safety measures aimed at eliminating the shortcomings identified by national fire safety authorities were implemented in full in 2020. All measures sche-

duled for 2020 under the 2018–2022 Action Plan for Fire Safety Improvement and Modernisation of Fire Protection Systems at NPPs were implemented. As a result of preventative measures implemented at Russian NPPs currently in operation and under construction, there were no fires or instances of ignition in 2020.

No accidents at hazardous production facilities were recorded in 2020.

Industrial safety

The Division attaches special importance to ensuring industrial safety of hazardous production facilities (HPFs) at NPPs. As at December 31, 2020, the divisional (industrial) section of the State Register of HPFs included 69 HPFs insured in accordance with the Federal Law on Compulsory Liability Insurance of an Owner of a Hazardous Facility Against Damage Resulting from an Accident at a Hazardous Facility.

In accordance with regulatory requirements, industrial safety declarations were developed for hazard class 1 and 2 HPFs. The Division's employees involved in HPF operation undergo training and certification in industrial safety carried out by the relevant committees of Rostekhnadzor, Rosenergoatom's Central Administration and NPPs.

The Division has in place an industrial safety management system to prevent industrial accidents and incidents, plan and implement prioritised and long-term measures to improve industrial safety performance of HPFs, and ensure that the Division's personnel are prepared for emergency and incident containment and response.



Environmental safety

The Division's environmental safety policy is aimed at enabling sustainable, environmentally-friendly development of the nuclear power industry and maintain NPP safety performance at a level where its impact on the environment, personnel and local communities ensures long-term and short-term conservation of natural ecosystems, their integrity and life-supporting functions. In 2020, NPPs were operated in strict compliance with environmental safety standards and regulations. NPPs operated in a reliable and safe way, making a minimal environmental impact.

The Division's industrial environmental monitoring system is developed and improved year by year, which is confirmed by the year-on-year reduction of the environmental footprint of NPPs.

Pollutant emissions into the atmosphere

The contribution of NPPs to air pollution remains negligibly small compared to other power generation facilities using fossil fuels. The level of pollutant emissions into the atmosphere does not exceed permitted limits and is significantly below the limits established by environmental agencies. The major share of pollutant emissions is produced by auxiliary boiler houses, the boiler houses of health centres and backup diesel generator units, which are started up periodically for routine testing.

Total pollutant emissions into the atmosphere from all NPPs did not exceed the prescribed limits. 935 tonnes of pollutants were released into the atmosphere in 2020, which amounted to 13.9% of the limit established in the reporting year (6,747 tonnes).

For many years, NPPs account for less than 0.01% of the total volume of pollutant emissions into the atmosphere from Russian enterprises.

Despite the progress that has been made, NPPs continue to regularly implement measures to reduce the man-made impact on the atmosphere: the Division is improving technological solutions to increase fuel combustion efficiency at operating plants; high-quality fuel oil (with a lower sulphur content) is used; painting techniques are improved; efficient gas scrubbers and dust collectors are commissioned.

Discharge of pollutants into water bodies

NPPs are large water consumers; accordingly, matters related to water consumption and water discharge are central to environmental management. Almost all water withdrawn from water bodies (5,465.0 million m³, or more than 99%) was used for cooling the process medium in turbine condensers and heat exchangers and was returned to water bodies without additional pollution. Water consumption is kept within the limits established by environmental agencies.

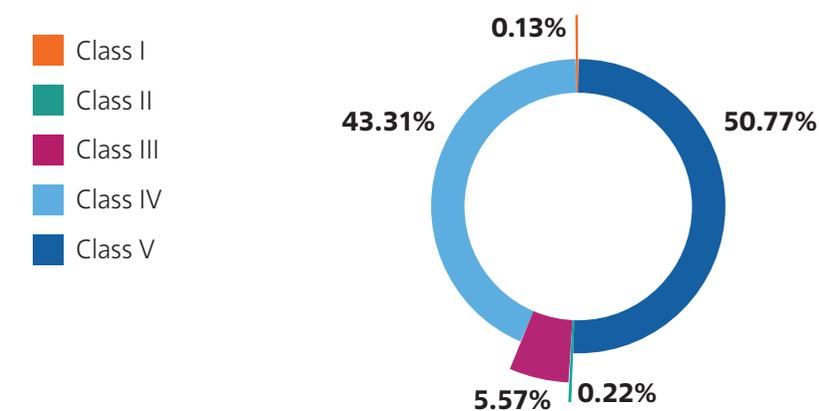
In 2020, water discharge from NPPs was consistent with the water balance and electricity output and totalled 5,024.7 million m³, or 91.6% of water consumption (5,487.7 million m³), which indicates efficient water management. The share of contaminated wastewater totalled 2.1 million m³ (0.04%). The volume of contaminated wastewater discharges is gradually decreasing as wastewater treatment systems at NPPs are systematically upgraded and renovated.

In 2020, industrial and consumer waste (hereinafter referred to as waste) at NPPs was managed in accordance with environmental legislation. Environmental aspects (industrial processes) leading to waste generation include maintenance and repairs of buildings, structures, equipment, tools, machines, other installations and mechanisms, water preparation for production and process needs, production of steam and hot water for heating and other needs of NPPs, services provided to NPP personnel, wastewater treatment, metal and wood treatment, removal of petroleum products from tanks, oil purification and regeneration, replacement of light bulbs, etc.

Industrial and consumer waste, by class, tonnes

Waste class	2020
I	51
II	84
III	2,127
IV	16,558
V	19,407
TOTAL	38,227

Waste, by hazard class



The volume of waste at the beginning and at the end of 2020 totalled 28,252 tonnes and 28,247 tonnes respectively.

In 2020, NPPs transferred waste to other organisations for:

recycling	17,311 tonnes
disposal	12,646 tonnes
decontamination	2,605 tonnes
processing	186 tonnes

4,293 tonnes of municipal solid waste were handed over to the regional operator. All industrial and consumer waste is stored at properly equipped sites and in special storage facilities, and its disposal is monitored by environmental departments of NPPs.

Rosenergoatom is committed to adopting and using the best practices in the sphere of environmental management in accordance with the international ISO 14001:2015 standard and the local GOST R ISO 14001-2016 standard. In 2020, certified environmental management systems (EMSs) of Rosenergoatom and its NPPs successfully underwent inspection (recertification audits); the findings of the audits confirmed efficient operation and continuous improvement of EMSs and their full compliance with environmental standards.

As part of its environmental safety initiatives, the Division implemented measures scheduled for 2020 under the Comprehensive Environmental Policy Implementation Plan of ROSATOM and its Organisations for the Period from 2019 through 2021 and the industry-wide Plan of Prioritised Measures for Reducing the Negative Environmental Impact of ROSATOM's Organisations until 2020 (within the scope related to the Division).

Significant environmental safety measures in 2020

Balakovo NPP	Stocking an NPP cooling pond with 12,400 tonnes of young fish. Changing the anti-acid coating of a leakage pan and foundations of external chemicals storage tanks (120 m ²) at the chemistry department using new acid-resistant tiles; commissioning a system for automated monitoring of maximum acceptable concentrations of hazardous chemicals at warehouses. Commissioning an industrial waste sorting hub (to minimise non-radioactive waste). Maintenance of Pirs-M and Zontik fish protection systems.
Bilibino NPP	Reduction of Class 1 waste to 0.04 tonnes per year, Class 3 – to 3 tonnes per year, Class 4 – to 0.3 tonnes per year, Class 5 – to 4 tonnes per year (implementation of the waste reduction programme).
Beloyarsk NPP	Release of juvenile bighead carp into the Beloyarsk Reservoir (269,000 pcs).
Kalinin NPP	Selective collection of plastic, paper and glass waste; mining allows significant reduction of municipal solid waste. RUB 47.329 million were allocated for RAW removal from the NPP site. Stocking Pesbo and Udomlya lakes with this year's black carp totalling 1,082 kg.
Kola NPP	Overhaul of gas blowers No. 3 and 4 and a sand card of sewage treatment units for better biological wastewater treatment. Replacing mercury-containing bulbs with LED bulbs. Upgrading equipment for an outdoor transformer unit, changing energised regulators.
Kursk NPP	Stocking a cooling pond with bighead carp totalling 3,490 kg. Cleaning the shoreline area of the cooling pond (stage I and II). Inspecting hydraulic substructures of onshore pumping stations 1-3, a pumping station, spray colling pond. Replacing VNV-750 kW breakers with sulphur hexafluoride circuit breakers not requiring pressure cooling at power unit No. 3 (10 pcs).
Leningrad NPP	A favourable opinion was issued following a state expert review as part of the upgrading of treatment facilities at the Kopanskoye health resort. Installation and pre-commissioning works are complete, packaged open drain pumps were commissioned.

Novovoronezh NPP	Stocking a cooling pond with 8 tonnes of young herbivorous fish. On October 1, artificial biological household sewage treatment units were put into operation. Waste and dead plants were removed from a feed pump station, a protective spur, the shoreline area of the cooling pond, and the NPP's open outlet channel.
Rostov NPP	Stocking a cooling pond and the Tsimlyansk Reservoir dam area with algae to mitigate biological obstacles, i.e. to prevent water blooming. Inspecting hydraulic substructures: a forebay and intake chambers, outlet channel, and heat-sink dam. Performance assessment of a fish protection system on a make-up water pump station at power units No. 3 and 4.
Smolensk NPP	Upgrading transformer emergency oil-discharge tanks. Changing oil tanks at an outdoor oil warehouse and oil coolers of a unit transformer. Upgrading cells of a landfill for industrial non-radioactive and construction waste from the NPP. Replacing lighting devices at production premises with more durable devices.

Measures for better energy efficiency

Performance against the target set for energy savings through reducing energy consumption in 2020, under comparable conditions, against 2015 as the base year totalled 4.86% (against the target level of 4.2%). The target was met, mainly thanks to an increase in electricity generation. The indicator reflects energy savings that were achieved, under comparable conditions, by reducing energy consumption of NPPs for in-house needs, not related to safe production and a reliable electricity supply, as well as energy consumption for business needs.

In 2020, Rosenergoatom's Overall Energy Saving and Efficiency Programme for 2017-2021 was implemented as planned (RUB 778.2 million).

As part of the programme, in the reporting year, NPPs took measures to reduce seasonal losses and scheduled and unscheduled repair time, improve performance of power units, and reduce energy consumption, including through upgrading lighting systems and using LED lights, an integrated setup of heating systems and heat consuming power units of NPP buildings and structures, upgrading ventilation equipment, replacing thermal insulation with highly efficient coating, and winterising NPP buildings and structures. These measures are aimed at enhancing the safety and reliability of operation of main equipment, reducing failures and the duration of related repairs, and improving energy efficiency of power units.

Following the first inspection audit, it was confirmed that Rosenergoatom's energy management system complied with the ISO 50001:2011 international standard and GOST R ISO 50001-2012 Russian standard, as well as a new version of ISO 50001:2018. The Company's certificates will be valid until December 2022.

**SPECIFIC RISKS
AND MANAGEMENT
APPROACHES**



In 2020, Rosenergoatom experienced no significant adverse effects of risk materialisation. Given the nature of its business, Rosenergoatom pays special attention to nuclear, radiation, technical and fire safety risks and risks related to NPP security; accordingly, any decisions related to the operation of the Risk Management System are determined primarily by the need to comply with all types of current safety standards and ensure continuous operation and improvement of the safety management system, which forms part of the Company's overall management system. In 2020, as throughout its entire history, Rosenergoatom prevented any significant adverse effects of risk materialisation.

GRI 102-15

Key risks of the Division

Risks (description)	Management practice
Electricity market and capacity risk (negative changes in prices for electricity and capacity)	<p>Management approaches: The risk depends only on external factors. The risk cannot be hedged using financial instruments due to the low liquidity of the market. In order to reduce the risk, Rosenergoatom's services determine the lead time for repairs of network and generation equipment jointly with PJSC FGC UES and JSC SO UES.</p> <p>Results: In 2020, as in previous periods, key contributing factors included electricity consumption in the first pricing zone, indexation of gas prices (with gas being the main type of fuel used by thermal power plants in the first pricing zone) and competition between power generation companies. Due to a significant drop in consumption caused by pandemic-related restrictions, the impact of the factors on electricity prices was considerably more in 2020 than in 2019. In 2020, the pricing zone 1 consumption decreased by 5% compared to the previous year.</p>
Risk of non-payment in the wholesale electricity and capacity market (non-payment from the North Caucasus's providers of last resort and other buyers)	<p>Management approaches: Developing and implementing measures, jointly with the largest WECM providers, to settle debts and improve payment discipline among providers of last resort in the North Caucasus; using a mechanism for selling accounts receivable related to electricity and capacity in WECM through open biddings; restructuring missed payments under the pre-action protocol; considering claims and serving writs of execution in relation to debtors' settlement accounts, as well as to Russia's Federal Bailiff Service Office; paying for WECM accounts receivable following bidding procedures in case of companies in bankruptcy.</p> <p>Results: The measures aimed to settle debts and improve payment discipline among providers of last resort in the North Caucasus led to an increase in settlements by up to 100% in the second half of 2020. In the reporting year, accounts receivable grew by RUB 4.7 billion, which is more than in 2019 by RUB 1.3 billion. This was caused by poor payment discipline among providers of last resort in the North Caucasus in the first half of 2020, as well as by an increase in the cost of the FTNPP's products in Q4 2020 as compared to indicators set by Chukotka Autonomous District's Regional Energy Company.</p>

Risks (description)	Management practice
Risk of a decrease in power generation (due to equipment shutdowns or unavailability)	<p>Management approaches: The key driver of the year-on-year increase in electricity generation at NPPs in 2020 was the full-year operation of power unit No. 2 of Novovoronezh NPP-2; commissioning of the FTNPP, optimisation of NPP repairs, and synchronisation of the new power unit No. 2 at Leningrad NPP-2 with the grid. Key factors behind electricity generation shortfalls include: 1) irregularities and equipment failures resulting in unscheduled load shedding, shutdowns and unscheduled repairs (all irregularities and failures are investigated; corrective and preventative measures are developed); 2) restrictions of Russia's UES System Operator (daily regulation was introduced at some NPPs to reduce the impact of the SO's restrictions on the output of NPPs under quarantine).</p> <p>Results: Risk management measures included repairs optimisation, implementation of the Division's consolidated plan of compensatory measures aimed at achieving target KPIs in 2020, special arrangements at power units of NPPs operating under capacity contracts, a programme for equipment life extension and modernisation.</p>



Information on the Reporting Process

GRI 102-43

GRI 102-54

The preparation of the Power Engineering Division’s reporting materials for 2020 involved a review of the Division’s performance in 2020 and a questionnaire survey among stakeholders to amend the list of material topics to be disclosed in the reporting materials. As in the past, safe NPP operation remains the prioritised topic for the Division. The reporting materials have been prepared in accordance with the Core option of the GRI Standards.

GRI 102-45

GRI 102-46

GRI 102-50

GRI 102-52

The reporting materials provide information about the performance of the Power Engineering Division (JSC Rosenergoatom and its affiliates and subsidiaries), as well as JSC Rosenergoatom (where stated) for the period from January 1, 2020 through December 31, 2020 and information on long-term development areas and measures providing a framework for long-term sustainable development. Draft reporting materials were approved by stakeholders during remote discussions (including discussions of material topics, circulating the materials, collecting, analysing and incorporating comments).

Additional Information

GRI 102-55

GRI Index

Indicator	Chapter/Comments
GRI 101: Foundation (2016)	
GRI 102: General Disclosures (2016)	
Company profile	
102-1 Name of the organisation	Chapter 1. Overview of the Power Engineering Division
102-2 Activities, brands, products and services	Chapter 1. Overview of the Power Engineering Division Chapter 6. New Products and Businesses
102-4 Location of operations	Chapter 1. Overview of the Power Engineering Division Chapter 6. New Products and Businesses
102-5 Ownership and legal form	Chapter 1. Overview of the Power Engineering Division
102-6 Markets served	Chapter 1. Overview of the Power Engineering Division
102-7 Scale of the organisation	Chapter 1. Overview of the Power Engineering Division Chapter 2. Key Results and Events of the Reporting Year Chapter 7. Developing the Human Capital
102-8 Information on employees and other workers	Chapter 7. Developing the Human Capital
102-9 Supply chain	Chapter 1. Overview of the Power Engineering Division
102-10 Significant changes to the organisation and its supply chain	Chapter 6. New Products and Businesses
102-11 Precautionary Principle or approach	Chapter 7. Developing the Human Capital Chapter 9. Safety of Operations
Strategy	
102-14 Statement from the most senior decision-maker of the organisation	Message from the Head of the Division
102-15 Key impacts, risks and opportunities	Chapter 10. Specific Risks and Management Approaches

Indicator	Chapter/Comments
Ethics and integrity	
102-16 Values, principles, standards, and norms of behaviour	Chapter 3. Sustainable Development
Governance	
102-18 Governance structure	Chapter 1. Overview of the Power Engineering Division
Stakeholder engagement	
102-43 Approach to stakeholder engagement	Chapter 8. Developing the Regions of Operation Information on the Reporting Process
Report profile	
102-45 Entities included in the consolidated financial statements	Information on the Reporting Process
102-46 Defining report content and topic Boundaries	Information on the Reporting Process
102-50 Reporting period	Information on the Reporting Process
102-52 Reporting cycle	Information on the Reporting Process
102-54 Claims of reporting in accordance with the GRI Standards	Information on the Reporting Process
102-55 GRI Content Index	GRI Index
Material topics	
GRI 403: Occupational Health and Safety (2018)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
403-1 Occupational health and safety management system	Chapter 7. Developing the Human Capital
403-3 Occupational health services that contribute to the identification and elimination of hazards and minimisation of risks	Chapter 9. Safety of Operations
403-5 Worker training on occupational health and safety	Chapter 7. Developing the Human Capital
403-6 Promotion of worker health	Chapter 7. Developing the Human Capital
403-9 Work-related injuries	Chapter 7. Developing the Human Capital
403-10 Work-related ill health	Chapter 7. Developing the Human Capital The Division has employees involved in professional activities entailing a risk of occupational diseases. These employees are categorised based on working conditions.

Indicator	Chapter/Comments
GRI 416: Customer Health and Safety (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Chapter 7. Developing the Human Capital There were no incidents of non-compliance with regulations or voluntary codes in the reporting period.
Safe NPP operation	
<i>GRI 103: Management Approach (2016)</i>	Chapter 1. Overview of the Power Engineering Division Chapter 9. Safety of Operations
Reliable electricity supply to consumers	
<i>GRI 103: Management Approach (2016)</i>	Chapter 2. Key Results and Events of the Reporting Year
New products and services, including on the market outside the scope of the industry	
<i>GRI 103: Management Approach (2016)</i>	Chapter 6. New Products and Businesses
The Company's impact on regional social and economic development	
<i>GRI 103: Management Approach (2016)</i>	Chapter 8. Developing the Regions of Operation
State nuclear power policy	
<i>GRI 103: Management Approach (2016)</i>	Chapter 1. Overview of the Power Engineering Division

Glossary and Abbreviations

CHPP	Combined heat and power plant
CO	Controlled organisation
CSS	Control and safety system
FNR	Fast-neutron reactor
IP	Intellectual property
JV	Joint venture
KPI	Key performance indicator
LNG	Liquefied natural gas
NPP	Nuclear power plant
NPU	Nuclear power unit
NPU	Nuclear propulsion unit
NSGP	Nuclear steam generating plant
OKBM	Experimental Design Bureau of Mechanical Engineering
QMS	Quality Management System
RPS	ROSATOM Production System
RU	Reactor unit
SMBs	Small and medium-sized businesses
SNPP	Small-scale nuclear power unit
STC	Scientific and Technical Council
UIS Quality	Unified Industry-Wide Quality Management System of ROSATOM
VVER	Water-cooled water-moderated power reactor

Terms used in the report

Consolidated revenue	total revenue of organisations included in the consolidated financial statements in accordance with the methodology approved in the company, less intra-group revenue and other adjustments
LTIFR	Lost Time Injury Frequency Rate
Material topic	a topic that reflects a significant area of the Company's business or impact on stakeholders
Significant regions of operation	regions where production facilities and key personnel of the enterprise are located
Stakeholder	an individual, a group of persons or an organisation that is affected by the company and / or can affect it
Top management (senior management)	employees of the Company who make decisions that have a significant impact on the operations of the enterprise as a whole (from the level of directors in functional areas up to the Chief Executive Officer)

Contact Details

Fax

+7 (495) 926-89-30

Phone number

+7 (495) 647-41-89

Email

info@rosenergoatom.ru

Corporate website

www.rosenergoatom.ru

Public annual reports

<https://report.rosatom.ru/rea>

Official group on VKontakte

<https://vk.com/rearu>

Official community page on Facebook

<https://www.facebook.com/rosenergoatom.ru>

Official account on Instagram

www.instagram.com/rosenergoatom_ru/

Official Telegram channel

t.me/rosenergoatom

Rosenergoatom, Joint-Stock Company (JSC Rosenergoatom)

Postal address: 25 Ferganskaya Street, Moscow, 109507

Registered address: 25 Ferganskaya Street, Moscow, 109507