ROSATOM

SUSTAINABILITY REPORT

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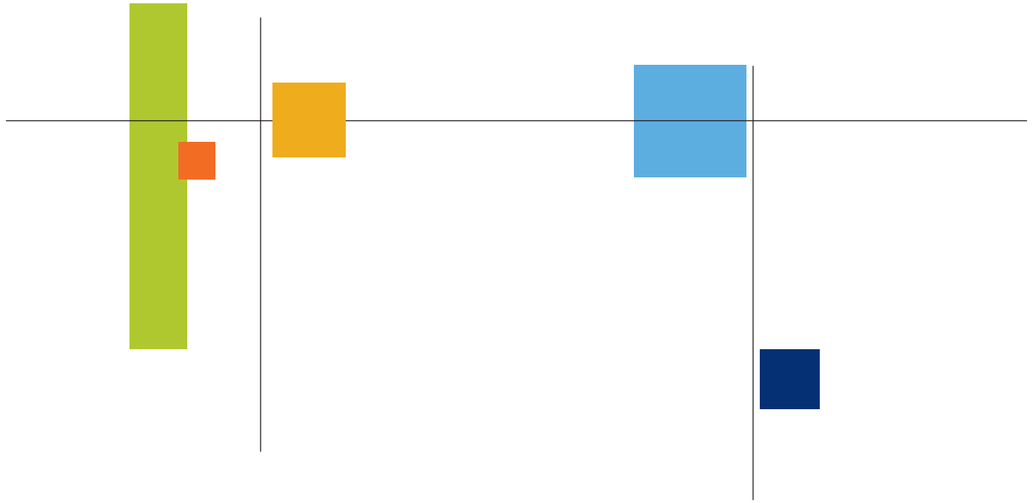


Statement of the Director General

Alexey Likhachev
Director General of ROSATOM

Dear colleagues,

Historically, the nuclear industry has been guided by sustainable development principles: the highest social standards, environmental responsibility and safety are integral to ROSATOM's business paradigm. In 2020, ROSATOM updated its Business Strategy until 2030. Contribution to the achievement of the 17 UN Sustainable Development Goals is explicitly stated in the Strategy as one of ROSATOM's top priorities.

At the same time, we are aware that sustainable development requires us to continuously fine-tune and improve our business processes, reflect the key aspects in the regulatory framework and make sure that our projects and products are aligned with sustainable development principles. Monitoring of compliance of our operations with sustainable development requirements is a major industry-wide effort involving both ROSATOM itself and its organisations.

In 2020, ROSATOM joined the UN Global Compact Network, which unites sustainable businesses across the globe. As part of this step, ROSATOM confirmed its commitment to the 10 principles of the UN Global Compact in the sphere of human rights, employment, the environment and anti-corruption; the Corporation also expressed its intention to integrate the principles of the UN Global Compact into its strategy, culture and operations. Membership of this global initiative is yet another sign that our efforts on the Russian and international markets are appreciated by the global sustainable community.

We seek to make further progress in the sphere of sustainable development, improve our production processes, develop new products and contribute to climate action by developing low-carbon solutions for the electricity industry; we also implement a set of measures to make our product line more sustainable, as ROSATOM's mission is to leverage high technology for the benefit of humanity.

20.3%

Share of nuclear power as the largest source of low-carbon electricity in Russia's electricity generation mix in 2020

>210

million tonnes of CO_2 equivalent of greenhouse gas emissions are prevented annually by all Russian-design NPPs currently in operation worldwide

>50

countries of operation globally

33%

Share of women among employees in the industry in 2020

84%

Employee engagement in the industry in 2020

144,006

employees in the industry underwent training in 2020

10%

Reduction in the LTIFR across the Corporation in 2020

Vision Zero[1]

Principle governing ROSATOM's operations since 2019

9.84%

Reduction in energy consumption in 2020

[1] Vision Zero is based on the belief that all accidents, diseases and harm at work are preventable and on the commitment of Vision Zero Companies and Partners to promote the three core values of this campaign: Safety, Health and Well-Being (http://visionzero.global/ru).

In the course of its operations, State Atomic Energy Corporation Rosatom (hereinafter referred to as ROSATOM or the Corporation) is committed to global sustainable development priorities and adheres to the 10 principles of the UN Global Compact. ROSATOM contributes to the achievement of the UN Sustainable Development Goals (SDGs) through its product line, its financial and economic performance and its efforts to ensure the sustainability of internal environmental, social and governance processes.

In July 2020, the Unified Industry Policy on Sustainable Development was approved in the industry. The Policy sets out the position of ROSATOM and its organisations on sustainable development matters, including the goals, objectives and key principles of their efforts in the sphere of health, safety and the environment, in the social sphere and in the sphere of corporate governance. The Policy is available on the website at https://www.rosatom.ru in the Sustainability section.

In addition, in order to systematise sustainability initiatives across the industry, in 2020, ROSATOM developed and approved the Uniform Industry-Wide Methodological Guidelines on the Management of Sustainability Initiatives.

Overall, ROSATOM's operations contribute to the achievement of all 17 of the UN SDGs. However, given the scale of impact and the nature of the Corporation's business, the following Goals are of key importance:

ROSATOM's progress in the sphere of sustainable development in accordance with the 10 principles of the UN Global Compact is presented in the following sections:

Environment	**Environment and Safety** Environmental policy Pollutant and greenhouse gas emissions Radiation safety Energy efficiency Water use and wastewater discharge Industrial and consumer waste management Biodiversity and land rehabilitation
Human Rights Labour	**People-Centric Approach** Labour relations Talent development Occupational health and safety Human rights Developing the regions of operation Corporate volunteering
Anti-Corruption	**Business Ethics** Public reporting Supply chain and procurement procedures Code of Ethics Anti-corruption policy Audit and internal control

Contribution to the Achievement of the UN SDGs

ROSATOM's product portfolio comprises more than 80 existing and future-oriented high-technology products and services. All of these products are aimed at improving the quality of people's lives and contribute to the achievement of the UN Sustainable Development Goals, each in their own way. When developing new businesses, ROSATOM focuses particularly on environmental impacts, value creation for end users and assessment of product solutions in terms of their alignment with the UN SDG priorities.

One of the strategic priorities of ROSATOM's business is to develop low-carbon energy solutions that contribute to climate action. In addition to conventional nuclear power, ROSATOM's portfolio also includes wind power. In addition, the Corporation is developing hydrogen-based solutions.

Energy solutions

- Nuclear power
- Wind power
- Hydrogen
- Energy storage systems

New businesses

- Nuclear medicine, isotopes
- Product processing centres
- Research reactors
- Waste management and environmental solutions
- Smart city
- Clean water
- Arctic shipping
- New materials

Examples of ROSATOM's products and their contribution to the achievement of the UN SDGs

Nuclear power

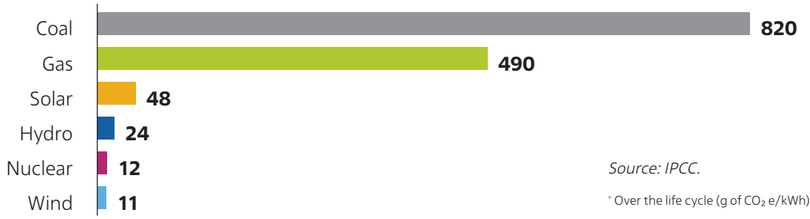
The climate agenda is a major priority for ROSATOM both because it is an important aspect of sustainable development and given the scale of the contribution of the nuclear power industry to implementing the Paris Agreement and reducing the carbon footprint in Russia and globally.

Russia and a number of other countries view nuclear power as a 'green' low-carbon source of electricity and a high-priority tool for achieving national targets for carbon neutrality.

Nuclear power is the largest source of low-carbon 'green' energy in Russia: in 2020, ROSATOM produced 215.7 billion kWh of electricity, or 20.3% of the total electricity output in the country, setting an all-time record in the history of the Russian nuclear power industry and breaking the record set in 1988 collectively by all NPPs in the USSR. In 2020, 35 power units of NPPs and the power unit of the floating thermal nuclear power plant equipped with two reactor units were in operation in Russia, with their installed capacity totalling 29.3 GW.

Nuclear power generation is a source of low-carbon energy that meets base load power demand. Nuclear power generation does not produce direct CO_2 emissions, which puts it on a par with renewable energy sources, such as wind power. The operation of NPPs in Russia helps to prevent emissions exceeding 100 million tonnes of CO_2 equivalent per year, while the operation of all Russian-design NPPs globally helps to prevent emissions exceeding 210 million tonnes of CO_2 equivalent per year.

Greenhouse gas emissions*



Source: IPCC.

* Over the life cycle (g of CO_2 e/kWh)

Estimated contribution of an NPP project to the achievement of the UN SDGs:

An NPP produces 2,400 MW of low-carbon energy for 60 years, which is sufficient to provide power supply to an average of 1.8 million households*. Nuclear power generation has one of the lowest LCOEs among conventional power plants, with NPPs producing electricity at a stable price that does not depend on the cost of fuel.

The operation of an NPP creates about 3,000 new jobs at the power plant itself and 10,000 jobs in adjacent industries*.

During the construction of an NPP, local industrial enterprises secure orders worth a total of USD 3 to 4 billion*.

In NPP construction and operation projects, special focus is given to the management of spent nuclear fuel (SNF), SNF processing products and operational radioactive waste, as well as to the decommissioning of facilities posing nuclear and radiation hazards. Enterprises in the nuclear industry are making concerted efforts to develop closed nuclear fuel cycle technologies and ensure safe storage of radioactive waste.

NPPs produce no direct CO_2 emissions. The nuclear power industry produces the second lowest amount of greenhouse gas emissions over the life cycle, outperformed only by wind power generation, with emissions totalling 12 grams and 11 grams of CO_2 equivalent per kilowatt-hour respectively, according to the IPCC.

The nuclear power industry offers solutions for different stakeholders: the government, local communities, industrial enterprises, etc. The sustainable development agenda is actively discussed on international platforms: at conferences held by the IAEA and the World Nuclear Association (WNA), the World Association of Nuclear Operators (WANO), the World Energy Council, etc.

**An NPP with two 1,200 MW power units.*

Safety

The nuclear industry is subject to the strictest regulation in terms of safety. The construction of a nuclear power plant is commenced only after many years of thorough planning, licensing, development of local regulations governing the nuclear industry, application of safety standards developed by the International Atomic Energy Agency (IAEA) and an in-depth environmental assessment.

Technological advancement

ROSATOM continuously improves its technological solutions. Russian-design reactors feature a combination of active and passive safety systems that prevent the risk of damage from a hurricane, a flood, an earthquake and other disasters. Russian-design generation 3+ NPPs meet enhanced safety standards.

Innovative solutions and the closed nuclear fuel cycle

To provide power supply in remote regions, ROSATOM is developing small nuclear power plants. Russia's first onshore small NPP equipped with RITM-200 reactors is expected to be put into operation by 2028 in the Sakha Republic (Yakutia). The power plant will help the region become self-sufficient in energy by providing stable and environmentally friendly electricity and heat supply, including for energy-intensive manufacturing enterprises; it will also help to reduce pollutant emissions into the atmosphere by replacing existing diesel generators.

In order to transition to closed-loop production, which is an important prerequisite for sustainable development, ROSATOM is developing closed nuclear fuel cycle technologies and solutions for safe radioactive waste storage. ROSATOM has developed and put into operation the first BN-800 fast neutron reactor, which uses MOX fuel; this solution makes it possible to reuse spent nuclear fuel instead of storing it.

Russia already has a floating thermal nuclear power plant (FTNPP) serving as a reference project: the Akademik Lomonosov NPP equipped with small KLT-40S reactors. In May 2020, the FTNPP, which is located in the town of Pevek (Chukotka Autonomous District), started commercial operation.

Wind power

ROSATOM adheres to sustainability principles and seeks to diversify its product solutions in the sphere of power generation. As part of these efforts, it has been developing the wind power business jointly with Lagerwey since 2017.

ROSATOM has signed an agreement with the Nestlé Purina PetCare pet food factory on supplying 50 million kWh of electricity generated from wind energy. Since May 2020, the factory has been using renewable energy for all its production operations.

ROSATOM's first project in this area is the 150 MW Adygea Wind Power Plant, which started to supply electricity to the wholesale market in March 2020. Later, in December 2020, the 210 MW Kochubeyevskaya Wind Power Plant was put into operation. It is currently the largest wind power plant in the country.

The portfolio of wind power plants to be built by ROSATOM by 2024 totals 1.2 GW, or more than 30% of the Russian wind power market.

In 2020, agreement was reached with a major Russian bank on granting a 'sustainable' loan to finance the second stage of a 340 MW wind farm, with the price terms of the loan linked with the achievement of sustainable development targets at the construction and operation stages of the project. This is the Corporation's first project involving the use of a sustainable financing mechanism. In the future, ROSATOM plans to expand the use of these instruments to finance its other projects and its business as a whole.

Hydrogen

In 2018, hydrogen energy production was included in the list of prioritised areas of scientific and technological development of the nuclear industry. ROSATOM has extensive technological and research capabilities for developing key hydrogen production techniques: electrolysis, which is one of the most environmentally friendly hydrogen production techniques, and steam methane reforming, which involves the use of CO_2 capture technology. The Corporation is focused on developing technologies for low-carbon hydrogen production and storage and participating in pilot hydrogen projects both in Russia and abroad.

ROSATOM is participating in a pilot experiment on Sakhalin Island that is aimed at achieving carbon neutrality by creating a hydrogen cluster to support local projects on Sakhalin Island, including hydrogen transport. ROSATOM also plans to develop hydrogen production for the export market.

Energy storage systems

In 2020, a separate business area, Energy Storage Systems, was established at ROSATOM. It is focused on lithium-ion batteries for electric vehicles, as well as stationary energy storage systems for uninterruptible and emergency power supply and energy storage systems for renewable energy. The first pilot production facility was launched in late 2020.

ROSATOM has supplied the first test batch of lithium-ion batteries for electric karts. The first race was held in October 2020, with 10 kart racers aged 9 to 11 participating in the event.

Environmental solutions

ROSATOM is responsible for developing an integrated system for hazard class 1 and 2 waste management in Russia, which involves building a secure integrated system for managing the entire process chain, from waste generation to waste processing into recycled products, as well as building the relevant infrastructure for hazard class 1 and 2 waste processing. ROSATOM is creating seven environmental technology parks, which will be equipped with world-class state-of-the-art technological solutions. The first four environmental technology parks will be created in the Saratov, Kirov and Kurgan Regions and in the Udmurt Republic.

ROSATOM is also working to mitigate environmental risks posed by legacy sites in the Irkutsk, Chelyabinsk and Leningrad Regions.

In 2020, ROSATOM assumed responsibility for designing and implementing a project to repair environmental damage caused over the years by the Baykalsk Pulp and Paper Mill. The project is aimed at environmental improvement of Lake Baikal, which involves reducing the area of highly contaminated land.

In 2020, municipal landfill reclamation in Chelyabinsk (74.1 hectares) was largely completed. The project involved the use of the world's best reference solutions for environmental remediation; it will help to reduce emissions within the city boundaries by 30%.

In 2020, design work was initiated at one of the legacy sites posing the greatest environmental hazards in Russia: the Krasny Bor landfill in the Leningrad Region (67.4 hectares), where toxic industrial waste is stored.

In 2020, high-priority work was completed as part of industrial site rehabilitation in the town of Usolye-Sibirskoye in the Irkutsk Region (610 hectares). Measures were taken to ensure the safety of 17 tanks containing toxic substances, which were in a dilapidated condition; two shafts were decommissioned at a brine field; an underground waterproofing system was installed to prevent oil-contaminated soil from being washed into the Angara River (14,500 m^3). The dismantling and clean-up of the superstructure of the mercury cell electrolysis shop (37,600 m^3), which had been the main source of contamination at the site, were completed.

Development of the Northern Sea Route

ROSATOM has been assigned the functions of the infrastructure operator of the Northern Sea Route (NSR). It is responsible for managing maritime traffic along the NSR, building infrastructure facilities, providing navigational and hydrographic support and ensuring safe navigation in a harsh Arctic environment. ROSATOM operates the world's only nuclear-powered icebreaker fleet, which is a low-carbon type of marine transport, as it uses nuclear energy.

In 2020, cargo traffic along the NSR totalled 32.97 million tonnes, including 25.2 million tonnes transported by vessels escorted by nuclear icebreakers. Cargo traffic along the NSR is projected to reach 80 million tonnes by 2024 and might increase to 110 million tonnes by 2030.

Marine transport currently produces about 1 billion tonnes of greenhouse gas emissions per year, accounting for about 2.89% of total global greenhouse gas emissions*.

Due to a shorter distance, the use of the NSR will help to cut CO_2 emissions by 23%**.

* IMO Fourth Greenhouse Gas Study, 2020.

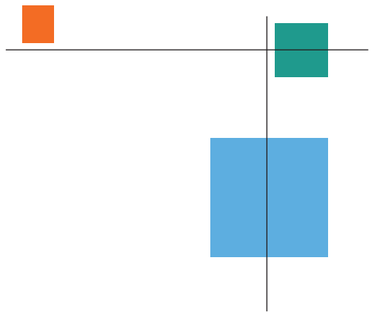
** SKOLKOVO research: Arctic 2050: Mapping the Future, 2021.

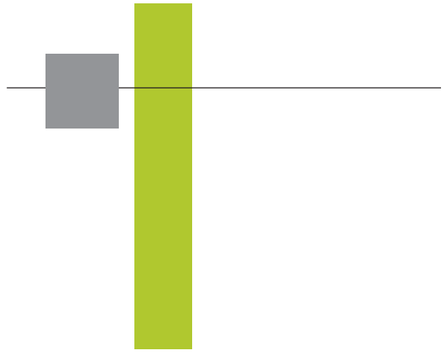
Nuclear medicine and isotope products

Business areas prioritised by ROSATOM include the development of nuclear medicine. ROSATOM's solutions for nuclear medicine involve developing new high-technology equipment for medical applications and supplying radiopharmaceuticals based on isotopes produced in-house, as well as solutions for nuclear medicine centres comprising diagnostic and radiotherapy modules.

ROSATOM accounts for 25% to 40% of global radioisotope production, depending on the types of radioisotope products. Millions of patients undergo diagnostic procedures and therapy that involve the use of isotope products manufactured by ROSATOM: for example, almost 2 million people per year undergo procedures that involve the use of molybdenum-99 and technetium-99.

ROSATOM cooperates with the Russian Ministry of Health on the Lean Polyclinic Federal Project, which is aimed at improving the performance of healthcare institutions and the availability of healthcare services to the population across Russia. The project helps to drastically reduce queues and speed up medical tests, makes it easier to make an appointment with a doctor and enables a significant increase in the number of patients covered by healthcare services using the same amount of resources.
In 2019, the project was included in the scope of the Healthcare National Project and is expected to cover more than 7,000 healthcare institutions across Russia by 2024.





Environment and Radiation Safety

ENVIRONMENT

Principle 7. Businesses should support a precautionary approach to environmental challenges.

Principle 8. Businesses should undertake initiatives to promote greater environmental responsibility.

Principle 9. Businesses should encourage the development and diffusion of environmentally friendly technologies.

Environmental policy

ROSATOM seeks to align its operations with the 'Do No Significant Harm' principle, which involves minimising environmental pollution, the negative impact on ecosystems and risks to human health.

In 2020, ROSATOM was ranked among the top five environmentally responsible companies in Russia according to Forbes.

The **Uniform Industry-Wide Environmental Policy (2008[2])** (hereinafter referred to as the Environmental Policy) is the main regulatory document in the sphere of environmental safety and environmental protection in the nuclear industry. It sets out the goals and key focus areas in the sphere of environmental safety and environmental protection in the regions where nuclear facilities are located.

ROSATOM pursues a responsible environmental policy underpinned by the precautionary principle. The policy prioritises the preservation of natural ecosystems and stipulates that the latest scientific achievements must be used to ensure environmental safety and that environmental aspects of operations of enterprises in the industry must be transparent and the relevant information must be made publicly available. ROSATOM's organisations, including JSC Rosenergoatom, JSC TENEX, JSC TVEL, JSC Atomenergomash, JSC Atomredmetzoloto, etc. have obtained certification confirming compliance of their environmental management systems with the ISO 14001 international standard and regularly undergo recertification audits to confirm their compliance with this standard.

As part of implementation of its Environmental Policy, ROSATOM holds a number of events focused on improving environmental safety and preserving the environment. These include Nuclear Power and Industry Safety Day dialogue forums, industry-wide safety culture competitions and industry-wide safety days.

[2] The years of approval of the first versions of the documents are stated.

ROSATOM's organisations publish environmental safety reports on an annual basis. These reports provide information on the organisations' environmental performance, including emissions and discharges, industrial and consumer waste and radioactive waste (RAW), progress in the implementation of the environmental policy, the development and implementation of management systems and industrial environmental control systems, as well as engagement with government agencies (including local governments), environmental non-governmental organisations, research and social institutions and the general public. The reports are publicly available.

Pollutant and greenhouse gas emissions

In 2020, pollutant emissions into the atmosphere from ROSATOM's organisations totalled 38,000 tonnes, accounting for 0.2% of total emissions in Russia in 2020; the pollutant capture rate stood at 92.2%.

Pollutant emissions into the atmosphere[3], '000 tonnes

	2018	2019	2020
Total (excluding CO_2), including:	39.9	38.6	38.0
Particulate matter	13.8	13.4	14.2
NO_x	10.6	10.2	6.1
SO_2	9.4	9.7	11.6
CO	3.7	3.5	3.3
Carbon emissions, including:	1.7	1.4	2.2
Methane	0.2	0.2	0.8
Volatile organic compounds	1.2	1.1	1.2
Other gases and liquids	0.7	0.4	0.6

Emissions decreased by 600 tonnes compared to 2019 due to a reduction in fuel combustion at ROSATOM's CHPPs. A significant change in the volume of sulphur dioxide and nitrogen oxide emissions was caused by a shift to different types of fuel at the CHPPs.

[3] Pollutant emissions are reported by ROSATOM's organisations using chemical analysis methods or automatic gas analysers.

Greenhouse gas emissions

Nuclear organisations accounted for 0.04% of the total volume of greenhouse gas emissions in Russia (in CO_2 equivalent).

Gross greenhouse gas emissions by ROSATOM's organisations, tonnes[4]

Substance	2018	2019	2020
Carbon dioxide[5]	5,802.284	5,451.820	5,216.911
Methane	239.72	193.734	766.619
Nitrous oxide	0	0	0
Trifluoromethane	0	0	0
Perfluoromethane	124.806	124.806	124.806
Perfluoroethane	0	0	0
Sulphur hexafluoride	0	0	0
Total	**6,166.810**	**5,770.360**	**6,108.334**

In 2020, gross greenhouse gas emissions totalled 6,108.34 tonnes, up by 5.9% year on year.

Over the past three years, CO_2 emissions in ROSATOM have been decreasing; at the same time, there has been an increase in methane emissions due to changes in the methodology for quantitative assessment of pollutant emissions from solid household waste and industrial waste landfills.

Radiation safety

Safety is one of ROSATOM's values. ROSATOM seeks to ensure that its operations are completely safe for people and the environment as a matter of priority; the Corporation is responsible for process safety across the production chain, from uranium mining to decommissioning and RAW and SNF management.

[4] Quantitative estimates of greenhouse gas emissions are based on data obtained from statistical observation forms 2-TP (air).
[5] The data are presented using a coefficient of 1.57 calculated by converting CO to CO_2 based on molar mass.

In recent years, no events rated at level 2 or higher on the international INES scale have been detected at Russian NPPs (deviations rated at level 1 and 0 do not pose a risk to employees operating the facilities, local residents or the environment). Both in 2020 and in 2019, there were no deviations rated at level 1 at Russian NPPs. In 2020, there were 24 deviations rated at level 0.

The safety status of nuclear facilities is assessed based on the number and scale of recorded deviations in their operation, which are benchmarked against the IAEA International Nuclear and Radiological Event Scale (INES).

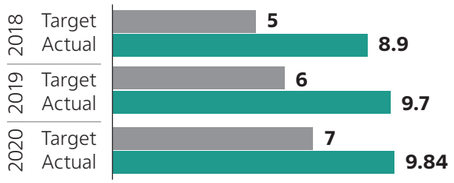
In order to ensure the safe operation of the nuclear industry and protect employees, the local population and areas against the possible effects of accidents (emergencies), ROSATOM operates an emergency prevention and response system (EPRS), which is a functional subsystem forming part of the integrated state system for emergency prevention and response (ISSEPR). Radiation safety management systems have been implemented at all facilities posing nuclear and radiation hazards; the use of these systems is a mandatory requirement.

Energy efficiency

An energy conservation and energy efficiency improvement programme for the period from 2018 through 2022 was adopted in the industry in 2018. To monitor progress on energy efficiency improvement measures and their outcomes, an Automated Energy Efficiency Management System has been introduced in the industry; it covers 80 nuclear organisations.

JSC Rusatom Infrastructure Solutions, a subsidiary of ROSATOM, is implementing a project to improve the performance and reliability of power facilities in the industry. The project involves implementing an information system for calculating technical and economic indicators and operational planning between 2020 and 2022; the system will incorporate certain elements of end-to-end digital technologies. It will help to automate the collection and analysis of process status data and monitor the operation of equipment.

Savings compared to 2015, %



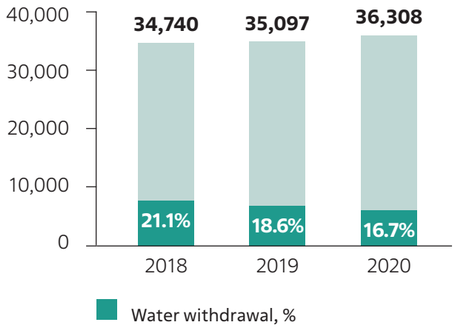
In accordance with the government programme of the Russian Federation titled 'Development of the Nuclear Power and Industry Complex', between 2015 and 2020, energy conservation targets were set for ROSATOM, with actual energy consumption in 2015 used as a baseline; all the targets were met.

In 2020, the actual reduction in energy consumption totalled 9.84%, exceeding the target.

Water use and wastewater discharge

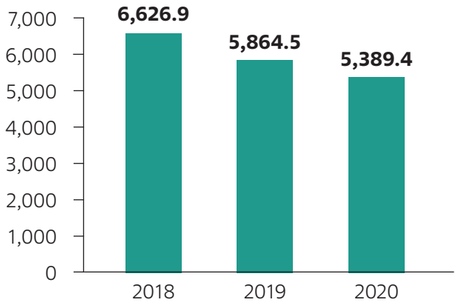
The basic principle behind NPP operation is that a nuclear reaction produces a large amount of heat, which is used to heat water and transform it into steam. Modern NPPs use a system comprising two circuits: there is no contact whatsoever between water in the primary circuit and water in the secondary circuit. This helps to improve NPP safety and prevents radioactive contamination of water discharged to the eventual destination (a sea or another water body or a cooling tower).

Total volume of recycled and reused water, million m³



In 2020, the volume of water recycled and reused by ROSATOM's organisations totalled 36,308.2 million m³. In the reporting year, water withdrawal by nuclear organisations totalled 6,059.2 million m³, which is 472.1 million m³ less than in 2019. NPPs account for 91.1% of water withdrawal and 97.3% of the total volume of recycled and reused water.

Wastewater discharge, million m³



In 2020, wastewater discharge by ROSATOM's organisations totalled 5,389.4 million m³, with clean water compliant with regulatory requirements accounting for 96.7% of the total volume, while the share of treated wastewater compliant with regulatory requirements and contaminated wastewater stood at 0.7% and 2.6% respectively.

Industrial and consumer waste management and disposal

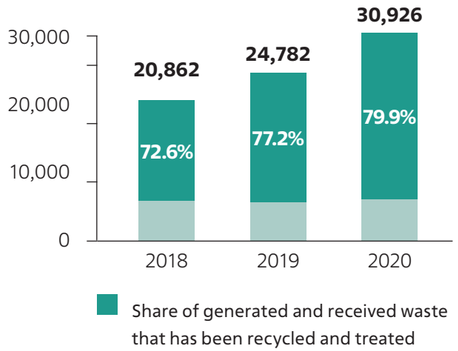
In the course of its operations, ROSATOM seeks to reduce specific pollutant emissions and discharges into the environment, to reduce industrial and consumer waste generation (including radioactive waste) and expand the application of closed-cycle production technology.

In 2020, nuclear organisations produced 30.9 million tonnes of industrial and consumer waste, which is 6.1 million tonnes (24.6%) more than in 2019. Most of the waste (22.3 million tonnes) was generated by PJSC PIMCU (a uranium mining company forming part of ROSATOM's Mining Division) and consisted of rock and loose overburden produced during mining. Most of this waste is class 5 waste, which is the least hazardous.

79.9% of the total amount of waste generated and received by ROSATOM's organisations was recycled; 0.003% was treated.

The key focus area of the Strategy for the Development of Nuclear Power in Russia is a transition to a two-component structure of the nuclear power industry based on thermal-neutron and fast reactors, which involves closing the nuclear fuel cycle and SNF processing.

Waste generated and received by ROSATOM, `000 tonnes



A programme to reduce waste generation has been launched at Bilibino NPP. Over the past 10 years, its successful implementation made it possible to reduce waste generation from 5.43 tonnes to 4.8 tonnes per year for class 3 waste, from 0.5 tonnes to 0.2 tonnes per year for class 4 industrial waste and from 7.5 tonnes to 5 tonnes per year for class 5 industrial waste.

A total of 650 to 700 tonnes of SNF is generated annually in Russia. An average of 120 tonnes per year is processed, while the remaining SNF is sent to a centralised storage facility for temporary storage.

The Proryv Project is aimed at achieving a fundamental transformation of the nuclear power industry by designing and developing a closed nuclear fuel cycle based on fast-neutron reactors and implementing it on an industrial scale. The goal of the Proryv Project is to build nuclear energy centres comprising NPPs, nuclear fuel regeneration (processing) and refabrication plants and facilities for the preparation of all types of RAW for permanent removal from the process cycle.

Biodiversity and land rehabilitation

Nuclear organisations regularly monitor radionuclide content in local agricultural products, in wild-growing foods and fodder in radiation control areas, as well as in fish living in cooling ponds of NPPs. All of ROSATOM's organisations take steps to prevent the degradation of natural ecosystems in their vicinity as a result of their operation.

ROSATOM implements a range of measures to preserve the biodiversity of flora and fauna. These include:

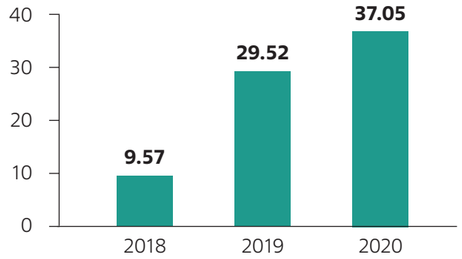
- Equipping water intake facilities with fish screens to prevent young fish from swimming or being drawn into them;
- Equipping transformer substations with special devices to prevent animals from entering the premises;
- Installing bird diverters on power lines;
- Ensuring that motor vehicles and special machinery travel on paved roads and providing special parking lots for them;
- Arranging waste accumulation areas compliant with technical and sanitary standards, and removing waste and transporting it to designated locations in a timely manner;
- Taking measures to reduce noise impact, etc.

The Lapland State Nature Reserve is located within a 30-kilometre radius of Kola NPP. 16 nature monuments and 33 wildlife sanctuaries are located within a 30-kilometre radius of Kalinin NPP.

The vast majority of nuclear power plants globally use water-cooled water-moderated reactors to generate electricity. As a result, the production process involves using a large amount of water. For this purpose, NPPs use water from on-site cooling ponds (reservoirs) equipped with special water intake and discharge facilities.

Stocking cooling ponds at NPPs with fish is a widespread practice. Fish released into cooling ponds include such species as the bighead carp, the salmon, the common carp, the grass carp, the black carp, etc. Fish help to maintain a proper balance of aquatic wildlife, the diversity of species and environmental well-being. Regular surveys are conducted to assess the status of fish population in water bodies in the vicinity of NPPs.

Area of restored land, ha



ROSATOM is a participant of the Rhisotope Project, which is aimed at preventing the killing of rhinoceros in South Africa. The project involves radioisotope tagging of rhino horns. This measure is expected to reduce demand for rhino horn and increase the likelihood of detection of smuggling. With more than 10,000 radiation detectors installed at border crossings, horn trafficking will cease to be a lucrative business.

Given an increase in the prioritisation of biodiversity conservation, ROSATOM has drafted amendments to its Environmental Policy regarding monitoring and minimising the impact of operations of nuclear organisations on biodiversity. A number of organisations in the industry implement targeted measures to protect biodiversity.

At the end of the reporting year, the area of disturbed land[6] totalled 6,600 hectares; this included land disturbed during mining, construction, disposal of industrial waste, survey work and other operations. In the reporting period, organisations in the industry implemented a set of measures to restore the productivity and economic value of disturbed land. The area of restored land totalled 37.05 hectares.

[6] Land whose degradation has made it impossible to use it for its intended purpose, as permitted.

People-Centric Approach

HUMAN RIGHTS

Principle 1. Businesses should support and respect the protection of internationally proclaimed human rights.

Principle 2. Businesses should make sure that they are not complicit in human rights abuses.

LABOUR

Principle 3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.

Principle 4. Businesses should uphold the elimination of all forms of forced and compulsory labour.

Principle 5. Businesses should uphold the effective abolition of child labour.

Principle 6. Businesses should uphold the elimination of discrimination in respect of employment and occupation.

The Social aspect (S) includes ensuring occupational and process safety, protecting the life and health of employees in the industry and developing human potential. ROSATOM implements social projects aimed at supporting employees in the industry and the residents of 'nuclear' towns and cities and driving systematic improvements in the standard of living for employees and their families, local communities and consumers of the Corporation's products in its regions of operation.

The top priority for the Corporation is to ensure occupational and process safety and to protect the life and health of employees in the industry; this is one of the key principles that ROSATOM is guided by in the course of its operations. ROSATOM has adopted the **Uniform Industry-Wide Social Policy (2013), the Uniform Industry-Wide Policy on Occupational Safety and Health (2013)** and the **Occupational Health and Safety Management System (2009)**, which is an important element of mutual obligations undertaken by ROSATOM, the Russian Union of Employers in the Nuclear Industry, Power and Science and the Russian Trade Union of Nuclear Power and Industry Workers.

ROSATOM provides optimal working conditions for its employees, with occupational hazards totally eliminated or exposure to such hazards not exceeding regulatory limits deemed safe for people. Organisations in the industry work systematically to improve safety performance; this includes reducing the occupational injury rate (which is more than five times lower than the national average), minimising employees' exposure to occupational hazards and ensuring contrac-

tor safety. Individual organisations in the industry, including JSC TENEX, JSC TVEL, JSC Afrikantov OKBM, JSC ZIO-Podolsk, etc., have undergone certification to confirm compliance of their occupational health and safety management systems with the ISO 45001 international standard.

Labour relations

In 2020, ROSATOM and its organisations employed 276,100 people (including 16,100 people in overseas organisations, branches and representative offices), with men and women accounting for 67% and 33% of the total headcount respectively (according to the IAEA, the share of women in the global nuclear industry totals 22.4%).

In 2020, personnel costs totalled RUB 397.45 billion, up by 10.25% year on year. In 2020, the monthly average salary per employee at ROSATOM increased by 7.1% year on year to RUB 90,000.

Social policy is an important part of ROSATOM's human capital management policy; it is aimed at recruiting and retaining young professionals and highly skilled specialists, providing social assistance to employees, their families and veterans of the nuclear industry.

ROSATOM adheres to the Industry-Wide Agreement on Nuclear Power, Industry and Science for 2018–2020 (the Agreement is concluded once every three years). The Agreement is based on the established practice of social partnership in the nuclear industry and is aimed at implementing the Integrated Standardised Remuneration System, the Uniform Industry-Wide Social Policy and the Occupational Health and Safety Management System.

The Agreement has been drafted and is being implemented jointly with the Russian Trade Union of Nuclear Power and Industry Workers (RTUNPIW). 131,557 employees of ROSATOM's organisations covered by the activities of the RTUNPIW, or 47.7% of the total headcount, are trade union members.

The Agreement provides a basis for collective agreements concluded in nuclear organisations (collective agreements cover 80% of ROSATOM's employees).

The Agreement stipulates the employer's obligations related to salary indexation, social benefits and safe working conditions; it also reflects the role of the industry-wide trade union, local trade union cells and trade union committees in maintaining social stability among the workforce of ROSATOM's organisations.

Talent development

The development of competences and employee training is one of the major priorities of ROSATOM's HR policy.

To provide employee training, ROSATOM has established the Corporate Academy and the Technical Academy. Training includes online and distance learning. A total of 144,006 employees in the industry, or more than half of ROSATOM's total headcount, underwent training in 2020. The number of training hours per employee averaged 30.65 hours in 2020.

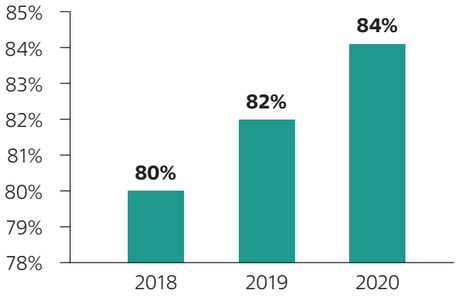
Training programmes of the Technical Academy comprise about 500 training courses on occupational, industrial, environmental and fire safety, information security and energy security. The portfolio of ROSATOM's Corporate Academy includes more than 400 training programmes focused on global projects, development of the executive succession pool and training entrepreneurial leaders responsible for developing new products.

The employee engagement rate in the industry stood at 84% in 2020.

ROSATOM's team has won the national competition of cross-industry skilled professions for workers in high-technology industries held in accordance with the WorldSkills methodology, WorldSkills Hi-Tech 2020, for the sixth time.

ROSATOM has been declared the best Russian employer according to HeadHunter, Russia's largest online recruitment platform.

Employee engagement rate



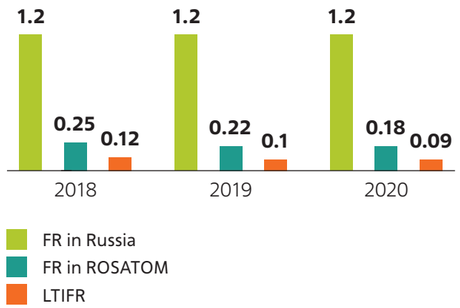
Occupational health and safety

In 2019, ROSATOM joined the Vision Zero international campaign and is working to achieve a zero injury rate in its organisations.

More specifically, ROSATOM has adopted a Uniform Industry-Wide Policy on Occupational Safety and Health, whose principles underpin local occupational health and safety management systems in nuclear organisations.

In 2020, organisations in the industry continued to take steps to improve the workplace safety culture. This resulted in a 19% reduction in the total number of accidents, with the number of severe injuries and fatalities decreasing by 37%.

Injury frequency rate (FR)[7] and LTIFR[8]



Human rights and ethics

None of ROSATOM's internal regulations contain any provisions barring people from being employed in the industry on the grounds of gender, ethnicity, background, the level of personal wealth, marital or social status, position, age, place of residence, attitude to religion, political opinions or membership of public associations.

ROSATOM provides its employees with opportunities for professional development and career advancement, participation in training and professional development programmes and training courses aimed at developing corporate competences. ROSATOM's top priorities in the sphere of employment rights and human rights are to provide a workplace environment that poses no risks to employees' life and health and to promote a responsible approach to occupational health and safety at all management levels.

[7] The injury frequency rate (FR) for Russia has been calculated based on the data from the Federal State Statistics Service provided in the Statistics section of the Trud-Expert Management online service.
[8] Lost Time Injury Frequency Rate (LTIFR) = number of lost time injuries / total work hours × 1 million man-hours.

Developing the regions where nuclear facilities are located

ROSATOM is a responsible corporate citizen committed to promoting social well-being in its regions of operation. The operations of largest nuclear organisations in Russia have an impact on the social and economic climate in 10 towns and cities where nuclear power plants are located and 10 closed administrative and territorial formations (CATFs). ROSATOM implements a wide range of projects to provide assistance to employees in the industry and the residents of 'nuclear' towns and cities and support civic initiatives.

In 2018, 'nuclear' towns and cities joined the 100 City Leaders programme (Rurban Space Lab) launched by the Agency for Strategic Initiatives.
In September 2020, ROSATOM and Flacon Franchise launched a joint initiative to redesign unused company premises, with the cinema of the Izumrud Healthcare Centre in Novouralsk as the pilot venue. The new concept is aimed at promoting the development of a creative economy in 'nuclear' towns and cities. Flacon Atom Space can provide a space for growth, live communication, education, active work and recreation and the development of creative industries.

In 2011, ROSATOM launched an initiative titled ROSATOM's School. This project is aimed at promoting the development of education systems in 21 participating towns and cities where nuclear organisations are located, as well as the town of Usolye-Sibirskoye (Irkutsk Region). The project currently covers more than 240 schools with more than 130,000 school students. Details are available on the website of the project: https://rosatomschool.ru/

Corporate volunteering

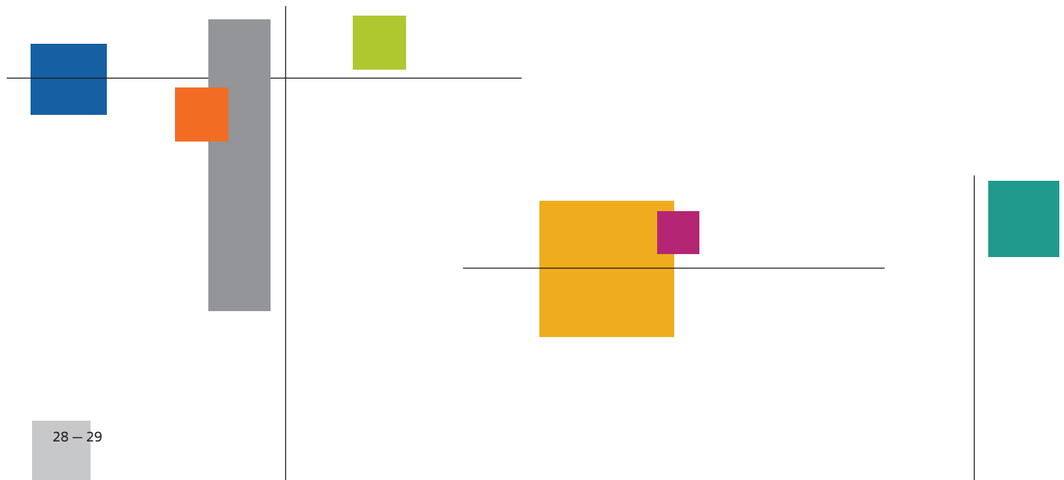
In 2018, ROSATOM decided to launch a corporate volunteering programme and develop an integrated system for planning and implementing volunteering initiatives in the following areas:

- Environmental protection;
- Supporting socially disadvantaged groups and veterans;
- Promoting a healthy lifestyle;
- Social integration and mentorship;
- Intellectual volunteering (leveraging employees' professional skills in the regions).

During the pandemic, between April and June 2020, more than 1,100 employees of ROSATOM worked as volunteers and provided assistance to more than 11,000 people in 42 towns and cities across Russia as part of the #WeAreTogether national campaign.

As part of the efforts to support socially disadvantaged groups, a visiting care service, We Are Responsible, has been launched in the industry; as part of this initiative, volunteers provide ongoing targeted assistance to senior citizens and veterans. Environmental initiatives include organising centralised solid household waste collection. Intellectual volunteering includes projects aimed at developing infrastructure in 'nuclear' towns and cities, such as solutions for optimising transport routes, a system of passes, urban navigation and developing convenient creative spaces.

Overall, about 300 volunteer campaigns were conducted in ROSATOM in 2020. The total number of volunteers across ROSATOM and its organisations exceeds 5,000 people.



Business Ethics

ANTI-CORRUPTION

Principle 10. Businesses should work against corruption in all its forms, including extortion and bribery.

As part of the *Governance aspect (G)*, ROSATOM is building an integrated system of industry regulation and sustainable development standards and ensures the transparency of its business by disclosing as much information as possible.

In its production processes, ROSATOM focuses on making the procurement system transparent for suppliers and building a sustainable supply chain, including a requirement for compliance with environmental and social standards. The Corporation implements anti-corruption measures and introduces the principles of ethical business conduct on an ongoing basis.

ROSATOM has adopted the Uniform Industry-Wide Public Reporting Policy (2009), the Uniform Industrial Procurement Standard (2009), the Uniform Industry-Wide Anti-Corruption Policy (2015) and the Code of Ethics and Professional Conduct (2016). The **ROSATOM Production System** has been developed and adopted in the industry; it is designed to promote a lean manufacturing culture. A quality management system has been introduced, and international standards such as ISO 14001 and ISO 9001 and other standards are applied.

ROSATOM has been ranked in the top 10 in the ESG ranking of Russian companies compiled by the RAEX-Europe rating agency, finishing in the eighth place. The Corporation achieved the highest score on the Governance (G) aspect, ranking fifth.

Public sustainability reports are an integral part of ROSATOM's practices to ensure the transparency of its business; they also serve as a stakeholder engagement tool. Starting from 2010, ROSATOM and its organisations annually publish non-financial reports in accordance with the international standards such as the GRI Standards and the International <IR> Framework.

The Code of Ethics establishes the ethical principles that ROSATOM's employees are guided by in the course of their work. The rules of conduct set out in the Code concern combating corruption, ensuring the security of resources, property and information, occupational safety and health, industrial and environmental safety, conflict prevention and resolving conflicts of interest.

The following anti-corruption measures are in place in the industry:

- Systematic monitoring of anti-corruption performance of nuclear organisations;
- Awareness-raising, training and other events designed to encourage zero tolerance to corruption among ROSATOM's employees;
- Promoting anti-corruption standards and developing legal awareness among employees in the nuclear industry;
- Contributing to Russia's international cooperation on combating corruption, etc.

A total of 1,250 employees of ROSATOM and its organisations have completed anti-corruption training. ROSATOM also runs a training programme titled 'Introduction to the Company', which is designed to provide all newly hired employees with information on ROSATOM's anti-corruption efforts.

An anti-corruption hotline is run successfully in the industry. All reports are reviewed under the established procedure, and appropriate corrective measures are implemented.

The Uniform Industrial Procurement Standard (UIPS) has been adopted in the industry. It is the main document that regulates the procurement activities of all nuclear organisations across all business areas and geographical regions. The UIPS stipulates that suppliers of goods, work and services must be selected impartially and efficiently through competitive tendering. ROSATOM and its organisations made 37,123 competitive purchases using their own funds (36,458 in 2019; 35,741 in 2018); as part of the annual procurement programme, in 2020, contracts were concluded with 22,223 counterparties.

In 2020, nuclear organisations concluded 40,036 contracts with small and medium-sized enterprises.

In 2019, a Supplier Code of Conduct and standardised recommendations for its implementation were developed in the Sales and Trading Division (JSC TENEX); in 2020, a pilot sustainability audit of suppliers was conducted in the industry at JSC SCP (an organisation of TVEL). The requirements of the Code are being incorporated into standard contracts, to be followed by regular supplier audits. The Code is available at:
https://www.tenex.ru/#sustainability
https://www.tenex.ru/en/#sustainability

Data reliability audits are one of the key supplier management tools. They help to ensure that suppliers meet the company's environmental and social standards. 128 data reliability audits were conducted among manufacturers and contractors in 2020.

ROSATOM's specialised internal control bodies (SICBs) conducted 646 inspections in the Corporation and its organisations. Following the inspections conducted in 2020, the Internal Control and Audit Function developed 667 corrective measures and approved them for implementation.

In 2020, ROSATOM developed an industry-wide action plan to increase the level of maturity in the sphere of sustainable development. The plan includes more than 100 measures and covers about 10 divisions of ROSATOM. It involves amending existing regulations and drafting targeted internal regulations to improve performance against sustainability principles, monitoring ESG indicators and assigning targeted responsibility for sustainability matters. Going forward, measures aimed at increasing the level of maturity in the sphere of sustainable development in the industry will be implemented on an ongoing basis.

ROSATOM has set up the Sustainability Department, which is responsible for developing the internal sustainability methodology and practices.

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