ATOMENERGOPROM
ROSATOM

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

JSC ATOMENERGOPROM
ANNUAL REPORT

2024

ROSATOM

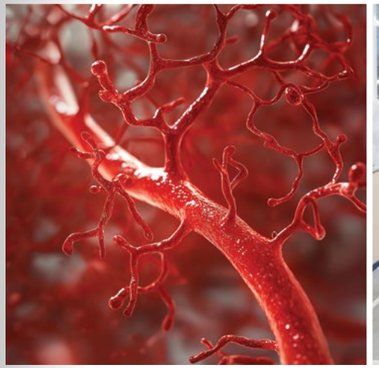
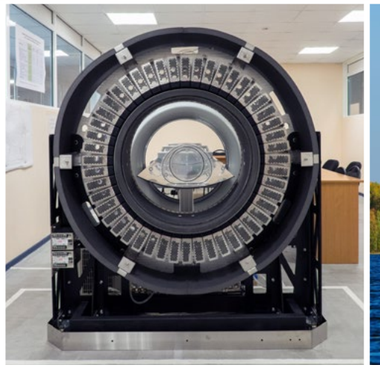



TABLE OF CONTENTS

CHAPTER 1. JSC ATOMENERGOPROM TODAY 4

Company Profile 6
Message from the Management 8
JSC Atomenergoprom Today 10
History of JSC Atomenergoprom 11
Key Events in 2024 12
Key Results in 2024 16
Financial and Economic Performance 17

CHAPTER 2. BUSINESS STRATEGY 22

2.1. Business Strategy until 2030 24
2.2. Sustainable Development Management 28
2.3 Markets Served by Atomenergoprom 36

CHAPTER 3. PERFORMANCE IN THE INTERNATIONAL ARENA 50

3.1. International Business 52
3.2. New Products for International Markets 56

CHAPTER 4. PERFORMANCE OF DIVISIONS 60

4.1. Mining Division 62
4.2. Fuel Division 66
4.3. Mechanical Engineering Division 71
4.4. Power Engineering Division 75

CHAPTER 5. INNOVATIONS AND NEW PRODUCTS 80

5.1. Research and Innovations 82
5.2. Business Diversification 90

CHAPTER 6. DIGITAL TRANSFORMATION 96

6.1. Uniform Digital Strategy 98
6.2. Participation in Digitisation in Russia 100
6.3. End-to-End Digital Technologies and Data Management 105
6.4. Internal Digitisation 107

CHAPTER 7. GOVERNANCE SYSTEM 108

7.1. Corporate Governance 110
7.2. Risk Management 116
7.3. Financial Management 130
7.4. Investment Management 134
7.5. Internal Control System 137

CHAPTER 8. HR AND SOCIAL POLICY. DEVELOPING THE COMPANY'S HOST TOWNS AND CITIES 142

8.1. Personnel Management 144
8.2. Developing the Regions Where Nuclear Facilities Are Located 162
8.3. Stakeholder Engagement 175

CHAPTER 9. SAFE OPERATIONS 178

9.1. Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health 180
9.2. Environmental Safety 195

APPENDICES 214

Appendix 1. Report Profile 215
Appendix 2. GRI Content Index 217
Appendix 3. Alignment with the Methodological Recommendations on Sustainability Reporting of the Ministry of Economic Development of the Russian Federation 230
Appendix 4. Number of Employees of JSC Atomenergoprom with a Breakdown by Type of Employment and Region 235
Appendix 5. Summary Consolidated Financial Statements Based on Consolidated Financial Statements for the Year Ended 31 December 2024 and the Independent Auditors' Report 238
Feedback Form 240
Contact Details 242

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

1

JSC ATOMENERGOPROM TODAY

‘Three Ks’: Sergey Korolev (1906–1966), Igor Kurchatov (1903–1960), Mstislav Keldysh (1911–1978)

In the Soviet era, only a cropped version of this historic photograph was published under the title ‘Three Ks: Sergey Korolev, Igor Kurchatov and Mstislav Keldysh’, but there was a fourth person in the photograph: Vasily Mishin. Mishin was Sergey Korolev’s closest associate and, following the death of the chief design engineer, his successor. The three great scientists shown in the cropped photograph managed initiatives to establish the aerospace and nuclear industries in Russia, which are now rapidly developing and cooperating.

CHAPTER 1. JSC ATOMENERGOPROM TODAY

GRI 2-1

COMPANY PROFILE

Joint-Stock Company Atomic Energy Power Corporation (JSC Atomenergoprom).

Primary state registration number (OGRN): **1077758081664.**

State registration date: **19 July 2007.**

State registration authority: **Inter-District Inspectorate No. 46 of the Federal Tax Service in Moscow.**

Location: **24 Bolshaya Ordynka Street, Moscow.**

Tel.: **+7 (495) 969-29-39.**

Fax: **+7 (495) 969-29-36.**

Official website: **www.atomenergoprom.ru**

1. SHAREHOLDERS OF JSC ATOMENERGOPROM

Holders of record of JSC Atomenergoprom as at 31 December 2024:

1.1. State Atomic Energy Corporation Rosatom

- Location: 24 Bolshaya Ordynka Street, Moscow, 119017.
- Status of the holder of record: shareholder.
- Interest in the Company's authorised share capital: 95.3577%.
- Portion of voting shares held by the entity: 100%.

1.2. Russian Federation represented by the Russian Ministry of Finance

- Location: 9 Ilyinka Street, Moscow, 109097.
- Status of the holder of record: shareholder.
- Interest in the Company's authorised share capital: 4.6423%.
- Portion of voting shares held by the entity: 0%.

2. AUDITOR OF JSC ATOMENERGOPROM

Full name: **LLC Financial and Accounting Consultants (LLC FBK).**
Location: **44, bldg. 2, Myasnitskaya Street, Moscow, 101000.**
INN: **7701017140.**
OGRN: **1027700058286.**
Tel.: **+7 (495) 737-53-53.**
Fax: **+7 (495) 737-53-47.**
Email: **fbk@fbk.ru**
JSC Kept is the auditor for the summary consolidated IFRS financial statements for 2024.
Full company name: **Joint-Stock Company Kept.**
Abbreviated company name: **JSC Kept.**
Location: **34A Leningradsky Avenue, Moscow, 125040.**
INN: **7702019950.**
OGRN: **1027700125628.**

3. REGISTRAR OF JSC ATOMENERGOPROM'S SHARES

The shareholder register of JSC Atomenergoprom is kept by Joint-Stock Company Independent Registrar Company R.O.S.T.
Abbreviated company name: **JSC IRC – R.O.S.T.**
Location: **18, bldg. 5B, office IX, Stromynka Street, Moscow, 107996.**
INN: **7705038503.**
OGRN: **1027739216757.**
Licence: **045-13976-000001.**
Date of issue: **3 December 2002.**
Expiry date: **perpetual licence.**
Licensing authority: **Russian Federal Commission for the Securities Market (Federal Financial Markets Service).**
Date from which the registrar has kept the issuer's shareholder register: **28 October 2009.**
JSC Independent Registrar Company R.O.S.T. also maintains shareholder registers of the majority of JSC Atomenergoprom's subsidiaries, which enables more rapid and reliable transactions in their shares when restructuring the corporate group.

MESSAGE FROM THE MANAGEMENT

GRI 2-22

Dear readers,

We would like to present to you the annual report of JSC Atomenergoprom (hereinafter referred to as the Company), a group of companies consolidating civilian assets in the Russian nuclear industry. The report has been prepared in accordance with Russian and international reporting standards.

In 2024, the Company successfully accomplished all the tasks set by the government and fulfilled all its contractual obligations to its partners. Performance against the target for electricity output from the Company's nuclear power plants set by the Federal Antimonopoly Service stood at 100.7%. Electricity generated by the Company's NPPs makes up 18.5% of the overall energy balance in the Unified Power System of Russia.

In 2024, the Company's revenue totalled RUB 2,501.7 million, up by 17.5% year on year.

In December 2024, the Government of the Russian Federation approved the General Scheme for the Locations of Power Facilities until 2042, a major strategic document designed to support the development of Russia's electric power industry. The document outlines plans to commission 38 new NPP power units with a total capacity of 29.3 GW in Russia by 2042. This means that we will be just one step away from reaching the target of a 25% share of nuclear power generation in total electricity output in Russia by 2045.

The Company is actively developing new businesses, including environmental solutions, logistics, healthcare and the development of digital products. In 2024, we continued to apply green finance instruments. By year-end, the Company had raised green loans totalling more than RUB 900 billion in the form of ESG loans and green bonds. Green finance raised by the Company was used to refinance the Akkuyu NPP project in Turkey, wind farm construction projects in Russia and environmental projects.

In the reporting year, the second stage of the Trunovskaya WPP in the Stavropol Territory with a capacity of 35 MW was put into operation. By the end of the reporting year, the total capacity of the Company's nine wind power plants in Russia exceeded 1 GW. The target for the total installed renewable energy capacity in the Company's overseas portfolio by 2030 has been set at 5 GW.

In the course of their operations, the Company and its organisations prioritise safety. In the reporting year, all nuclear facilities operated safely and reliably, with no safety-relevant events recorded by the Company.

In 2025, we plan to continue to build new nuclear power plants in the Russian Federation, improve the performance of existing NPPs, carry out contracts for new NPP construction abroad and supply key equipment to partner countries. The Company's key objective is to fulfil all its commitments under existing contracts both in Russia and abroad.

On behalf of the Company, we would like to thank our partners for effective cooperation and to give our thanks to all employees of organisations managed by the Company for their excellent work. JSC Atomenergoprom's capabilities and potential give us confidence that all tasks of national importance both in the Russian Federation and abroad will be accomplished in full and that the Company will actively develop new businesses and improve performance across all its operations.

Ekaterina Lyakhova,

Chair of the Board of Directors
of JSC Atomenergoprom

Kirill Komarov,

Director
of JSC Atomenergoprom

GRI 2-6

JSC Atomenergoprom Today

Joint-Stock Company Atomic Energy Power Corporation (JSC Atomenergoprom, hereinafter referred to as the Company or Atomenergoprom) is an integrated company that consolidates civilian assets of the Russian nuclear industry. JSC Atomenergoprom is an organisation of State Atomic Energy Corporation Rosatom (hereinafter referred to as ROSATOM or the Corporation).

The organisations of JSC Atomenergoprom (taking into account ROSATOM's portfolio) comprise a complete cycle of nuclear production ranging from uranium mining to NPP construction and electricity generation. The organisations give priority to improving product quality, introducing innovative technologies and environmental management.

JSC Atomenergoprom (including JSC Atomenergoprom's group of companies) is the largest power generation company in Russia and one of the leading companies on the global market for nuclear services and technologies. JSC Atomenergoprom and ROSATOM are capable of providing turnkey solutions for NPP design and construction, supplying fuel to NPPs throughout their entire service life, upgrading NPPs, rendering maintenance services and providing employee training.

The Company integrates leading organisations and enterprises in the nuclear industry, whose history spans 80 years, and possesses unique experience gained across the entire range of the nuclear fuel cycle and NPP construction technologies.

In addition to traditional segments of the market for nuclear technologies and services, JSC Atomenergoprom is actively diversifying into wind power generation, nuclear medicine, digital products, infrastructure solutions for towns and cities and into other new areas of business.

For details, see section 3.2. 'New Products for International Markets'.

JSC ATOMENERGOPROM TODAY

No. 1 IN THE WORLD

in terms of NPP exports (22 large power units under construction in seven countries worldwide, accounting for 88% of the global market), with the Company's portfolio of overseas NPP construction projects comprising 33 large power units and 6 small power units in 10 countries globally[1]

No. 1 IN THE WORLD

in terms of uranium enrichment (39% of the global market)

No. 3 IN THE WORLD

in terms of uranium production (15% of the global market)

No. 3 IN THE WORLD

in terms of nuclear fuel fabrication (19%[2] of the global market)

18.5% share in electricity generation in the Russian Federation[3]

1. Including the portfolio of ROSATOM.
2. The calculation does not include 23 NPP power units (Japan, India) which were classified as in 'suspended operation' as at 31 December 2024, according to data in the IAEA Power Reactor Information System (PRIS).
3. Within the Unified Power System of Russia.

History of JSC Atomenergoprom

JSC Atomenergoprom was established in July 2007 pursuant to Federal Law No. 13-FZ on Peculiarities of the Management and Disposal of the Property and Shares of Organisations Operating in the Nuclear Power Industry and on Introducing Amendments to Selected Russian Laws of 5 February 2007, Decree No. 556 of the Russian President on Restructuring the Russian Nuclear Power Generation Complex dated 27 April 2007 and Resolution No. 319 of the Russian Government on Measures for Establishing Joint-Stock Company Atomic Energy Power Corporation dated 26 May 2007.

Regulations on the establishment of JSC Atomenergoprom stipulated a merger of 89 enterprises in all nuclear power engineering and nuclear fuel cycle segments, including three federal educational establishments. The government contributed shares of 31 companies under federal ownership to the authorised share capital of JSC Atomenergoprom upon its establishment.

Other companies had been incorporated as federal state unitary enterprises (hereinafter referred to as FSUEs) and were subject to corporatisation to be merged with the nuclear corporation. Between 2008 and 2011, 55 FSUEs were reorganised into open joint-stock companies and merged with JSC Atomenergoprom. Thus, the formation of the Company's authorised share capital was completed.

These measures enabled JSC Atomenergoprom to start to form a new structure of the civilian branch of the nuclear industry and introduce a uniform policy on finances, corporate governance, HR management and management of non-core assets in 2011.

As at 31 December 2024, JSC Atomenergoprom's scope of consolidation in accordance with IFRS comprised 286 companies of different legal forms.

As at 31 December 2024, the shareholders of JSC Atomenergoprom were ROSATOM (95.3577%)[1] and the Russian Federation represented by the Russian Ministry of Finance (4.6423%).

1. ROSATOM holds 100% of voting shares in JSC Atomenergoprom.

Key Events in 2024

Power generation

Performance of Russian NPPs against the balance target for electricity output set by the Federal Antimonopoly Service stood at 100.7%.

March — **4 March.** The second stage of the Trunovskaya WPP in the Stavropol Territory with installed capacity totalling 35 MW started to supply electricity to Russia's integrated power grid.

November — **27 November.** The first foundation was concreted at the construction site of the Novolakskaya WPP in the Republic of Dagestan.

December — An investment agreement providing for cooperation in wind power generation was signed with the Cabinet of Ministers of the Kyrgyz Republic.

New products

- The production of wind turbine blades for renewable energy generation was launched at a site in Ulyanovsk.
- Revenue from the sales of special medical equipment totalled RUB 538.1 million.
- Batch production of nine models of 'medium-sized' 3D printers was launched.
- Two Shared Additive Manufacturing Centres (SAMCs) were opened at Tomsk Polytechnic University and Belgorod Agrarian University.
- More than 110,000 consumers used digital services on the Smart City platform; more than 40,000 enquiries were handled.

NPP construction in Russia

March — **14 March.** An official ceremony was held to mark the start of concreting at the construction site of power unit No. 3 of Leningrad NPP-2.

August — Site preparation for the construction of power units No. 1 and 2 of Smolensk NPP-2 was started.

December — **25 December.** The fuel fabrication/refabrication module that will produce fuel for the BREST-OD-300 reactor started pilot operation; it is the first stage of a Generation IV energy facility.

NPP construction abroad

January

23 January. Concreting of the foundation slab of power unit No. 4 was started at the construction site of El Dabaa NPP in Egypt.

A reactor vessel and two steam generators were shipped for power unit No. 8 of Tianwan NPP (China).

September

A protocol was signed on the start of work at the construction site of the small NPP (SNPP) to be built in Uzbekistan.

December

The reactor vessel was moved into permanent position at power unit No. 4 of Xudapu NPP (China).

Digital products

- Prototypes of quantum processors based on four main technological platforms were developed, including two 50-qubit quantum processors.
- Digital twins were designed for NPPs, uranium mining and polymer composite production processes, which has helped improve the efficiency of production processes.
- Two new data centres, Moscow-2 and Innopolis, were launched.
- Memoranda were signed with universities in Uzbekistan; exchange programmes for specialists were launched with BRICS countries.

Environmental protection

December

The reclamation of the left-bank municipal waste landfill in Magnitogorsk (Chelyabinsk Region) was completed as part of the Clean Air Federal Project included in the Ecology National Project.

Personnel training

June

16–22 June. A record high of 42 competences were represented at the 9th AtomSkills 2024 Industry-Wide Professional Skills Competition.

June

25 June. The latest, 22nd Nuclear Energy Information Centre was opened in Obninsk. This event was timed to coincide with the 70th anniversary of the launch of the world's first NPP.

The second cohort of Master's degree students graduated from MSU Sarov (NCPM).

November

11–15 November. At the High-Tech 2024 International Competition of High-Technology Professions (Yekaterinburg), ROSATOM's team won medals across 21 competences.

Sustainable development

- The Company raised green loans (ESG loans and green bonds) worth a total of more than RUB 900 billion.
- The national trading platform hosted by LLC Energy Certification Centre recognised Balakovo, Kalinin and Leningrad NPPs as qualifying for the issue of nuclear certificates. In the past, certificates of this kind were issued only for renewable energy sources.

Key Results in 2024

	Indicator	2021	2022	2023	2024	2024/2023, %
MED 1	Revenue under IFRS, RUB billion	1,100.6	1,412.5	2,129.1	2,501.7	117.5
	EBITDA, RUB billion	397.9	439.6	575.5	628.3	109.2
	Profit under IFRS, RUB billion	203.9	155.1	249.8	351.5	140.7
	Assets under IFRS, RUB billion	4,108	5,480	6,797	8,404	123.6
	Intangible assets under IFRS, RUB billion	186	213.3	271	308	113.7
	Nuclear power generation, billion kWh	222.4	223.4	217.4	215.5	99.1
	NPP capacity factor, %	83.18	86.21	83.91	85.61	102.0
	Uranium resources, '000 tonnes[1]	506.4	503.7	500.1	497.2	99.4
	Uranium production, '000 tonnes[2]	7.1	6.9	7.5	8.5	113.3
	Overseas NPP construction projects, number of power units[3]	35	34	33	39[4]	118.2
	Portfolio of orders for new products (outside the scope of the nuclear industry), RUB billion[5]	1,974.1	2,250.0	2,350.0	3,894.4	165.7
MED 26	Average salary, RUB '000 per month	105.3	115.6	135.1	150.0	111.0
	Number of events rated above level 2 on the INES scale	0	0	0	0	0

1. Data on uranium resources of the Mining Division in the Russian Federation (Russian assets).
2. Data on uranium production at ROSATOM's assets in Russia and abroad.
3. Including the project portfolio of ROSATOM.
4. Including six small power units.
5. Including the order portfolio of ROSATOM.

Financial and Economic Performance[1]

Key financial results

Consolidated financial results of JSC Atomenergoprom under IFRS, RUB billion

Indicator	2021	2022	2023	2024	2024/2023, %
Revenue	1,100.6	1,412.5	2,129.1	2,501.7	117.5
Cost of sales	(705.4)	(936.6)	(1,477.7)	(1,767.3)	119.6
Gross profit	395.2	475.9	651.4	734.4	112.7
Selling and administrative expenses	(106.9)	(141.1)	(187.4)	(234.0)	124.9
Other (expenses)/income, net	(9.8)	(39.4)	(10.7)	(38.6)	360.7
Financial (expenses)/income, net	(18.2)	(84.9)	(66.3)	12.1	-18.3
Share in the (loss)/profit of investments accounted for using the equity method	10.8	7.9	(3.2)	14.8	-
Income tax expense	(67.2)	(63.3)	(134.0)	(137.2)	102.4
Profit for the year after tax	203.9	155.1	249.8	351.5	140.7
Other comprehensive income/(expenses)	(15.9)	28.7	157.5	37.6	23.9
Total comprehensive income for the year	188.0	183.8	407.3	389.1	95.5
Net operating profit after tax (NOPAT)	211.3	232.1	319.3	324.6	101.7

Structure of revenue from sales to external customers by operating segment

Indicator	2021		2022		2023		2024	
Operating segment	RUB billion	% of the total	RUB billion	% of the total	RUB billion	% of the total	RUB billion	% of the total
Electricity Generation	611.6	55.6	633.9	45.4	680.6	32.0	847.3	33.9
Sales and Trading	204.2	18.5	256.5	18.4	568.7	26.7	619.7	24.8
Fuel	85.1	7.7	111.8	8	169.8	8.0	203.2	8.1
Mechanical Engineering	79.9	7.3	81.3	5.8	114.3	5.4	152.0	6.1
Mining	6.7	0.6	8.9	0.6	10.7	0.5	16.3	0.7
REIN	17.7	1.6	8.8	0.6	0	0	0	0
Transportation	0.0	0.0	95.4	6.8	274.5	12.9	275.2	11.0
Other operating segments	95.4	8.7	215.9	15.2	310.5	14.5	388.0	15.4
Total	**1,100.6**	**100**	**1,412.5**	**100**	**2,129.1**	**100.0**	**2,501.7**	**100.0**

1. Comparative data for 2023 have been recalculated due to the fact that:
   - The effect of fair value measurement of recognised assets and assumed liabilities of subsidiaries acquired in 2023 was recognised in 2024;
   - In September 2024, the Group increased its stake to 99% and acquired control over JSC WindSGC-2. Given that JSC WindSGC-2 had been controlled by ROSATOM, this transaction has been recognised in consolidated financial statements as a common control transaction; accordingly, comparative data for 2023 have been retrospectively adjusted.

Revenue increased by 17.5%, or RUB 372.6 billion, compared to 2023; this included:

- Revenue growth in the Electricity Generation segment driven primarily by a rise in prices for generated electricity and an increase in electricity sales volumes;
- An increase in revenue from the sales of other energy resources, as well as uranium-containing products in the Sales and Trading operating segment;
- Revenue growth in the Fuel segment driven mainly by an increase in the sales of uranium-containing products;
- Revenue growth in the Mechanical Engineering segment due to an increase in equipment sales.

Cost of sales

Cost structure, RUB billion

Cost of sales	2021	2022	2023	2024	2024/2023, %
Materials and fuel	212.3	332.0	709.6	775.4	109.3
Staff costs	161.4	207.4	252.6	306.0	121.1
Cost of electricity purchased for resale and for own use	58.1	70.8	104.9	152.8	145.7
Electricity transmission services	28.1	30.4	36.4	59.9	164.6
Depreciation and amortisation	113.1	112.7	124.6	135.6	108.8
Production services of third-party contractors	49.6	56.2	78.5	118.7	151.2
Property tax and other taxes and payments to the budget	21.6	25.4	30.0	34.5	115.0
Transport costs	9.5	69.7	170.4	166.9	97.9
Other expenses	67.5	75.4	93.9	103.1	109.8
Changes in finished goods and work in progress	(15.8)	(43.4)	(123.2)	(85.6)	69.5
Total	**705.4**	**936.6**	**1,477.7**	**1,767.3**	**119.6**

The cost of sales increased by **RUB 289.6 billion** (19.6%), with the growth driven mainly by the following items:

- (a) An increase in the cost of production services of third-party contractors by **RUB 40.2 billion;**
- (b) An increase in the cost of fuel and materials by **RUB 65.8 billion** caused by growing sales volumes;
- (c) An increase in expenditure on operating personnel by **RUB 53.4 billion;**
- (d) An increase in the cost of electricity purchased for resale and for own use by **RUB 47.9 billion** amid revenue growth.

Structure of the statement of financial position

Key changes in the asset structure, RUB billion

Indicator	31 December 2021	31 December 2022	31 December 2023	31 December 2024
Goodwill	49	101	123	140
Intangible assets	186	213	271	308
Property, plant and equipment	2,167	2,909	3,777	4,847
Financial investments	187	296	299	283
Loans issued	113	105	173	210
Bank deposits	274	181	155	6
Cash	217	491	326	446
Accounts receivable	464	655	862	1,098
Inventory	236	318	489	627
Other non-current assets	203	194	274	388
Other current assets	12	17	48	51
Total	**4,108**	**5,480**	**6,797**	**8,404**

Key changes in the structure of equity and liabilities, RUB billion

Indicator	31 December 2021	31 December 2022	31 December 2023	31 December 2024
Provisions	253	251	226	244
Accounts payable	593	801	1,114	1,353
Borrowings	438	1,324	1,938	2,876
Other liabilities	136	221	305	423
Non-controlling interest	79	158	157	197
Retained earnings	1,363	1,457	1,639	1,867
Equity	1,246	1,268	1,418	1,444
Total	**4,108**	**5,480**	**6,797**	**8,404**

Key financial and economic indicators

Financial sustainability indicator	2021	2022	2023	2024
Debt-to-equity ratio	0.40	0.63	0.96	1.26
Liquidity ratios				
Quick ratio	1.49	1.41	0.91	0.84
Current ratio	1.87	1.75	1.27	1.21
Turnover indicators, days				
Inventory turnover	78	71	69	82
Accounts receivable turnover	63	66	58	66
Accounts payable turnover	125	131	139	170
Profitability ratios, %				
Return on sales (ROS)	18.5	11.0	11.7	14.0
Return on assets (ROA)	5.0	2.8	3.7	4.2
Return on equity (ROE)	7.6	5.4	7.8	10.0

Cash flow

Indicator	2021	2022	2023	2024	2024/2023, %
Cash flow from operating activities before changes in working capital	393.1	455.3	557.3	640.2	114.9
Changes in working capital	(58.1)	(40.8)	(118.4)	(206.3)	174.2
Income tax paid	(69.7)	(63.3)	(168.5)	(154.9)	91.9
Interest paid	(16.6)	(57.9)	(112.9)	(232.5)	205.9
Net cash flow from operating activities	**248.7**	**293.3**	**157.5**	**46.5**	**29.5**
Capital expenditures	(358.0)	(543.3)	(714.4)	(844.0)	118.1
Other	(161.4)	(41.0)	76.7	198.6	258.9
Net cash flow used in investing activities	**(519.4)**	**(584.3)**	**(637.7)**	**(645.4)**	**101.2**
Net changes in total debt	222.2	622.7	322.9	786.6	243.6
Payment of lease liabilities	(4.1)	(4.0)	(9.9)	(15.9)	160.6
Dividends paid	(41.9)	(42.1)	(68.1)	(70.5)	103.5
Acquisition of non-controlling interest	-	(4.3)	(15.2)	(6.4)	42.1
Proceeds from the sale of non-controlling interest	-	-	1.5	11.4	760.0
Net cash flow from financing activities	**176.2**	**572.3**	**231.2**	**705.2**	**305.0**
Net (decrease)/increase in cash and cash equivalents	**(94.5)**	**281.3**	**(249.0)**	**106.3**	**-**
Cash and cash equivalents at the beginning of the reporting period	314.7	218.4	492.5	326.3	66.3
Effect of movements in foreign exchange rates on cash and cash equivalents	(3.3)	(8.7)	82.8	2.5	3.0
Cash and cash equivalents at the end of the reporting period	**216.9**	**491.0**	**326.3**	**435.1**	**133.3**

Approach to taxation

JSC Atomenergoprom is a major taxpayer in Russia. Its organisations make significant contributions to budget revenue in their regions of operation. Information on taxes paid is regularly provided to regional administrations, the Government and the President of the Russian Federation. The Company views strict compliance with laws as a necessary prerequisite for the implementation of its strategy.

In order to develop a single approach and minimise tax risks, ROSATOM develops and regularly updates the following uniform industry-wide documents regulating tax matters for JSC Atomenergoprom and its organisations: the Uniform Accounting Policy for Taxation; the Methodological Guidelines on Tax Due Diligence of Transactions; the Methodological Guidelines and Procedure for Communication on Transfer Pricing Matters; the Procedure for Calculating Income Tax for Controlled Foreign Companies and the Methodological Guidelines on Inspecting and Classifying Foreign Entities for the Purpose of Income Tax Calculation in the Russian Federation; the Procedure for Compiling Country-by-Country Data; the Methodological Guidelines on Identifying and Assessing Risks to Be Identified for the Purpose of Tax Monitoring; the Methodological Guidelines on Assessing the Applicability of Benefits under Tax Treaties (MLI).

Tax management, control and risk management

JSC Atomenergoprom has developed and operates a corporate risk management system on an ongoing basis. The tax risk management process is aimed at preventing or minimising risks, analysing the outcomes of the relevant measures and disclosing information on risks. Tax risk management approaches are regulated by the Uniform Industry-Wide Guidelines and recommendations of ROSATOM. In addition, those organisations that have joined the tax monitoring programme prepare quarterly tax risk reports to be submitted to tax authorities, as required by the Federal Tax Service of Russia (the risk register is compiled and updated based on the Industry-Wide Risk Library).

The performance of the tax function of JSC Atomenergoprom's subsidiaries is monitored by ROSATOM, which sets the relevant key performance targets (for the materiality of errors and for the share of non-deductible expenses).

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

2

BUSINESS STRATEGY

Igor Kurchatov (1903–1960)

In the autumn of 1945, a group of physicists headed by Igor Kurchatov produced an extensive memo on nuclear issues, which provided a detailed description of potential applications of nuclear energy. On 16 May 1950, Joseph Stalin signed the Decree of the Council of Ministers of the USSR on Scientific Research, Projects and Experimentation Focused on the Peaceful Use of Nuclear Energy. Under Kurchatov's supervision, plans were developed for extensive use of nuclear energy in the country. Starting from 1950, Igor Kurchatov worked actively on the development strategy for the nuclear industry.

CHAPTER 2. BUSINESS STRATEGY

2.1. Business Strategy until 2030

2.1.1. Business context

Trends in the development of the nuclear industry

The development of the nuclear industry is influenced by a number of factors, including:[1]

- Global population growth from 8.1 billion people in 2024 to 8.5 billion people by 2030 and an increase in the share of urban population from 57.7% to 60.1%;
- Global GDP growth of around 3.3% per year;
- Growth of global electricity output and consumption. Global electricity output is expected to increase by ~21% compared to 2024 and reach 37,500 TWh as early as in 2030, with the Asia Pacific region accounting for two thirds of the growth;
- Accelerating greenhouse gas accumulation. In 2024, carbon dioxide emissions reached a new high of more than 37.8 billion tonnes. In 2024, emissions increased by 0.8% compared to 2023.

The development of low-carbon power generation, including nuclear power, is a necessary prerequisite for reducing emissions and achieving international climate targets. In recent years, environmental aspects of the electricity industry remain under close scrutiny, and the share of low-carbon power in the global energy mix continues to increase.

In 2024, amid geopolitical instability, rising inflation and disruptions in traditional energy supply chains, the global commitment to low-carbon and sustainable energy solutions was reaffirmed. The shared commitment to reducing emissions will significantly accelerate the electrification of the global economy, which will necessitate active development of all zero-carbon energy sources, including nuclear power generation.

In the long term, the global nuclear power industry as an energy source will remain in demand. The International Energy Agency forecasts an increase in net installed nuclear capacity from 398.2 GW[2] to 452 GW[3] by 2030.

JSC Atomenergoprom continues to give priority to the development of nuclear technologies, innovative non-nuclear technologies and related technologies that complement nuclear power generation and produce a multiplier effect across the industry as a whole.

The Company focuses on promoting nuclear products and leveraging existing market opportunities to unlock the potential of existing mature technologies. As the Company strengthens its position on existing markets, it actively diversifies into both adjacent segments and promising innovative technologies.

Key criteria for a decision to develop a new business area include its expected commercial appeal for the industry in the long term and safety for people and the environment.

1. Data from the World Bank, the IMF, the IEA World Energy Outlook 2024 (Stated Policies Scenario), the IEA Global Energy Review 2025 and the IAEA.
2. The data take into account a new demonstration power unit with a capacity of ≈1,427 MW (net) put into operation in 2024 in the Shandong Province (China), which was not recorded in the IAEA Power Reactor Information System (PRIS) as at 31 December 2024 (https://pris.iaea.org).
3. IEA, World Energy Outlook 2024 (STEPS), net capacity (excluding consumption for own needs).

Thermal power generation will yield to nuclear energy due to price fluctuations and constraints on the fuel market, as well as CO_2 emissions, which have a negative impact on the environment and drive up the cost of energy since many countries have imposed CO_2 emission fees. Projects to install CO_2 capture and utilisation systems at thermal power plants in order to minimise emissions are expected to be developed in the future. However, current estimates show that an increase in the LCOE of thermal power plants by more than 35–55% will make them uneconomical.

Due to these factors, nuclear power will remain in demand in the long term.

The Company's competitive position

The competitiveness of services provided by the Company is based on its unique facilities, technical capabilities and human resources, as well as the experience of coordinating R&D and design organisations.

The Russian nuclear industry is one of the global leaders in terms of research and development in reactor design, capabilities and technologies in the nuclear fuel cycle and in the sphere of NPP operation.

Russia has the most advanced enrichment technologies in the world; nuclear power plants with water-cooled water-moderated power reactors (VVERs) have proved their reliability over one thousand reactor-years of fail-free operation.

In 2024, JSC Atomenergoprom (including ROSATOM's portfolio) was the largest global market player in terms of the portfolio of overseas large NPP construction projects (33 large power units and six small power units).

Competitive advantages:

- Integrated offer for the entire NPP life cycle, which guarantees a competitive cost per kilowatt-hour (LCOE);
- Use of reference technologies meeting the highest safety standards;
- Assistance in securing funding (including under the BOO (Build – Own – Operate) scheme) and building project infrastructure (legal framework, employee training, community relations, etc.).

For details on JSC Atomenergoprom's main competitors, see section 2.3. 'Markets Served by Atomenergoprom'.

GRI 2-23

2.1.2. Long-term strategic goals

JSC Atomenergoprom implements ROSATOM's Business Strategy until 2030, which has been developed based on the goals set by the government for the civilian branch of the nuclear industry; it was updated in 2024.[1]

The development of JSC Atomenergoprom as a company of ROSATOM is based on the long-term technological policy, which involves mastering new-generation nuclear energy technologies (including fast neutron reactors and the closed nuclear fuel cycle), ensuring technological sovereignty, as well as strengthening the export potential of Russia's nuclear technologies (NPP construction abroad, rendering uranium enrichment and conversion services, nuclear fuel fabrication, etc.).

ROSATOM's mission, which JSC Atomenergoprom is committed to, is defined as leveraging the achievements of nuclear science and safe modern technology for the benefit of humanity.

1. The updated strategy was approved by ROSATOM's Supervisory Board on 22 April 2024.

The Company's operations contribute to the implementation of the global sustainability agenda and to the achievement of the UN Sustainable Development Goals through the product line and efforts to ensure the sustainability of internal processes in terms of environmental, social and governance impacts.

For details, see section 2.2. 'Sustainable Development Management'.

ROSATOM's business strategy provides general guidelines for the long term, shapes the target vision for 2030 and sets a framework for development. The ROSATOM 2030 Vision is focused on becoming a global technological leader. Accordingly, the Company intends to expand the scale of its business to match existing global technological leaders.

The focus on the development of state-of-the-art technologies also determines the Company's role as a leader in terms of national technological sovereignty, which involves achieving technological self-sufficiency and independence.

By developing new product lines, the Company will be able to meet a significant share of demand for new technological solutions in most key industries. Furthermore, the development of new technological solutions will rely primarily on domestically developed solutions that ensure reliable and safe operations and help to prevent the risk of delays in the implementation of development projects caused by discriminatory measures taken by certain countries and organisations.

By 2030, ROSATOM intends to increase its revenue (including the portfolio of JSC Atomenergoprom) to RUB 5 trillion. This target is aligned with the goal of becoming a global technological leader, which requires the Company to expand the scale of its operations to match existing global technological leaders by expanding its geographic footprint and developing new products.

The vision also involves creating a governance system meeting international standards and easily adaptable to a changing environment, and fully unlocking the potential of our employees by providing an environment for lifelong learning and developing programmes to attract the best talent.

ROSATOM and the Company have set themselves four long-term strategic goals to be achieved by 2030:

Further escalation of geopolitical tensions was a major external factor in 2024; it resulted in the tightening of restrictive policies of certain countries. Most countries responded to the crisis by closely focusing on energy security, diversifying the energy mix and increasing investment in clean energy sources.

For JSC Atomenergoprom as a global player on the nuclear technology and wind power markets, this opens up opportunities for further expansion into international markets, primarily with product offers focused on low-carbon energy and targeted at emerging markets.

The Company's strategy provides it with sufficient flexibility in its development to enable it to leverage the opportunities arising in the industry.

- **To increase the international market share.** The Company takes steps to maintain and strengthen its position on traditional nuclear power markets globally (NPP construction in Russia and abroad, sales of nuclear fuel cycle products) and focuses on international expansion in new areas of development to maximise economic benefits;
- **To reduce production costs and the lead time.** JSC Atomenergoprom continuously improves its operational and investment performance, including minimising costs at all stages of the value chain to ensure that products sold by the Company are competitive while strictly complying with safety requirements;

- **To develop new products for the Russian and international markets.** The Company develops new energy and non-energy business areas to create new long-term growth points in the industry, reduce the negative impact of changes in the market environment in its traditional markets and maintain employment levels in its host communities;
- **To achieve global leadership in state-of-the-art technology.** ROSATOM and JSC Atomenergoprom support the implementation of prioritised research and technology initiatives, develop, produce and continuously upgrade technological solutions and products based on them, and seek to rank among the top five global companies in at least five advanced technologies included in the list of technologies prioritised for the development of the industry within the time horizon of their business strategy.

Necessary prerequisites for the implementation of the strategy:

- Ensuring safe use of nuclear energy;
- Minimising the negative environmental impact;
- Non-proliferation of nuclear technologies and materials;
- Ensuring that the development of nuclear power is socially acceptable;
- Developing the innovative potential of ROSATOM and JSC Atomenergoprom;
- Shaping a corporate culture focused on results and performance improvement;
- Ensuring full compliance with Russian legislation.

Key strategy implementation risks

Key risks that can affect the achievement of strategic goals include:

- Economic risks (including financial risks, such as currency, interest rate and credit risks, etc.);
- Commercial risks (including risks associated with the nuclear fuel cycle product and service market, as well as reputational risks);
- Operational risks (including the risk of losing critical knowledge of existing and newly created products);
- Nuclear and radiation risks;
- Political risks;
- Technical (project) risks;
- Climate risks (including environmental risks and energy transition risks);
- Social risks.

For details on key risks, see section 7.2. 'Risk Management'.

GRI 3-3
GRI 2-23

2.2. Sustainable Development Management

2.2.1. Key sustainable development results

The sustainable development agenda is incorporated into the Business Strategy of ROSATOM and JSC Atomenergoprom. As part of an update to the Strategy until 2030, in 2024, the confirmed 'green' quality of products and projects was defined as one of the principles underlying the operations of the Corporation and JSC Atomenergoprom.

The level of JSC Atomenergoprom's sustainability maturity is regularly confirmed by independent ESG ratings.

For details, see section 2.2.2. 'ESG Ratings'.

ESG rating assigned by ACRA

As part of the development of a system of green instruments in Russia, in 2024, a Russian platform for trading in certificates of origin of electricity (also known as green certificates) was launched at LLC Energy Certification Centre; its operation is governed by Federal Law No. 35-FZ on the Electric Power Industry. These certificates are designed to support industrial consumers seeking to minimise the carbon footprint of their operations. It is important to note that certificates that can be purchased on this platform include not only certificates for renewable energy but also 'nuclear' certificates (i.e. certificates of origin of electricity confirming that it has been generated by NPPs). In 2024, the national trading platform recognised Balakovo, Kalinin and Leningrad NPPs, which have a combined installed capacity of 9 GW, as qualifying for the issue of nuclear certificates; this will make nuclear certificates available to large Russian industrial consumers seeking to offset Scope 2 greenhouse gas emissions. In 2024, nuclear certificates were used to confirm the consumption of low-carbon energy by Russian companies totalling more than 100 million kWh.

JSC Atomenergoprom continues to apply green finance instruments. By year-end 2024, it had raised green loans totalling more than RUB 900 billion in the form of ESG loans and green bonds. Green finance raised by the Company was used to refinance the Akkuyu NPP project in Turkey, wind farm construction projects in Russia and environmental projects.

To confirm their status as sustainability leaders, the Company's organisations regularly participate in various green initiatives and competitions in Russia and abroad. More specifically, in 2024, projects implemented in the Power Engineering Division won two awards in the Green Eurasia International Climate Competition:

- The project to upgrade cooling towers at Rostov NPP was ranked first in the Climate-Resilient Infrastructure category;
- The project titled 'Roaming Operator of Charging Infrastructure for Electric Vehicles' was ranked second in the Green Transport category.

MED 39

2.2.2. ESG ratings

Starting from 2020, ROSATOM regularly undergoes an independent ESG assessment, which also covers JSC Atomenergoprom's organisations. Starting from 2022, an ESG rating is assigned to ROSATOM by the Russian Analytical Credit Rating Agency (ACRA) on an annual basis. In 2024, ACRA confirmed ROSATOM's rating at ESG-2, which corresponds to a very high environmental, social and governance score (the assessment was solicited, and the Corporation participated in the rating process).

The high ESG rating reflects the Corporation's strong environmental, social and governance performance compared to peer companies and regular updates to its internal policies and procedures on various aspects of sustainable development. More specifically, during the year since the previous ESG assessment, ROSATOM and the Company updated the industry-wide Code of Ethics, and developed and approved methodological guidelines on managing nature and climate risks.

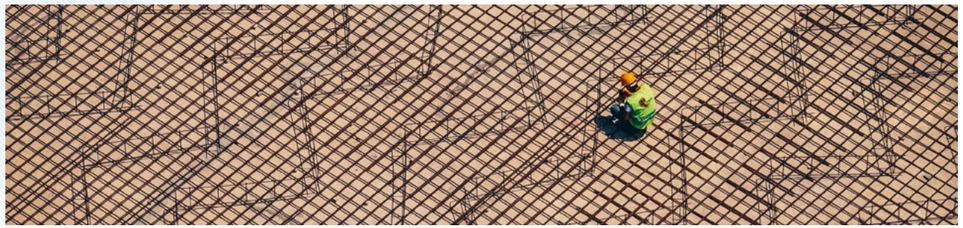
The ESG score remains consistently high and tends to improve. A slight decrease in the score for the E aspect in 2024 was due to a one-off decline in the environmental performance of individual Divisions caused by scheduled activities as part of their core operations.

ROSATOM's ESG score is informed by data on the performance of five key Divisions managed by JSC Atomenergoprom: the Mining, Power Engineering, Mechanical Engineering, Fuel, and Sales and Trading Divisions.

Changes in the ESG rating assigned to ROSATOM by the ACRA rating agency between 2022 and 2024

ACRA	2022	2023	2024
ROSATOM	ESG-3	ESG-2 ↑	ESG-2 —
E aspect	ESG-4	ESG-2 ↑	ESG-3 ↓
S aspect	ESG-5	ESG-3 ↑	ESG-2 ↑
G aspect	ESG-1	ESG-1 —	ESG-1 —

In addition, ROSATOM and JSC Atomenergoprom achieve good scores in other ESG ratings and rankings, which are based primarily on publicly available information about the Company. It should be noted that in 2024, JSC Atomenergoprom ranked second among all Russian companies in the national EPS ('Environment, People, State') ranking of responsible businesses.



Other ESG ratings and rankings in 2024

ЭКГ рейтинг ответственного бизнеса	Arctic Russia Arctic & CSR	NCR
142 points (No. 2 in the overall ranking)*	**37.5 points** (ranked No. 2)	**Level I**
RAEX	**Forbes**	**RSPP**
63 points (ranked No. 17)	**Platinum** Best Employer	Responsibility and Transparency **B+** Sustainable Development Vector **B**

** For JSC Atomenergoprom*

2.2.3. Green product line

The nuclear industry is one of the most knowledge-intensive and high-technology sectors. In addition to nuclear power, the Company is also developing other product solutions for the green energy transition, including wind power generation, hydrogen energy technology, energy storage systems and a number of other solutions. Nuclear technology also provides a basis for the development of solutions for nuclear medicine and isotope products, radiation processing technologies, environmental solutions, international logistics, etc.

As part of product line development, special emphasis is placed on environmental and climate performance of products and projects, and value creation for end users in terms of alignment with sustainability priorities.

As part of its efforts to ensure the 'green' quality of its product line, the Company reviews the ESG performance of its key product areas. To do so, it applies an internal ESG certification procedure, which involves businesses completing an ESG questionnaire containing 50 questions; a score is then assigned, and recommendations are produced for improving ESG maturity.

2.2.4. Contribution to the climate agenda

In the context of sustainable development, it is important that the 'green' quality of nuclear power should be recognised in official documents at the national level.

Systematic efforts are underway in Russia to ensure that projects in the nuclear power industry are covered by green regulation:

- In 2021, nuclear power was included in the Taxonomy of Green Projects;[1]
- The development of nuclear technology and the implementation of projects focused on nuclear power have been prioritised in the Strategy of Socio-Economic Development of the Russian Federation with Low Greenhouse Gas Emissions until 2050;[2]
- In 2023, nuclear power was listed among low-carbon power generation sources in the new version of Federal Law No. 35-FZ on the Electric Power Industry;
- In 2024, a national system for trading in green certificates of origin of electricity was launched in Russia; certificates available to Russian companies seeking to confirm the 'green' quality of energy that they consume include nuclear certificates (i.e. certificates of origin confirming that electricity has been generated by NPPs).[3]

The inclusion of nuclear power in the scope of national green regulation along with renewable energy sources helps maximise its climate performance. To date, nuclear power has been labelled as 'green' in official documents of more than 30 countries as they develop green and climate regulations.

Nuclear power is characterised by one of the lowest levels of greenhouse gas emissions among existing power generation options and plays a crucial role in combating climate change.

In Russia, nuclear power makes up almost half of all low-carbon energy generated in the country, and nuclear power generation accounts for about 19% of the total electricity output. In late 2024, the General Scheme for the Locations of Power Facilities until 2042 was approved in Russia (by Order No. 4153-r of the Government of the Russian Federation dated 30 December 2024); it outlines plans to increase the share of NPPs in the structure of electricity generation to 24% by 2042.

Since 2017, JSC Atomenergoprom has been developing the wind power business. Its share on the Russian wind power market totals about 40% of installed capacity of wind power plants. By year-end 2024, nine wind farms with a total capacity of more than 1 GW were in operation in Russia. The Company's renewable energy solutions are also in demand in foreign markets.

Since 2021, JSC Atomenergoprom's organisations have been offering consumers the 'green' quality of low-carbon nuclear and wind power in the form of free bilateral contracts, as well as certificates of origin of electricity, which became available in mid-2024. In 2024, the total volume of low-carbon nuclear and wind power covered by free bilateral contracts and green certificates exceeded 7.8 billion kWh (a total of 28.4 billion kWh between 2021 and 2024). These green instruments are in demand among large Russian companies in the metals, oil and gas, electric power, retail and other sectors.

2.2.5. Assessment of greenhouse gas emissions

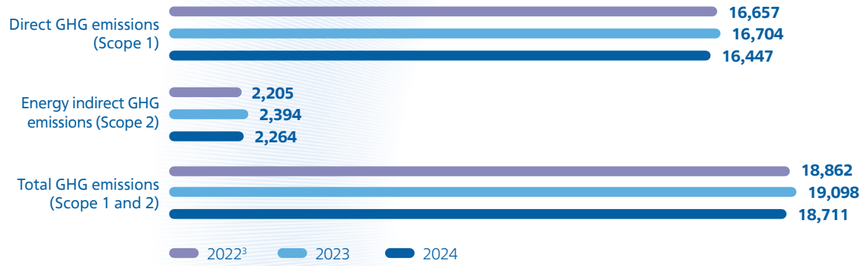
The Company assesses its greenhouse gas (GHG) emissions in accordance with the requirements of international standards and Russian legislation.

1. Approved by Decree No. 1587 of the Government of the Russian Federation dated 21 September 2021.
2. Approved by Order No. 3052-r of the Government of the Russian Federation dated 29 October 2021.
3. Similar green nuclear certificates are also applied in the UAE, Japan, France and the US.

2.2.5.1. Assessment of greenhouse gas emissions in accordance with international standards

When calculating GHG emissions in accordance with international standards, the Company applies the Uniform Guidelines for the Calculation of Greenhouse Gas Emissions of ROSATOM and Its Organisations, which are aligned with international standards (ISO 14064-1,[1] ISO 14067,[2] the GHG Protocol) and approaches outlined in the IPCC Guidelines for National Greenhouse Gas Inventories. The Guidelines use global warming potential values from the IPCC Fifth Assessment Report (AR5); energy indirect GHG emissions (Scope 2) are calculated using a location-based method. 86 organisations were included in the calculation in 2024.

MED 39 **GHG emissions in JSC Atomenergoprom's organisations,** '000 tonnes of CO_2e

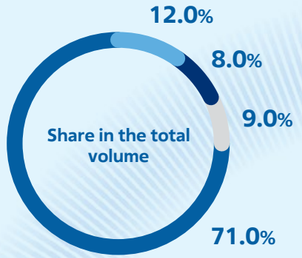


There were no significant changes in the volume of the Company's GHG emissions or their division into Scope 1 and 2 between 2022 and 2024. In 2024, GHG emissions (Scope 1 and 2) totalled 18,711,000 tonnes of CO_2e, including direct GHG emissions (Scope 1) totalling 16,447,000 tonnes of CO_2e.

There were also no significant changes in the breakdown of GHG emissions by key Division in 2024, with the major share of emissions (about 71%) produced by the Infrastructure Solutions Division, whose organisations manage heat supply systems in 20 Russian towns and cities (mainly coal- and gas-fired CHPPs) to ensure steady energy supply to consumers.

1. ISO 14064-1:2018 Part 1: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removal.
2. ISO 14067:2018 Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification.
3. The level of JSC Atomenergoprom's GHG emissions in 2022 is used as a baseline.

Breakdown of GHG emissions (Scope 1 and 2) by Division



	Total GHG emissions, '000 tonnes of CO_2e
Infrastructure Solutions	13,309
Mining Division	2,239
Fuel Division	1,463
Other	1,700
Total	**18,711**

2.2.5.2. Assessment of greenhouse gas emissions in accordance with the requirements of Russian legislation

Federal Law No. 296-FZ of 2 July 2021 on Limiting Greenhouse Gas Emissions establishes a regulatory framework for GHG emission control in the Russian Federation. As part of the national GHG emission accounting system, the threshold for direct GHG emissions for regulated organisations has been set at 50,000 tonnes of CO_2e per year.

In order to define the boundaries of GHG emission accounting in accordance with Russian legislation, the Company has set a more ambitious target of 20,000 tonnes of CO_2e per year or more; the scope of accounting includes organisations based in the Russian Federation. The list of organisations required to assess GHG emissions and disclose the relevant information in accordance with Russian legislation includes 24 organisations of JSC Atomenergoprom.

In 2024, GHG emissions in these 24 organisations of JSC Atomenergoprom totalled 16,398,000 tonnes of CO_2e.

Direct GHG emissions in JSC Atomenergoprom's organisations (in accordance with the Russian methodology), '000 tonnes of CO_2e

It should be noted that coefficients used for the 'stationary fuel combustion' category of GHG emission sources when calculating GHG emissions in accordance with the requirements of Russian legislation differ from those used for calculation in accordance with international standards, and a more limited range of GHG emission sources is used.

GRI 2-23
GRI 2-24

2.2.6. Fulfilment of responsible business commitments

Sustainable processes

The Company applies the Uniform Industry-Wide Policy on Sustainable Development, which sets out the objectives and key principles guiding the efforts of ROSATOM and its organisations in the sphere of health, safety and the environment, in the social sphere and in the sphere of corporate governance. When planning and carrying out its activities, the Corporation is guided by the precautionary principle approved at the United Nations Conference on Environment and Development in 1992. In addition, in order to systematise sustainability initiatives in the Russian nuclear industry, the Company applies and regularly updates the Uniform Industry-Wide Methodological Guidelines on the Management of Sustainability Initiatives.

Regulations concerning every aspect of sustainable development have been approved in the industry. They define the key principles underlying environmental, social and governance initiatives of ROSATOM and its organisations, as well as the mechanisms for implementing these principles. These regulations include the Environmental Policy, the Social Policy, the Occupational Health and Safety Policy, the Human Rights Policy, the Code of Ethics and Professional Conduct (updated in 2024), the Anti-Corruption Policy, the Uniform Industry-Wide Methodological Guidelines for the Calculation of Greenhouse Gas Emissions (updated in 2024), etc.

Sustainable Development Policy

The Company's sustainable development initiatives involve continuous process improvement, the implementation of projects focused on health, safety and the environment and human rights, as well as personnel management and talent development. Tools used for measuring the Company's sustainability performance include ESG indicators. The Company is developing its sustainability management system. It is considering setting short- and medium-term ESG goals for a number of functions and for the Company's businesses.

The Company's organisations are adopting sustainability principles. Sustainability officers and employees responsible for individual aspects of sustainable development have been appointed in the Divisions; measures to improve sustainability maturity are developed and implemented on an annual basis. In 2024, employees responsible for data collection and the calculation of greenhouse gas emissions were appointed; this was an important outcome of efforts to develop climate impact management capabilities in the industry.

The Company's representatives participate in public discussions on sustainable development on Russian and international platforms. More specifically, in 2024, they participated in discussions focused on sustainable development and the climate agenda at the St. Petersburg International Economic Forum (SPIEF), the Eastern Economic Forum (EEF), the Russian Energy Week (REW), the UN Climate Change Conference (COP29), etc. They also regularly participate in the work of a number of specialised international organisations, including the IAEA and the World Nuclear Association (WNA), focused on sustainable development and the climate agenda.

Employees in the industry are informed on a regular basis about sustainability priorities and objectives; workshops and other events are held, and surveys on sustainable development are conducted.

In order to develop sustainability competences, the Rosatom Corporate Academy provides face-to-face training on an annual basis. In addition, in 2024, a basic online training course on sustainable development was posted on ROSATOM's proprietary online training platform, RECORD Mobile; it includes seven videos on prioritised sustainability initiatives in the industry. In 2024, more than 7,000 unique users in ROSATOM and the Company completed this online training course.

In order to systematise existing approaches to embedding sustainability principles and enable organisations in the industry to share their experience, a Library of Industry Sustainability Practices has been made available to employees.

2.3. Markets Served by Atomenergoprom

In 2024, ROSATOM (including the portfolio of JSC Atomenergoprom) ranked:

- First in the world in terms of NPP exports (22 large power units under construction in seven countries worldwide, accounting for 88% of the global market), with the Company's portfolio of overseas NPP construction projects comprising 33 large power units and 6 small power units in 10 countries globally;
- First on the global uranium enrichment market (39%);
- Third in the world in terms of uranium production (15% of the market);
- Third on the global nuclear fuel market (19%).

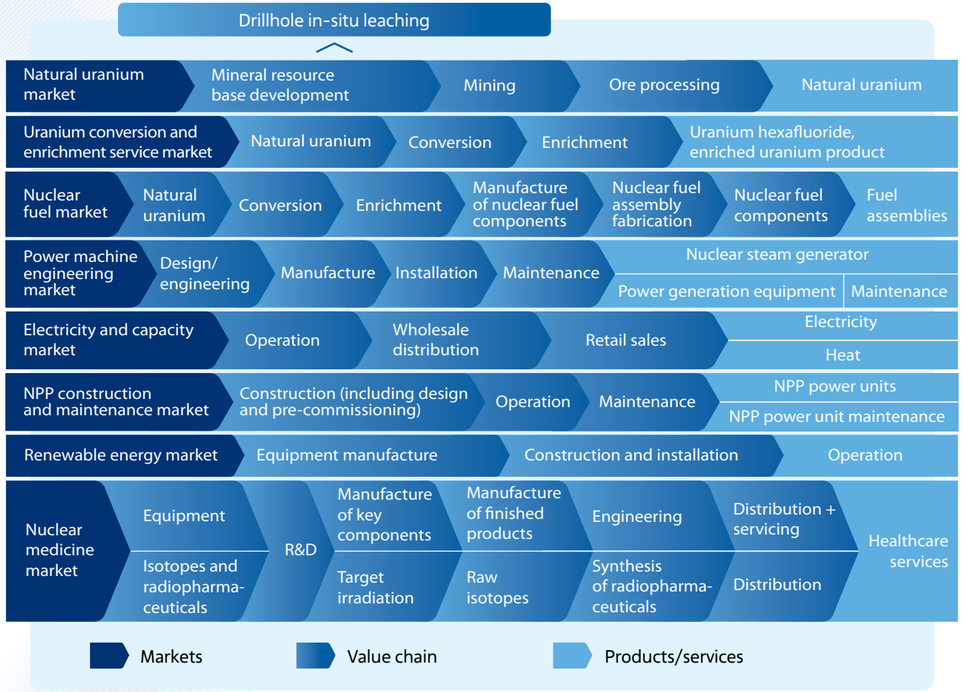
The vision of JSC Atomenergoprom as a company of ROSATOM is to become the flagship of national technological sovereignty and a global technological leader; this necessitates both developing in traditional segments and actively diversifying into new high-technology markets.

One of the key priorities of the Company's business is to develop globally competitive products that are able not only to effectively replace imports, but also to become leaders on global markets (both traditional and new ones).

GRI 2-6

2.3.1. Markets served by Atomenergoprom and value chains

In the reporting year, there were no changes in the value chain, including the supply chain.



2.3.2. Natural uranium market

Forecast for changes in uranium demand by 2030

In 2024, global reactor demand for uranium totalled 68,700 tonnes.[1] Global demand taking into account commercial and strategic stockpiling not intended for current consumption is estimated at 73,800 tonnes.

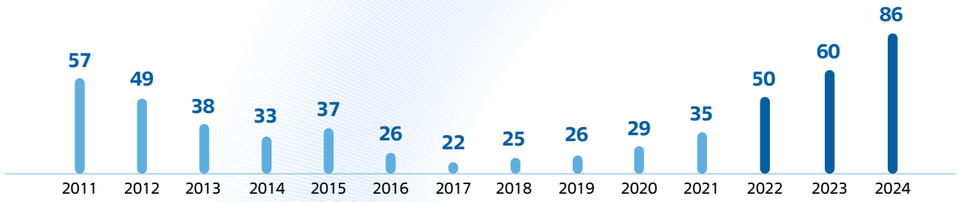
In 2024, the spot uranium market was characterised by a high level of price volatility due to the fluctuating activity of market players. At the start of the year, quotations rose on market players' concerns regarding uranium

1. Hereinafter, data on the uranium market from a report by UxC (UMO Q4 2024) are used.

supplies and an increased activity of financial investors. In February, spot prices rose to USD 107/lb of U_3O_8, reaching the highest level since August 2007. During the months that followed, quotations mostly trended downwards; as a result, by year end, spot prices dropped to USD 71.8/lb of U_3O_8.

According to UxC, in 2024, spot market quotations for uranium averaged USD 86.3/lb of U_3O_8, up by 43% year on year.

Average annual spot market quotations for natural uranium, USD/lb of U_3O_8



Sources: input data from UxC;[1] average values have been calculated by ROSATOM's Mining Division.

The uranium market fundamentals remain favourable. In the medium and long term, market prices for uranium are expected to rise due to additional demand from investors and a reduction in the 'liquid' portion of secondary sources. In the long term, price growth is expected to accelerate due to a rise in demand for uranium driven by the commissioning of new NPPs in China, India and other countries. According to the base case forecast of the World Nuclear Association (WNA), global reactor demand for uranium will increase to 83,800 tonnes by 2030 and to 129,900 tonnes by 2040.

1. UxC, LLC (UxC) is an independent international company specialising in market analysis, research and forecasting covering the entire nuclear fuel cycle (https://www.uxc.com/).

Natural uranium market overview

According to UxC, in 2024, global uranium production increased by 7% to 58,900 tonnes.

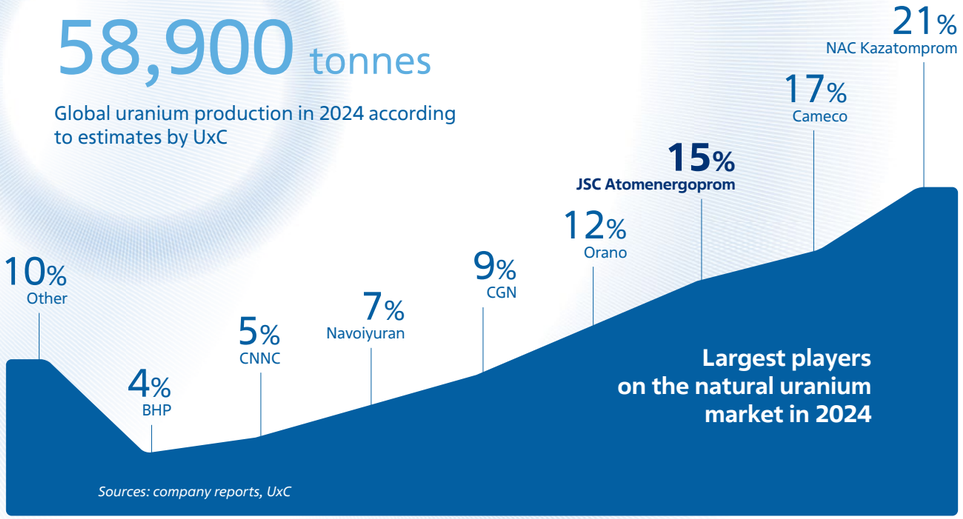
Nine major companies, namely NAC Kazatomprom (Kazakhstan), Cameco (Canada), two companies managed by JSC Atomenergoprom, CNNC and CGN (China), Orano (France), Navoiyuran State Enterprise (Uzbekistan) and BHP (Australia – UK), accounted for about 90% of global production.

NAC Kazatomprom has been the largest uranium mining company globally since 2010 (21% of global production in 2024). By year-end 2024, Canada's Cameco (17% of global production) remained in second place as it increased production after relaunching the McArthur River mine in Q4 2022 (the mine was put on care and maintenance in 2018 due to an unfavourable market environment). At year-end 2024, JSC Atomenergoprom ranked third among major companies (15% of global production).

Supplies from secondary sources (inventories of energy companies and some states, repreparation of depleted uranium hexafluoride, reprocessed uranium, etc.) in 2024 totalled 14,700 tonnes of natural uranium equivalent.

58,900 tonnes

Global uranium production in 2024 according to estimates by UxC



Sources: company reports, UxC

2.3.3. Uranium conversion and enrichment market

Products and services offered on the market include uranium hexafluoride (UF_6), uranium conversion services, uranium enrichment services and enriched uranium product (low enriched (up to 5%) and medium enriched[1] (5% to 20%) uranium).

Forecast for changes in demand for uranium conversion services by 2030

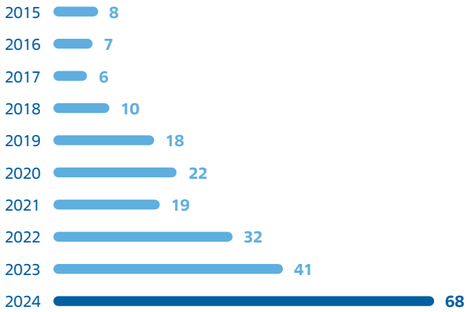
According to the base case scenario of the World Nuclear Association, in the reporting year, global reactor demand for uranium conversion services was estimated at 65,000 tonnes.

In 2024, average annual spot market quotations for uranium conversion services soared by 66%, while average annual long-term quotations rose by 33%.

The growth was driven by the following factors:

- An overall rise in interest in nuclear power accompanied by growing global demand for conversion services;
- Growing concerns among market players regarding the availability of conversion services amid politically motivated fragmentation of supply chains and limited conversion capacities of Western producers.

Average annual spot market quotations for conversion services, USD/kg of uranium (average for the North American and European markets)



The development of nuclear power generation until 2030 will have a positive impact on the market for uranium conversion services. According to the base case forecast of the World Nuclear Association, global demand for conversion services may grow to 66,000 tonnes in 2025 and 81,000 tonnes by 2030.

1. Also termed HALEU (the abbreviation for High-Assay Low-Enriched Uranium) in foreign sources.

Forecast for changes in demand for uranium enrichment services by 2030

According to the World Nuclear Association, in 2024, global reactor demand for enrichment totalled about 53 million separative work units (SWU).

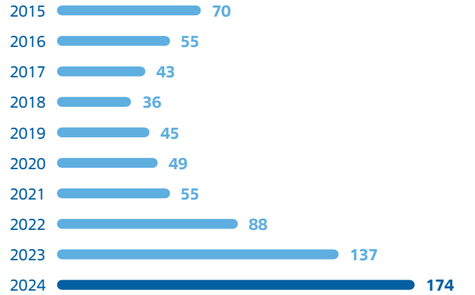
In 2024, average annual spot market quotations for uranium enrichment rose by 27%, while long-term quotations increased by 11%.

The rise in quotations was driven by the following factors:

- An overall rise in interest in nuclear power accompanied by growing global demand for enrichment services;
- Growing concerns among market players regarding the availability of enrichment services provided by Russian companies following a ban on the import of Russian uranium products into the US starting from 2028 (which came into force in August 2024) and temporary restrictions on enriched uranium supplies from Russia to the US or under export contracts concluded with persons registered under the US jurisdiction until the end of 2025 (pursuant to Decree No. 313 of the Government of the Russian Federation dated 9 March 2022), as well as limited enrichment capacities of Western producers.

The development of nuclear power generation until 2030 will have a positive impact on the market for uranium enrichment services. According to the base case forecast of the World Nuclear Association, global demand for enrichment will grow to 54 million SWU in 2025 and 66 million SWU by 2030.

Average annual spot market quotations for enrichment services, USD/SWU



Uranium conversion and enrichment market overview

Along with JSC Atomenergoprom, key players on the global market for uranium conversion services include Orano (France), Cameco (Canada), CNNC (China) and ConverDyn (US).

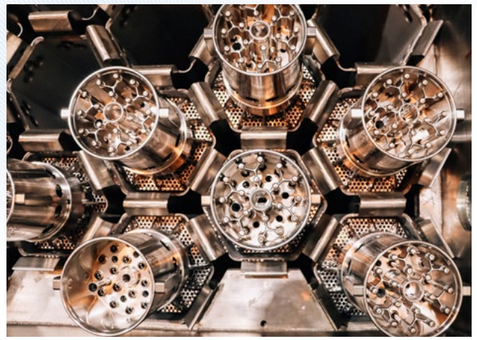
The main players on the global market for uranium enrichment services include JSC Atomenergoprom (39% of the global market), URENCO (UK, Germany, Netherlands; 31%), CNNC (China; 16%) and Orano (France; 13%). Together, these companies control more than 95% of the market. At present, all players use modern gas centrifuge technology for uranium enrichment.

2.3.4. Nuclear fuel fabrication market

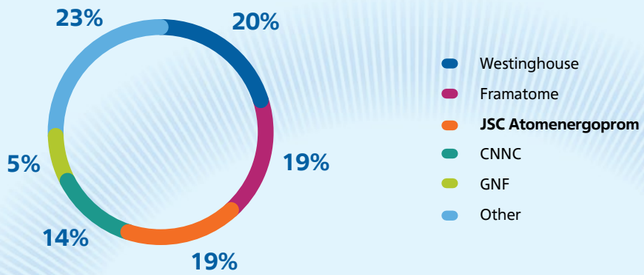
According to the Company, in 2024, the global nuclear fuel market capacity totalled about 10,400 tonnes of heavy metal (tHM), with fuel for light-water and other reactors requiring uranium enrichment accounting for ~7,200 tHM (including ~1,300 tHM of fuel for water-cooled water-moderated power reactors (VVERs)) and fuel for heavy-water reactors accounting for ~3,100 tHM.

As the reactor fleet will be expanding, the demand for fabrication services may increase to 11,200 tHM by 2030, including 1,400 tHM for VVER reactors.

Global suppliers on the fabrication market include Westinghouse (with a market share of 20%), Framatome (with a market share of 19%), JSC Atomenergoprom (19%),[1] CNNC (14%) and Global Nuclear Fuel (5%).



Shares of players on the nuclear fuel fabrication market



In the reporting year, Russian nuclear fuel fully met the demand of Russia and a number of customers, including Slovakia, the Czech Republic, Hungary, Finland, India, Turkey and China, for reactor fuel.

1. The calculation does not include 23 NPP power units (Japan, India) which were classified as in 'suspended operation' as at 31 December 2024, according to data in the IAEA Power Reactor Information System (PRIS).

Outcomes of efforts to enter new nuclear fuel markets

A batch of nuclear fuel for reactor start-up was produced and shipped in a timely manner for power unit No. 2 of Akkuyu NPP in Turkey, which is one of the Company's largest overseas projects.

The Company started to carry out a contract for nuclear fuel supply to power units No. 3 and 4 of Kudankulam NPP (India) throughout its life cycle (the portfolio of overseas orders covering the entire life cycle was expanded by USD 7 billion).

A batch of fuel for reactor start-up was produced for power unit No. 1 of Kursk NPP-2 equipped with a VVER-TOI reactor unit, which is currently under construction.

Nuclear fuel for the second reactor unit of the floating thermal nuclear power plant (FTNPP) in Pevek was delivered via the Northern Sea Route. Empty transportation casks were returned for the first time from Pevek to the manufacturing plant; this marked the completion of the full reloading cycle for the reactor units at the FTNPP.

Fuel assemblies comprising fuel elements with MOX fuel containing minor actinides were supplied for testing in the core of the BN-800 reactor.

The latest batch of uranium and aluminium components of nuclear fuel was supplied for the ETRR research reactor in Egypt under the long-term contract with the Egyptian Atomic Energy Authority (EAEA).

For details, see section 5.1. 'Research and Innovations'.

2.3.5. Power machine engineering market

Electricity is vitally important for industry, science and the daily life. In 2024, Russian industry expanded by 4.6%, with the manufacturing sector demonstrating the strongest growth at 8.5%. The production of steam turbines increased by 34.1% year on year.[1]

Economic growth and the need to upgrade energy infrastructure support the development of the Russian power machine engineering industry. The General Scheme for the Locations of Power Facilities until 2042 outlines plans to commission 88 GW of new capacity, including 29 GW at NPPs.

The Mechanical Engineering Division is the largest group of power machine engineering companies in Russia providing a full range of solutions for the design, manufacture and supply of equipment for NPPs, as well as for the fuel and energy sector, the oil and gas industry, shipbuilding and the metals industry.

The core competence of the Mechanical Engineering Division is the supply of full sets of reactor and turbine island equipment for nuclear power plants. In 2024, equipment produced by the Division continued to be used at more than 19% of power units globally. All Russian-design[2] NPPs use reactor equipment produced by the Mechanical Engineering Division.

The Division's enterprises control all stages of the production chain, from special steel production to finished equipment. This helps ensure high product quality and reliability. The Division is actively involved in NPP construction, equipment upgrades and maintenance.

The Division produces equipment for thermal and nuclear power generation, including solutions for shipbuilding and the oil and gas industry. Streamlined production processes enable the Division to effectively implement even the most complex projects.

1. Estimates based on data from the Federal State Statistics Service.
2. With a VVER design.

2.3.6. NPP construction and operation market

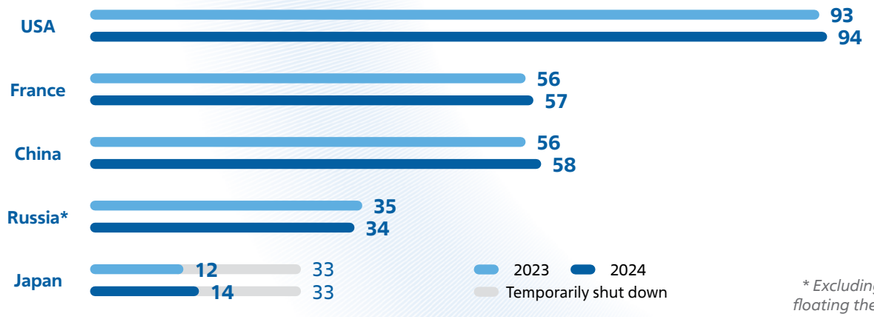
In recent years, key trends in the development of the global electricity market include heightened scrutiny of environmental aspects of the electric power industry and an increase in the share of zero-carbon power generation in the global energy mix. Countries seek to reduce the share of power plants using fossil fuels, such as coal and gas, and to develop renewable energy sources, such as wind and solar power plants, etc. Despite a surge in renewable power generation, its stability in the absence of expensive energy storage systems remains an unresolved issue. As a result, nuclear power generation is currently one of the most reliable, cheapest and most environmentally friendly sources of electricity. The International Energy Agency forecasts that by 2030, the global installed capacity of NPPs will reach 452 GW,[1] which reflects steady growth of nuclear power generation.

In 2024, nuclear power accounted for about 9% of global electricity generation. According to the IAEA, in 14 states, more than a quarter of electricity demand is met by nuclear power generation. Countries with the largest share of nuclear power generation include France (64.8%), Slovakia (61.3%) and Hungary (48.8%).[2]

According to the IAEA,[3] as at 31 December 2024, 441 power reactors with a total capacity of 398.2 GW were in operation (including the suspended Japanese reactors). Another 62 reactors were under construction. In 2024, 34 power units of 10 NPPs and the two-reactor power unit of the *Akademik Lomonosov* floating thermal nuclear power plant (FTNPP) were in operation in Russia, with their installed capacity totalling 28.6 GW. In 2024, the Company ranked second among nuclear power generation companies globally in terms of installed NPP capacity, surpassed only by the French EDF. Russia ranks fourth in the world in terms of the number of NPP power units in operation.

Light-water reactors (VVER, PWR, BWR, LWGR) are the main type of reactors currently in operation in the world. They make up more than 90% of the global market (as a percentage of the total installed capacity).

Leading countries by the number of operating NPP power units in 2023 and 2024, at year end



** Excluding the floating thermal nuclear power plant.*

1. IEA, World Energy Outlook 2024 (STEPS), net capacity (excluding consumption for own needs).
2. IAEA, 2024: Nuclear Power Reactors in the World.
3. The data take into account a new demonstration power unit with a capacity of ≈1,427 MW (net) put into operation in 2024 in the Shandong Province (China), which was not recorded in the IAEA Power Reactor Information System (PRIS) as at 31 December 2024 (https://pris.iaea.org)

According to the IAEA, new nuclear power generation capacities connected to the grid globally in 2024 totalled 8.2 GW.[1] At present, demand for NPP construction comes primarily from Asian countries, which is due to rapidly growing electricity consumption in this region. The Company is taking active steps to expand its footprint on the international market as a leader in terms of the number of overseas NPP construction projects.

2.3.7. NPP servicing market

JSC Atomenergoprom provides NPP maintenance services covering the entire life cycle: it provides personnel training and supplies equipment for training centres, provides engineering and technical support at the commissioning and operation stages, carries out maintenance, repairs and upgrades, supplies spare parts and equipment and extends the service life of NPPs.

Key end markets in this segment include foreign countries where there are Russian-design power units in operation or under construction, namely Armenia, Bangladesh, Belarus, Bulgaria, Hungary, Egypt, India, China, Slovakia, Turkey, Finland and the Czech Republic.

In the reporting year, the portfolio of power units serviced by the Company comprised 48 Russian-design NPP power units abroad.

The Company is a market leader in China, Bulgaria and Armenia, acting as a general contractor for life extension, scheduled preventive maintenance and equipment upgrades at NPPs equipped with VVER reactors.

JSC Atomenergoprom's rivals on this market include national operators and local service companies forming part of or partnered with local energy corporations, as well as large international companies (Framatome, Engie, Westinghouse, AFRY, etc.).

To consolidate its position on the NPP servicing market, the Company has initiated and continues its localisation efforts in key regions by creating partnerships and joint ventures with local market players, establishing subsidiaries or developing branches.

JSC Atomenergoprom is exploring localisation opportunities in other regions of operation and plans to develop a line of NPP servicing products by 2030.

For details, see chapter 2. 'Business Strategy'.

1. The data take into account a new demonstration power unit with a capacity of ≈1,427 MW (net) put into operation in 2024 in the Shandong Province (China), which was not recorded in the IAEA Power Reactor Information System (PRIS) as at 31 December 2024 (https://pris.iaea.org).

2.3.8. Electricity and capacity market in the Russian Federation

Expansion on the electricity and capacity market in the Russian Federation remains one of JSC Atomenergoprom's top priorities. The Company is one of the key power generation companies in Russia. In addition, the local market is important in terms of obtaining references for new technological solutions for their subsequent global implementation.

In 2024, electricity consumption in the Unified Power System of Russia totalled 1,165.9 billion kWh as against 1,138.3 billion kWh in the previous year (up by 2.4%).

Nuclear power plants maintained their role in terms of meeting base load demand in the Unified Power System of Russia, with nuclear power generation totalling 215.523 billion kWh in 2024 (including 215.16 billion kWh in the Unified Power System of Russia). As a result, in the reporting year, the Company managed to remain a leader among power generation companies, with the share of nuclear power generation in the country's total electricity output (in the Unified Power System of Russia) totalling 18.5%. The Company's key goal remains to ensure safe and reliable NPP operation and remain a leader in terms of the share of electricity output in the country's energy mix.

JSC Atomenergoprom is a major player on the thermal power market. Power generation capacity of thermal power plants (TPPs) managed by the Company totalled about 4 GW, while their heat generation capacity exceeded 19,500 Gcal/h.

In 2024, power generation and net heat supply at the TPPs totalled 14.1 billion kWh and 26.8 million Gcal respectively (2023: 13.3 billion kWh and 24.5 million Gcal respectively).

The Company's TPPs and boiler houses supplied power and heat to regions of the Far Eastern, Siberian, Ural and Central Federal Districts.

In addition, JSC Atomenergoprom builds and operates wind power plants (WPPs) in Russia. The portfolio of wind power plants to be built by the Company totals about 1.7 GW, with slightly more than 1 GW already put into operation. In 2024, electricity output from JSC Atomenergoprom's WPPs totalled 2.75 billion kWh (2023: 2.27 billion kWh; 2022: 1.96 billion kWh).

In addition to NPP, TPP and WPP operation, the Company also sells electricity. In the reporting year, an electricity sales company in the Power Engineering Division continued to operate as the power supplier of last resort in the Kursk, Tver, Smolensk and Murmansk Regions and in the Republic of Khakassia. The company provides services to more than 63,000 legal entities and more than 2 million households in Russia. In 2024, retail electricity sales by the electricity sales company totalled 18.4 billion kWh, up by 1% compared to 2023 (18.2 billion kWh).

For details, see 'Performance of the Power Engineering Division in 2024'.

2.3.9. Renewable energy market

The global renewable energy market has been demonstrating a consistently strong growth in recent years in terms of both capacity additions and investment activity.

The International Energy Agency forecasts that by 2030, total installed renewable energy capacity globally may almost double compared to the current level and reach 9.8 TW, with the capacity of onshore and offshore wind power plants increasing by about 1 TW, while the capacity of solar power plants (SPPs) will grow by about 4 TW.[1]

In 2024, global investment in technologies supporting the energy transition and in related infrastructure reached USD 2.08 trillion, including USD 728 billion invested directly in renewable energy.[2]

The renewable energy market is highly competitive and consolidated. The top 10 wind turbine manufacturers accounted for 84% of the total capacity of onshore and offshore WPPs commissioned in 2023, with major players, such as Goldwind, Envision, Vestas, Windey and Mingyang, accounting for about 55% of capacity additions. The share of Chinese manufacturers in the total global installed WPP capacity will continue to grow and will reach 68% by 2025.[3] The value proposition gap between Chinese and European manufacturers has already reached 84% and continues to widen.[4] The solar power sector is also highly competitive, with the combined market share of four leading manufacturers of solar panels (JinkoSolar, Trina Solar, LONGi and JA Solar) totalling 52% in early 2024; furthermore, Chinese manufacturers account for more than 80% of global solar panel production.

JSC Atomenergoprom (as a company of ROSATOM) positions itself on the global market as a renewable energy project developer and offers its capabilities in the sphere of comprehensive implementation of projects to build renewable energy facilities. In accordance with the Strategic Programme titled 'Renewable Energy: Foreign Markets', the target portfolio of JSC Atomenergoprom's overseas

1. IEA, World Energy Outlook 2024 (STEPS).
2. BNEF, Energy Transition Investment Trends 2025.
3. Global Wind Energy Council (GWEC), Global Wind Report 2024.
4. Wood Mackenzie, Wind Turbine OEMs financial analysis/ Wind energy capital cost (CAPEX) database.

renewable energy projects totals 400 MW in 2025 and 5 GW by 2030. The Company plans to expand its international business by diversifying into new segments of the renewable energy market, namely the SPP and offshore WPP segments, while simultaneously expanding its footprint in the onshore WPP segment in target markets in the CIS countries, Southeast Asia, Africa and the Middle East.

In terms of the development of renewable energy in the Russian Federation, according to the General Scheme for the Locations of Power Facilities until 2042 approved by Order No. 4153-r of the Government of the Russian Federation dated 30 December 2024, renewable energy capacities are expected to expand by about 17 GW by 2042.

As part of the Wind Power Strategic Programme, the Company successfully builds wind farms in the Russian Federation. Following competitive selection as part of the programme to support the use of renewable energy based on capacity supply agreements on the wholesale market, the Company has formed a portfolio of projects with a total capacity of approximately 1.7 GW.

In 2024, the Company completed the construction of the second stage of the Trunovskaya WPP (35 MW) in the Stavropol Territory and started the construction of the Novolakskaya WPP with a total installed capacity of 300 MW in the Republic of Dagestan.

Thus, at year-end 2024, nine wind farms with a total capacity of 1,035 MW were in operation. Plans for 2025 include the commissioning of the Novolakskaya WPP in the Republic of Dagestan.

Taking into account wind power capacities commissioned in the Russian Federation, the Company's share on the Russian wind power market totals about 40%.

For details, see chapter 2 'Business Strategy'.

GRI 3-3

2.3.10. Nuclear medicine market

Nuclear medicine is a high-technology branch of healthcare which uses medical isotopes, radiopharmaceuticals and certain types of medical equipment in order to diagnose and treat various diseases.

In 2024, the global market for isotope products totalled USD 8.5 billion, with radiopharmaceuticals accounting for more than 75% of the market (USD 6.4 billion). About 70% of radiopharmaceuticals are used for diagnostics, while the remaining 30% are used for the treatment of diseases. The radiopharmaceuticals market is growing rapidly (it has doubled over the past 10 years), while the markets for raw isotopes are already largely established. The combined market for isotopes and radiopharmaceuticals is projected to reach USD 12.6 billion by 2030.

JSC Atomenergoprom's research and production capabilities also enable it to develop an offer of nuclear medicine equipment. The combined global market for main types of nuclear medicine equipment totals USD 21 billion and is projected to grow to USD 36 billion in 2030.

In the coming years, the development of nuclear medicine in Russia will be driven primarily by a national project titled 'Long and Active Life', which will become a successor to the Healthcare National Project. As part of the project, funding will continue to be provided for the federal target programme titled 'Fighting Cancer'. Other growth drivers will also include nuclear medicine procedures being prescribed more often as part of high-technology healthcare services, as well as the development of healthcare infrastructure and, more specifically, the construction of nuclear medicine centres specialising in radionuclide diagnostics and therapy. In a number of Russian regions, steps are being taken or plans have been developed to provide existing healthcare institutions with state-of-the-art nuclear medicine equipment for diagnostics and therapy.

The Company has initiated projects to establish a network of radionuclide therapy and nuclear medicine centres in Russia and abroad, which will provide high-quality healthcare services to patients.

JSC Atomenergoprom is a major supplier of isotopes and radiopharmaceuticals for nuclear medicine in Russia. 30% of the world's reactor units producing medical radioisotopes are located in Russia. The Company accounts for 25% to 50% of global radioisotope production (for some types of radioisotope products, its share totals 100%). The Company's long-term goal is to rank among the top five global suppliers of isotope products for medical applications, including brand-name radiopharmaceuticals and generic drugs.

In addition, JSC Atomenergoprom is a major player on the market for medical device sterilisation using radiation processing technologies.

The Company also develops medical equipment for diagnostics and therapy. By 2030, it plans to launch mass production of brachytherapy equipment and MRI scanners. The Company is examining the possibilities for producing equipment for radiation therapy, CT and SPECT/CT scanners, and cyclotron and therapy facilities.

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

3

PERFORMANCE IN THE INTERNATIONAL ARENA

Anatoly Alexandrov (1903–1994)

Anatoly Alexandrov headed the Institute of Atomic Energy in 1960; he was also one of the scientists providing supervision for the construction of Rheinsberg Nuclear Power Plant in the German Democratic Republic. His responsibilities included dealing with the most challenging issues related to the construction of the NPP. Rheinsberg NPP was the first nuclear power plant built outside the USSR; this marked the start of exports of Soviet reactor technologies to the global market.

GRI 3-3

CHAPTER 3. PERFORMANCE IN THE INTERNATIONAL ARENA

GRI 2-1

3.1. International Business

Key results in 2024*

- The 10-year portfolio of overseas orders totalled USD 128.8 billion.
- The portfolio of overseas orders covering the entire life cycle totalled USD 200.4 billion.
- Foreign revenue reached USD 18.0 billion (USD 16.2 billion in 2023).
- The overseas NPP construction project portfolio comprised 33 large power units and six small power units in 10 countries around the world.
- Projects were underway in more than 60 countries worldwide.

** Including the results of ROSATOM.*

GRI 3-3

Promoting technologies on foreign markets

Despite persisting sanctions pressure, in 2024, JSC Atomenergoprom (taking into account ROSATOM's order portfolio) remained a leader in key segments of the global nuclear energy market.

The main focus of international business of ROSATOM and JSC Atomenergoprom is the construction of Russian-design nuclear power plants abroad. The Corporation promotes an integrated offer covering a wide range of areas, from NPP construction and fuel supply to the development of nuclear infrastructure and personnel training. This enables ROSATOM (taking into account JSC Atomenergoprom's contribution) to remain the only player in the world capable of establishing a comprehensive technological partnership in the nuclear power industry.

The Company is actively promoting Russian nuclear technologies and solutions for energy and non-energy applications both in countries that are beginning to develop nuclear power and in countries with a well-developed national nuclear power industry (including based on Russian technology).

JSC Atomenergoprom provides support throughout the life cycle of nuclear facilities (including both energy and non-energy facilities) by supplying the global market with the full range of products and services in the front-end and back-end stages of the nuclear fuel cycle (NFC), as well as providing services related to the maintenance and modernisation of such facilities. In 2024, JSC Atomenergoprom maintained its foothold on the nuclear fuel cycle product market.

As at 31 December 2024, JSC Atomenergoprom operated in more than 60 countries worldwide (taking into account ROSATOM's projects).

The Company attaches special importance to partnerships in the CIS countries. In addition to maintaining and expanding its footprint in countries that already have certain nuclear industry capabilities, such as Kazakhstan, Armenia, Belarus and Uzbekistan, the Company also cooperates with other countries (Kyrgyzstan, Tajikistan) building on historical ties.

GRI 2-28

The Company views cooperation with foreign non-profit organisations as a key tool supporting the achievement of business targets. In 2024, the Company's organisations (as part of ROSATOM) cooperated with more than 30 foreign organisations in 19 countries worldwide, including comprehensive cooperation with the World Nuclear Association. These efforts were focused on further expanding the Company's geographic footprint with an emphasis on promoting new businesses in prioritised friendly countries, such as Turkey, Kazakhstan and Namibia.

Special mention should be made of the initiative to establish the BRICS Nuclear Energy Platform (hereinafter referred to as the Platform). Its aim is to strengthen partnerships with friendly countries and key companies in the nuclear industry. The new Platform will make it possible to pool corporate capabilities and accelerate the development of the nuclear power industry in BRICS countries. Plans also include engagement with specialised organisations (the World Nuclear Association, the IAEA, etc.). The Platform's agenda will cover the entire life cycle of nuclear power generation, including fuel supply, spent nuclear fuel and radioactive waste management; non-energy and related areas: nuclear medicine, personnel training, developing educational standards, shaping a positive public perception, etc.

NPP construction abroad

At year-end 2024, the Company's portfolio of overseas NPP construction projects (including ROSATOM's portfolio) comprised 33 large power units and six small power units in 10 countries worldwide, with 22 power units in seven countries at the construction stage. All overseas NPP construction projects are on track. Russian-design nuclear reactors that are currently under construction fully meet international safety requirements.

NPP servicing abroad

The Company provides maintenance services for 48 Russian-design power units abroad that are currently in operation or at the design/construction stage. Its product portfolio targeted at international markets includes a wide range of work and services covering the entire NPP life cycle.

In 2024, the Company provided support for nine scheduled preventive maintenance projects at foreign NPPs, namely the Belarusian NPP (Belarus), Tianwan NPP (China), Kudankulam NPP (India) and the Armenian NPP (Armenia). The first major repairs were carried out at power unit No. 2 of the Belarusian NPP. Long-term contracts were signed for the supply of equipment, spare parts, tools and accessories and service provision for foreign NPPs in Belarus, India and Armenia.

The project to re-extend the service life of the Armenian NPP was launched.

An agreement was signed concerning a long-term contract for the provision of comprehensive technical support for the operation of power units of Tianwan NPP (China).

Full-scale simulators were developed and delivered to Tianwan NPP (China), Xudapu NPP (China) and El Dabaa NPP (Egypt).

1,320 members of operating and maintenance personnel of foreign NPPs, including in Bangladesh, Turkey, Egypt, Hungary, etc., underwent training as part of long-term and short-term programmes in 2024.

Export of uranium products and natural uranium enrichment services

In 2024, the Company remained the world's leading supplier of uranium enrichment services.

All obligations under existing contracts in the reporting year were fulfilled in full, with uranium products supplied to 26 customers in 13 countries. Feedback received from customers indicates that product quality, communications and supply chain resilience meet their expectations. The customer-centric approach adopted by the Company and the importance that it attaches to its partners' offers provide a foundation for constructive long-term cooperation. The 10-year portfolio of orders for uranium products remained roughly at the same level as in previous years.

In the reporting year, the Company concluded seven new contracts for the supply of uranium products with six customers from five countries, including addenda to existing contracts.

Uranium mining abroad

In 2024, JSC Atomenergoprom's overseas uranium mining enterprises managed by the Sales and Trading Division produced about 5,800 tonnes on uranium (the share of production based on ownership interest). Together with the operating results of uranium mining enterprises in the Russian Federation, this enabled the Company to rank third in the world in terms of production.

The Company plans to develop its mineral resource base and continuously improve the economics of its natural uranium mining projects.

Uranium mining by Uranium One enterprises in the Republic of Kazakhstan, '000 tonnes

Nuclear fuel export

In 2024, JSC Atomenergoprom strictly complied with contractual obligations to foreign customers with regard to nuclear fuel supply, despite external factors, such as transportation and logistics challenges, difficulties with money transfers, etc.

The share of JSC Atomenergoprom on the global nuclear fuel fabrication market totalled 19% in 2024.[1]

In 2024, nuclear fuel produced by the Company fully met the demand of Russia, as well as a number of partner countries, including India and Turkey, for reactor fuel. Nuclear fuel produced by JSC Atomenergoprom is also used in reactors at NPPs in the Republic of Belarus, China and a number of other countries. In the reporting year, the Company started to carry out a contract for nuclear fuel supply to power units No. 3 and 4 of Kudankulam NPP throughout its life cycle.

The first batches of nuclear fuel for major overseas projects were manufactured and shipped in a timely manner; this included fuel for reactor start-up at power unit No. 2 of Akkuyu NPP in Turkey.

In the furtherance of cooperation with foreign customers the Company continues to expand its logistics capabilities and plans to launch an alternative route to Egypt.

1. The calculation does not include 23 NPP power units (Japan, India) which were classified as in 'suspended operation' as at 31 December 2024, according to data in the IAEA Power Reactor Information System (PRIS).

GRI 3-3

3.2. New Products for International Markets

Non-energy applications of nuclear technologies

JSC Atomenergoprom also continues active work on non-energy applications of nuclear technology.

For instance, the Company's high-technology healthcare projects help to save lives and protect the health of thousands of people worldwide. They provide people with access to vital benefits, such as the possibility to preserve food products and sterilise medical supplies to proactively maintain their own health; medical equipment and radiopharmaceuticals for effective cancer diagnostics and treatment; healthcare infrastructure facilities to improve the accessibility of medical care using best practices in the sphere of nuclear medicine.

The Company continues to implement the project to build a Nuclear Research and Technology Centre (NRTC) in Bolivia, which is the world's highest-altitude nuclear facility. Since the commissioning of the Cyclotron Radiopharmacy Preclinical Complex (CRPC), several thousands of patients have undergone medical examinations using radiopharmaceuticals produced by the CRPC. Construction and installation operations were completed and key equipment was installed at stage 4 NRTC facilities, including the reactor vessel and the primary cooling circuit. Despite existing restrictions, 90% of equipment has been delivered to the construction site.

The Company is assessing options for the implementation of similar projects in a number of countries in Africa and Southeast Asia. For instance, during the visit of the President of the Russian Federation Vladimir Putin to Hanoi (Vietnam) in June 2024, an interdepartmental memorandum was signed concerning the schedule of implementation of an NRTC construction project in Vietnam.

Lithium projects

The Company continues to actively cooperate with Bolivian partners on lithium projects. Major achievements in 2024 included the signing of a contract with the Bolivian state-owned company Yacimientos de Litio Bolivianos (YLB) for the construction of an industrial lithium carbonate production complex in Bolivia. The new plant will be located on the world's largest lithium-rich salt flat, Salar de Uyuni. Resources of the salt flat will be developed using Russian direct sorption technology for lithium recovery, which has demonstrated a high level of safety and efficiency during testing. Environmental benefits from the Russian technology include avoiding the use of aggressive chemicals in the production process and maximising water recycling, which will help preserve the neighbouring ecosystems in the Potosi Department of Bolivia.

Nuclear medicine and isotope products

In 2024, the Company continued to develop its capabilities in the sphere of medicine. The Company remains a leader in the radioisotope segment, ranking among the top five isotope producers globally. It supplies more than 90% of radioisotope products that are widely used worldwide. In 2024, exports of Russian isotopes increased by more than 7% year on year, with isotopes supplied to more than 50 countries. Last year, about 2.5 million diagnostic and therapeutic procedures were performed using Russian isotopes.

Work is ongoing to develop innovative Russian radiopharmaceuticals. Significant progress has been made in this area over the past three years. Work aimed at closing the thermal envelope has been completed as part of the project to build Europe's largest radiopharmaceuticals plant.

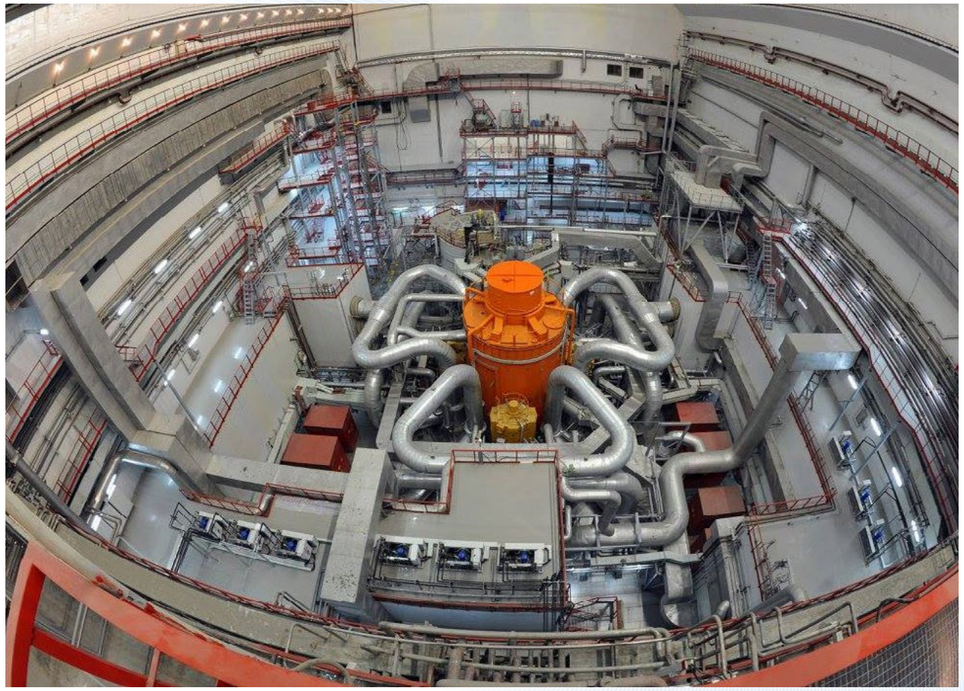
In late 2023, a distribution contract was signed for the supply of the Tianox medical device to the Republic of Belarus; the first registration certificate in foreign markets was obtained for the Tianox device; in 2024, the first Tianox device was exported to the Republic of Belarus. In 2024, a registration certificate was obtained in the Republic of Belarus for the Russian-made Brachium device; steps are being taken with regard to potential supplies of the device to the Republic of Belarus.

Promoting life cycle back-end services

The Company continues to promote products and services for the back end of the nuclear fuel cycle (NFC) on the global market, including as part of the Balanced NFC framework developed by Russian specialists.

The Company is developing new-generation transportation casks for multimodal transportation of spent nuclear fuel (SNF) from NPPs. A transportation cask was delivered to the construction site of Akkuyu NPP; it will be used during comprehensive testing of NPP equipment at the commissioning stage.

The Company continues to develop the key component of the Balanced NFC, namely solutions for managing the 'short-lived' fraction of radioactive waste that will be produced during the processing of SNF from NPPs. Feasibility studies have been prepared confirming that it is possible to avoid building deep geological repositories in the countries where NPPs are located. Proposals for the integration of these solutions into national RAW management systems have been prepared for potential customers.



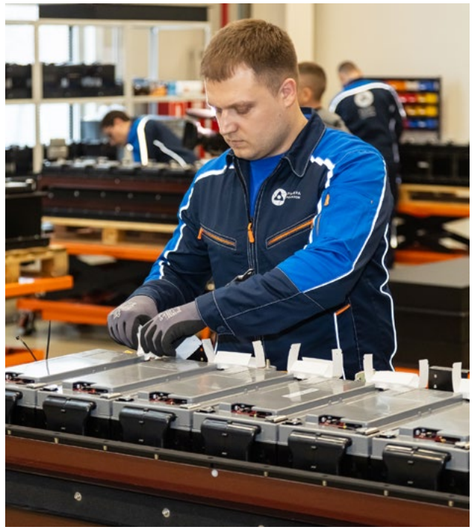
Energy storage systems

JSC Atomenergoprom continues to actively cooperate with foreign companies in order to promote energy storage systems in the Republic of Belarus.

The Company is taking steps to expand into new markets in neighbouring and other foreign countries. The Company is discussing strategic partnerships and projects to supply energy storage systems to Latin America, Southeast Asia, the Middle East and North Africa, Nigeria, India and South Africa.

A proposal for the potential phased localisation of production of energy storage systems, up to and including comprehensive marketing and technology support for the construction of a gigafactory in the customer country, has been prepared and unveiled on the market. The introduction of this product has resulted in the signing of a contract for technology transfer to South Africa. The project involves phased provision of services, from market research to conceptual design of a gigafactory based on Russian technology.

In 2024, the production and delivery of a set of traction batteries for mining equipment were completed under a contract with the Republic of Belarus.

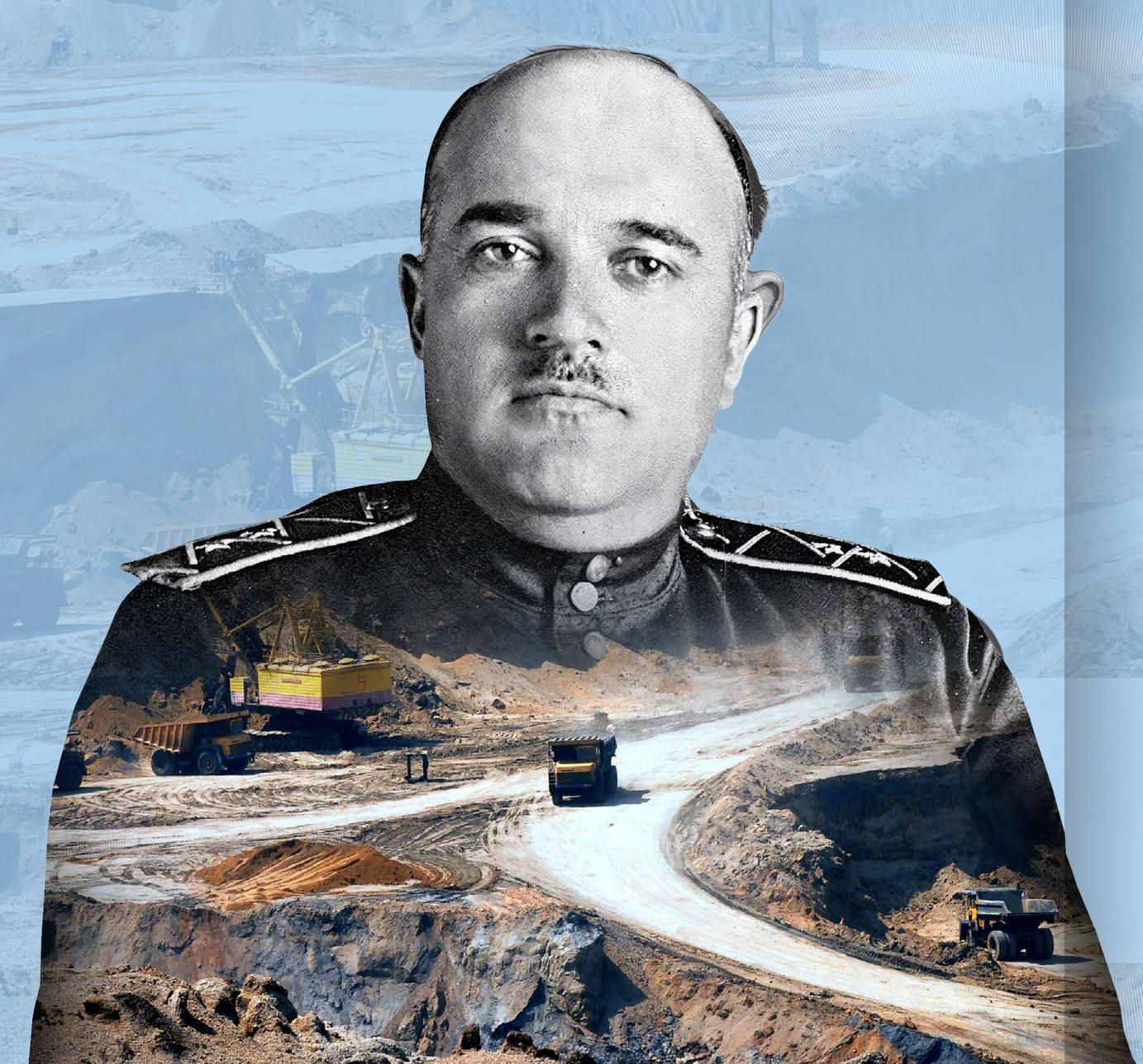


Plans for 2025

In 2025, the Company plans to continue preparations for the commissioning of several power units in Bangladesh and Turkey and the launch of the research reactor in Bolivia.

Given that the customers' interest in the energy market is shifting towards flexible solutions (in terms of both the power generation volume and the amount of funding), the most important area of focus for the Company in 2025 will be the promotion of small NPPs. The Company plans to make new arrangements concerning projects with countries in Africa, Latin America and Southeast Asia.

JSC Atomenergoprom plans to consistently diversify its product offer and launch new products on new markets. It also plans to be more active on foreign markets with a focus on wind power, energy storage systems and electric mobility, given the considerable potential of these market segments.



80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

4

PERFORMANCE OF DIVISIONS

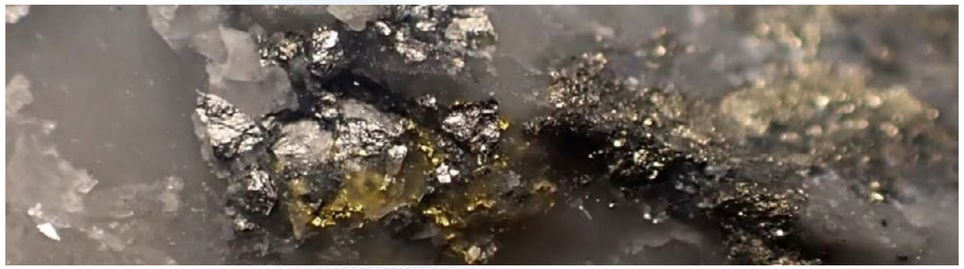
Avraami Zavenyagin (1901–1956)

Avraami Zavenyagin, the senior administrator of the nuclear industry, was responsible for establishing uranium mining and enrichment operations in the country as part of the Soviet nuclear project. His area of responsibility included all stages of the nuclear fuel and warhead production cycle, from ore mining to plutonium production in industrial reactors. His responsibilities included the exploration of uranium deposits; uranium ore mining and processing; the construction and operation of mines, enrichment plants, ore and concentrate processing plants; and developing a technology for producing uranium metal from ore.

CHAPTER 4. PERFORMANCE OF DIVISIONS

4.1. Mining Division

Operating results	2021	2022	2023	2024
Uranium production, tonnes	2,635	2,508	2,710	2,738
The increase in production in 2023 and 2024 was driven by the development of new ore bodies and deposits.				
Uranium resources (Russian assets), '000 tonnes[1]	506.4	503.7	500.1	497.2
The Division's mineral resource base decreases annually due to the depletion of economic uranium reserves during mining.				
Average headcount, persons	7,325	7,689	8,870	12,932
The increase was due to the inclusion of new enterprises in the Division's scope of consolidation as from 1 January 2024.				
Lost Time Injury Frequency Rate (LTIFR)	0.22	0.21	0.24	0.16
The change was due to a decrease in the number of injured persons by one person (three people were injured in accidents in 2024) and a rise in the number of man-hours worked due to an increase in the headcount as a result of integration of new enterprises in the Division.				



The Mining Division is one of the largest natural uranium producers in the world.

Key assets managed by the Division include the following:

- Uranium mining assets currently in operation in the Zabaykalsky Territory, the Republic of Buryatia and the Kurgan Region;
- Service companies (an R&D and design institute, a drilling and exploration company, a procurement authority);
- Existing and prospective enterprises.

The enterprise in the Zabaykalsky Territory specialises in underground mining. In the Republic of Buryatia and the Kurgan Region, uranium is mined using in-situ leaching (ISL), which is the most cost-effective and environmentally safe technique.

In addition to uranium mining, the Division implements projects focused on the mining of rare and rare-earth metals (hereinafter referred to as RMs and REMs), the development of gold deposits, brown coal mining, the design of an integrated production facility at the Pavlovskoye lead and zinc deposit, etc.

Enterprises of the Division perform a full range of operations, from geological exploration, design and pilot operation to the decommissioning of production facilities and land rehabilitation.

The Division's enterprises are based in ten regions of the Russian Federation: the Murmansk, Arkhangelsk, Tomsk, Kurgan and Moscow Regions, the Zabaykalsky and Perm Territories, the Republic of Buryatia, the Sakha Republic (Yakutia) and the Chukotka Autonomous District.

1. Data as at 1 January of the year following the reporting year.

Key results and events in the reporting year

- Uranium output from underground mine No. 8 in the Zabaykalsky Territory reached the 6-million-kilogram milestone.
- The construction of key industrial buildings and machinery at mine No. 6 in the Zabaykalsky Territory was completed on schedule.
- Coal production at the Urtuyskoye Open-Pit Mine Office in the Zabaykalsky Territory reached the 100-million-tonne milestone.
- A technology for the separation of rare-earth metals was developed for the future production facility in Solikamsk.
- Field geological exploration and desk analysis of data from the Kolmozerskoye lithium deposit were completed as part of the lithium project.
- The construction of key facilities at the Severnoye deposit was completed.

Contribution to ensuring safety, reliability and self-reliant technological development in Russia

Uranium operations

In 2024, uranium production in the Division totalled 2,738 tonnes, up by 1% year on year.

Zabaykalsky Territory

- Uranium output from underground mine No. 8 reached the 6-million-kilogram mark;
- The mining equipment fleet was upgraded, including diesel/electric load-haul-dump (LHD) machines, mine drilling rigs, K-10 electric locomotives and self-propelled drilling rigs; the upgrade will help improve the efficiency and safety of production processes during underground uranium mining in the enterprise;
- Three 60-tonne mine dump trucks and a front-end loader with a 4 m^3 bucket were delivered to the Urtuyskoye Open-Pit Mine Office;
- The Government of the Russian Federation issued an order to hold an auction for mining rights to the Shirondukuyskoye subsoil area of federal importance;
- The Smart Hard Hats digital solution was introduced at production sites to ensure industrial safety;

– As part of the Mine No. 6 project, construction and installation operations were completed on schedule: the construction of the headframe of shaft 19-RESh and the headframe of shaft 20V was completed. In addition, in the reporting year, shaft 19-RESh (below level 7) and shaft 20V were dewatered.

Republic of Buryatia

– In the reporting year, an enterprise of the Division became a leader in terms of uranium mining in Russia;
– In 2024, a licence was obtained for geological surveys in the Namaru-1 open-pit mine;
– Statements of compliance were obtained for completed facilities at the Dybrynskoye (stage 1) and Kolichikanskoye (stage 2) deposits;
– The Government of the Russian Federation issued an order to hold an auction for mining rights to a subsoil area of federal importance forming part of the Tetrakhskoye deposit.

Kurgan Region

– The construction of facilities at the site of the Vostochnaya local sorption unit (LSU No. 2) was completed; railroad support facilities at the Khokhlovskoye deposit were put into operation;
– A permit was obtained for the commissioning of a pilot site (stage 1) at the Dobrovolnoye deposit;
– The first joint state geological and environmental expert review was carried out for a slurry pond at the Dalmatovskoye deposit (stage 1);
– A project focused on robotic automation of a finished product warehouse was developed and launched as part of the ISL Digital Twin.

Non-uranium operations

The development of production of rare and rare-earth metals (RMs and REMs) is of critical importance for high-technology industries in the Russian Federation.

The key priority for the development of the nuclear industry is to replace imports, develop technologies and establish integrated production operations based on its own mineral resource base. To achieve this, a road map titled 'Technology for New Materials and Substances' is being implemented, which includes RM and REM operations; it is aimed at completely ceasing imports by 2030.

RM and REM production is included in a federal project titled 'Development of the Rare and Rare-Earth Metals Industry', which forms part of the New Materials and Chemicals National Project. The project involves establishing integrated production chains covering all stages, from raw materials to finished products, meeting the needs of industry and achieving full independence from import supplies of strategic RMs and REMs by 2030.

Lithium

The lithium project involves launching the production of battery-grade lithium carbonate and hydroxide at the Kolmozerskoye lithium deposit (Murmansk Region) in order to provide raw materials for producers of lithium-based products, including enterprises of JSC Atomenergoprom.

Geological exploration and desk analysis of data, as well as comprehensive engineering surveys for a route connecting the mining and processing plant and the village of Oktyabrsky were completed at the Kolmozerskoye lithium deposit. Operating procedures were developed for the enrichment of ore from the Kolmozerskoye lithium deposit and the production of spodumene concentrate.

Rare-earth metals

The Division manages two enterprises producing RMs and REMs that form part of a single process chain. One of them mines ore and produces loparite concentrate, while the other extracts collective REM concentrate from it and produces titanium, as well as tantalum and niobium compounds. In order to increase the degree of processing of REM products, the Division plans to build its own separation facility, which will enable it to obtain separated lanthanum, cerium, neodymium and praseodymium compounds. The resulting products will help replace imported separated REM compounds and enhance Russia's technological sovereignty.

In the reporting year, a technology for the separation of rare-earth metals was developed for the future production facility in Solikamsk. The first pilot sample of equipment was produced for the REM production facility currently under construction.

Comprehensive upgrades of main process equipment were launched at a beneficiation plant and an underground mine in the Murmansk Region. Plans for 2025 include reserve evaluation at the south-western flank of the Karnasurt mine.

Titanium and zirconium

In the reporting period, the output of titanium and zirconium concentrate increased by 35% compared to 2023.

Scandium

In the reporting year, main engineering studies were completed and an official transition was made to commercial production of scandium recovered from uranium solutions as a by-product in the Kurgan Region. 453 kg of scandium oxide with a purity of at least 99.9% was produced in 2024.

Gold

As part of the Gold Mining strategic programme, in the reporting year, the construction of key facilities was completed at the Severnoye deposit. A feasibility study was approved for the Sovinoye deposit, which contains 86 tonnes of gold and 29 tonnes of silver. Prospecting is underway as part of the Dor and Ryveem projects; it has confirmed the prospects for the development of these deposits.

Plans for 2025

In 2025, the Division will continue to develop new uranium deposits. In the Republic of Buryatia, the Division plans to obtain a mining licence for a subsoil area forming part of the Tetrakhskoye deposit and to start mining at the Namaruskoye deposit. Plans for 2025 include the commissioning of LSU-2 at the Khokhlovskoye deposit.

The start of tunnelling operations in shaft 20V at mine No. 6 in the Zabaykalsky Territory is scheduled for 2025. The enterprise also plans to obtain a mining licence for a subsoil area forming part of the Shirondukuyskoye deposit and to start developing it.

The Ministry of Natural Resources and Environment, the Federal Agency for Mineral Resources of the Russian Federation and ROSATOM are developing a joint action plan to expand the uranium resource base.

In the Murmansk Region, the Division plans to implement measures to improve operations management in order to meet the targets for the production of loparite concentrate.

In Solikamsk, the Division plans to complete the design of the separation facility and submit the documents to FAI Glavgosexpertiza of Russia.

Key measures forming part of the titanium project will be focused on improving the efficiency of production processes.

As part of the lithium project, in 2025, the Division plans to present the scoping study and register new reserves of the Kolmozerskoye deposit, and to start preparing design documentation.

As part of the Gold Mining strategic programme, the Division plans to obtain a positive opinion from FAI Glavgosexpertiza of Russia for design documentation for stage 2 facilities at the Severnoye deposit and transition from pilot development to production (commissioning).

In 2025, the Division will continue to improve the technology for scandium recovery from pregnant solutions and to expand the geographic footprint of scandium oxide sales.

4.2. Fuel Division

Operating results	2021	2022	2023	2024
Lost Time Injury Frequency Rate (LTIFR)	0.05	0.09	0.04	0.02
The change is insignificant.				
Environmental costs, RUB million	2,345.8	2,366.83	2,793.42	3,996.96
The increase was driven by a rise in expenditure on waste management.				
Average headcount, persons	21,958	23,382	24,939	25,860
The growth was driven by the development of production facilities, new businesses and products.				

The Fuel Division is one of the world's largest nuclear fuel producers. The Division is the only supplier of nuclear fuel for all Russian NPPs, marine and research reactors in Russia.

The Division provides nuclear fuel for more than 70 power reactors in 15 countries worldwide, as well as research reactors in nine countries.

The Division is a fully integrated producer of nuclear fuel with operations covering all stages, from triuranium octoxide to finished fuel assemblies; it also sells nuclear fuel on the market. Fuel and its components produced by the Division are exported and supplied to all types of Russian-design reactors and Western-design light-water reactors (PWRs and BWRs). The Division also supplies fuel components for foreign heavy-water reactors (PHWRs). In addition, the Division has developed a proprietary fuel design for PWRs, TVS-Kvadrat; its advantages have been demonstrated during full-scale operation at a foreign NPP.

The Division manages enterprises specialising in uranium conversion and enrichment, the production of gas centrifuges for the separation of uranium isotopes, the production of metal components of nuclear fuel, and nuclear fuel fabrication.

The Division is a turnkey supplier of fuel and provides services supporting its use. The Division offers its customers the best engineering solutions for improving fuel and the fuel cycle throughout the operating life of an NPP, which helps improve the performance of nuclear power units.

Technological leadership is one of the key prerequisites for success in the global market. The Fuel Division continuously improves the technical and economic characteristics of nuclear fuel, such as fuel burnup, uranium intensity, the service life and reliability.

Today, the Division not only produces nuclear fuel but also designs and produces gas centrifuges, enriches uranium, carries out scientific research, produces 3D printers, energy storage systems and superconducting materials, isotope products, automotive catalysts and digital products, and decommissions facilities posing nuclear and radiation hazards.

The Division is one of the world's largest producers of isotope products and gas centrifuges, and ranks among leaders on the Russian market in terms of the output of zirconium, calcium, lithium and niobium products, and in such segments as 3D printing, energy storage systems and the development of superconducting materials.

The Division actively develops new business areas and supplies the Russian and international markets with a wide range of non-nuclear products and services in the following areas: metals production, energy storage systems, the chemical industry, and 3D printing technologies.

The Division comprises industry integrators specialising in the decommissioning of facilities posing nuclear and radiation hazards, as well as in additive manufacturing and energy storage systems.

The Division's R&D projects cover a wide range of areas, from improving nuclear fuel designs and materials, closing the nuclear fuel cycle, and developing innovative types of fuel to addressing a number of applied scientific tasks.

Key results and events in the reporting year

In 2024, the Fuel Division fulfilled all its contractual obligations to customers.

Nuclear fuel cycle

- The Division started to carry out a contract for the supply of nuclear fuel for power units No. 3 and 4 of Kudankulam NPP (India), which are currently under construction; the contract provides for nuclear fuel supply throughout the life cycle of the NPP;
- Nuclear fuel was produced for a research reactor in Bolivia; this is the first-ever batch of Russian fuel supplied to a nuclear facility in South America;
- A batch of nuclear fuel for reactor start-up at power unit No. 2 of Akkuyu NPP in Turkey was produced and shipped in a timely manner as part of one of the Company's largest overseas projects;
- The final cycle of pilot operation of new-generation ATF nuclear fuel with enhanced safety performance was started at Rostov NPP. The final cycle of pilot operation of REMIX uranium/plutonium fuel was started at Balakovo NPP;
- The production of chrome-coated cladding for new-generation ATF fuel elements with enhanced safety performance was launched.

Contribution to ensuring safety, reliability and self-reliant technological development in Russia

The Division's production operations and R&D activities make an important contribution to ensuring safety, reliability and self-reliant technological development in Russia through innovation and the development of promising areas.

Proryv Project

The Proryv (Breakthrough) Project is one of the key innovative projects in the global nuclear power industry that is being implemented in Russia. It forms part of Federal Project U1 included in the Comprehensive Programme 'Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024'[1] and, starting from 2025, of Federal Project R1 included in the New Nuclear and Energy Technologies National Project,[2] which is aimed at achieving technological leadership. The project involves developing a new technology platform with a closed nuclear fuel cycle based on fast neutron reactors. This technology helps prevent serious accidents, evacuation of the local population and the accumulation of irradiated fuel, and makes it possible to reuse spent nuclear fuel, which helps address the issue of limited resources.

The Pilot and Demonstration Energy Facility (PDEF) is under construction in Seversk. It includes a power unit equipped with the BREST-OD-300 reactor, a mixed uranium/plutonium nitride (MNUP) fuel production module and a spent fuel reprocessing module. For the first time in the world, the closed nuclear fuel cycle with a fast reactor will be implemented on a single site, which will provide the foundation for the Generation IV nuclear power industry.

Researchers working in the Fuel Division and on the Proryv Project have developed an innovative technology for the treatment and recovery of nuclear material from irradiated nuclear fuel (SNF). A new refining crystallisation technology will be applied at the spent MNUP fuel processing module.

In April 2024, a licence was obtained from the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor) for the operation of a nuclear installation forming part of the fabrication/refabrication module producing nuclear fuel for the BREST-OD-300 reactor. Under the licence, the Division may produce mock-ups of fuel assemblies containing depleted uranium.

25 December 2024 saw the start of pilot operation of a unique fuel production plant forming part of the Generation IV Pilot and Demonstration Energy Facility. All production sites at the plant successfully underwent comprehensive testing. The third and final tier of the reactor enclosure was installed at the construction site of the BREST-OD-300 power unit. The installation of turbine island equipment, namely a steam turbine condenser, was started.

Additive manufacturing

The Additive Manufacturing business of the Division covers all segments of the additive manufacturing market: the production of 3D printers and their components, powder materials, software development, and the establishment of additive manufacturing centres.

Key events in 2024 included the following:

- Batch production of nine models of 'medium-sized' RusMelt 310M 3D printers using the selective laser melting (SLM) technology was launched; according to experts, they met more than 30% of demand of the Russian industry for additive manufacturing equipment in 2024;
- Two new Shared Additive Manufacturing Centres (SAMCs) were opened at Belgorod State Agrarian University named after Vasily Gorin and at Tomsk Polytechnic University;
- For the first time, a component for a nuclear facility, namely a pump impeller for a uranium conversion site of an enterprise in the Fuel Division, was produced on a 3D printer;
- The production of titanium powders for 3D printing using the SLM technology was launched; this will meet the demand of the Russian market for materials of this kind.

Electric mobility and energy storage systems

JSC Atomenergoprom is becoming a leader in a new sector, namely electric mobility. This involves developing a wide range of domestically designed solutions for electric mobility, from the development of critical parts and components for electric vehicles and charging stations (integrated electric drives, the fast battery swapping technique, etc.) to the establishment of joint ventures producing individual types of electric vehicles and supplying low-carbon green electricity generated by nuclear and wind power plants. The industry integrator specialising in energy storage systems, which is managed by the Fuel Division, has successfully implemented dozens of projects focused on refitting equipment and vehicles powered by lithium-ion batteries:

- In November 2024, two EV charging hubs comprising 15 charging stations with a total capacity of more than 2 MW were put into operation in Kaliningrad. The Fuel Division acted as an investor in the project under a cooperation agreement with the government of the Kaliningrad Region on the development of electric transport in the region;
- An agreement was signed on the launch of a battery assembly plant by JSC Atomenergoprom at a site of the Avtotor automotive enterprise in Kaliningrad;
- An agreement was signed with the government of the Lipetsk Region on launching the production of a key component for EVs, namely electric traction drives consisting of an electric motor, a reduction drive and an inverter. Production facilities will be situated at the Gryazi site of the Lipetsk Special Economic Zone. They are scheduled to be commissioned in 2025. At the first stage, the project involves developing local production operations, to be followed by the manufacture of electric drives developed by JSC Atomenergoprom's companies;
- An agreement was signed with the government of the Novosibirsk Region on the development of electric mobility in the region. The parties intend to cooperate in implementing the Concept for the Development of the Production and Use of Electric Vehicles in the Russian Federation until 2030 in the Novosibirsk Region. Plans include implementing a number of projects to build fast charging hubs for electric vehicles in the Novosibirsk Region in 2024 and 2025 and developing a retail charging station network jointly with regional operators;
- A DC control power system started full-scale operation at the Krasnopolyanskaya HPP in Sochi. A lithium-ion battery produced by the Fuel Division will ensure reliable and uninterrupted operation of critical systems at the power plant;
- A set of traction batteries for mining equipment was supplied to the Republic of Belarus.

Hydrogen energy

The development of hydrogen energy helps ensure technological sovereignty and supports the adoption of state-of-the-art technology in Russia. Enterprises of JSC Atomenergoprom develop efficient solutions in this area that are competitive on the global market; these include new state-of-the-art electrolytic systems.

In 2024, pilot samples of equipment for hydrogen production (electrolysis units) with a capacity of 5 Nm^3/h and 30 Nm^3/h developed and produced by the Division were delivered to the pilot hydrogen production site of the Eastern Hydrogen Cluster in Yuzhno-Sakhalinsk. The relevant technology and design solutions for the equipment have been developed at the request of the Power Engineering Division as part of the industry-wide programme to develop hydrogen-based nuclear technologies.

1. Approved on 24 December 2020 by the Prime Minister of the Russian Federation Mikhail Mishustin. National projects that were underway between 2018 and 2024, including as part of the programme and related federal projects, are scheduled to be completed in 2025.
2. Approved by the Presidium of the Presidential Council for Strategic Development and National Projects (minutes of the meeting No. 12pr dated 20 December 2024).

Metals production

The research and technological capabilities and highly qualified specialists of the Fuel Division enable it to launch the mass production of new materials and promising products and promptly respond to the needs of leading industries and high-technology companies.

In 2024, the Division set a record in terms of production and sales of calcium injection wire, which is widely used in the iron and steel industry to improve steel quality. In the reporting year, 6,000 tonnes of calcium injection wire were supplied to Russian iron and steel enterprises (up by 11% year on year). This is an all-time high since the launch of production of this product in the Division.

Special chemicals

The main advantage of production sites of the Fuel Division consists in unique chemical production facilities producing high-purity metals and materials and complex chemical compounds used in various industries, healthcare, agriculture and science. Key achievements in the reporting year included the following:

- An enterprise in the Fuel Division acquired a 50% stake in the capital of a major Russian manufacturer of exhaust catalytic converters and integrated exhaust systems (Tolyatti). This transaction will enable JSC Atomenergoprom, which is already a leading producer of automotive catalysts, to secure a foothold in the market for exhaust treatment products;
- An R&D centre specialising in electrolytes was established; the first batches of electrolytes were produced in-house to be sold to consumers;
- A second polycarbon monofluoride production unit was put into operation in an enterprise of the Division;
- The first batch of mass-produced truck catalysts was shipped.

Plans for 2025

The Division's development prospects hinge on the development of both core nuclear businesses and promising non-nuclear business areas:

- Upgrading the production capacities of nuclear fuel cycle enterprises;
- Starting to supply nuclear fuel to new power units in Russia and abroad;
- Launching a new mass-produced model of 3D printers, RusMelt 610M, on the market;
- Opening new Shared Additive Manufacturing Centres (SAMCs) in the Russian Federation;
- Launching the first Russian gigafactory producing energy storage systems in the Kaliningrad Region;
- Launching the production of medical implants and instruments.

4.3. Mechanical Engineering Division

Operating results	2021	2022	2023	2024
Shipment of mechanical engineering products, number of NPP power units	16	18	17	21
Products are supplied as part of ROSATOM's NPP construction programme and as part of maintenance and supply of equipment and spare parts for operating units.				
Consolidated revenue of the Division, RUB billion	106	115	151	201
Revenue growth was driven by an increase in the supply of products as part of ROSATOM's NPP construction programme and under contracts of new non-nuclear businesses.				
Average headcount, persons[1]	8,187	20,367	20,876	22,813
The increase in the headcount was due to the scheduled expansion of production capacity to meet the targets for product output set in the production programme.				
Taxes paid, RUB billion	7.9	7.8	14.6	23.8
The increase in the amount of taxes paid by the Division was caused by the expansion of the Division's operations and revenue growth.				
Lost Time Injury Frequency Rate (LTIFR)[2]	0.07	0.19	0.1	0.09
The decrease in the indicator was achieved through the implementation of additional programmes and measures to prevent and reduce occupational injuries.				
Spending on charity, RUB million	92.7	80.0	81.7	176.2
The increase in expenses was driven by a growing number of charitable initiatives in the Division's regions of operation, including those aimed at supporting local residents.				
Occupational health and safety costs, RUB million	465	891	1,188	1,567
The change in the indicator was caused by an increase in expenditure on improving working conditions, including through the introduction of technical and technological innovations.				

1. The indicator covers enterprises managed by ROSATOM.
2. The indicator does not include the Division's foreign enterprises.

The Mechanical Engineering Division offers equipment for the nuclear and thermal power industries, shipbuilding, the oil and gas industry, and special steel production. Full control over the production chain helps ensure high product quality. The Division is involved in NPP construction, equipment upgrades and maintenance; it also produces equipment for power generation facilities, with operations covering all stages, from special steel to finished products. It performs design and engineering work for both its own and third-party projects.

The Division is the chief designer and single-source supplier of all marine reactor units for multipurpose nuclear icebreakers with RITM-200 reactor units, which are rightly considered state-of-the-art icebreakers.

The Division manufactures high-performance equipment for the Russian oil and gas industry. Its enterprises have a proven track record in the design and manufacture of equipment for the thermal power industry: the Company has supplied products to 40% of CHPPs in Russia and the CIS.

Key results and events in the reporting year

In 2024, the Mechanical Engineering Division continued to participate in projects to build nine large NPPs comprising a total of 24 power units. In the reporting period, the Division completed the delivery of main reactor unit equipment for five power units, supplied equipment to enable the achievement of first criticality at two power units, and supplied all equipment for the reactor units and turbine halls of four power units. The Division also produced blanks for nuclear steam generator equipment for five power units.

In the reporting year, the Division's enterprises produced and supplied key reactor equipment and turbine hall equipment for ROSATOM's NPP construction projects, including the following:

Kursk NPP-2, Russian Federation

- Power unit No. 1. Equipment was supplied for cold and hot trials and the first criticality stage. Trials of a new unique pump, RCP-1753, were started.

Akkuyu NPP, Republic of Türkiye

- Power unit No. 1. The first locally produced low-speed turbine was placed on the barring gear; this is one of the key pre-commissioning operations, demonstrating the high level of technical availability of the turbine unit and its auxiliary systems.
- Power unit No. 2. The delivery of the main equipment for the reactor unit was completed. Trials of a new unique pump, RCP-1753, were started.

El Dabaa NPP, Egypt

- Power units No. 1–4. Flow-line production of nuclear steam generator equipment was launched for all four power units with an interval of six months. The production of blanks for an experimental main steam valve unit was launched in advance. Deliveries of turbine hall equipment were started; orders were placed, and the production of heat exchangers was launched.

Kudankulam NPP, India

- Power unit No. 3. The delivery of turbine hall equipment was completed.
- Power unit No. 5. The delivery of the main equipment for the reactor unit was completed.
- Power unit No. 6. The reactor vessel was shipped to the port of Novorossiysk.

Rooppur NPP, Bangladesh

- Power unit No. 1. Preparations were made for the first criticality stage.
- Power units No. 1 and 2. Turbine hall equipment was supplied in full.

Tianwan NPP, China

- Power unit No. 7. The delivery of equipment was completed.
- Power unit No. 8. The delivery of the main equipment for the reactor unit was completed.

Xudapu NPP, China

- Power unit No. 3. The delivery of equipment was completed.
- Power unit No. 4. The delivery of the main equipment for the reactor unit was completed.

Paks 2 NPP, Hungary

- Power unit No. 5. The production of blanks for the reactor vessel was started (eight months ahead of schedule).

The Division continues to develop solutions for the fuel and energy sector. In 2024, the Division produced and shipped metal-intensive equipment for gas processing projects, with some items of equipment weighing up to 341 tonnes. In terms of domestically developed technologies, the Division successfully implemented key initiatives to develop new solutions and produce equipment for gas processing. As part of the development of new products, the Division concluded a contract for oil unloading equipment.

In the thermal power sector, in 2024, the Division continued to implement a project focused on local production of main equipment for waste-to-energy plants based on a reference technology and compliant with strict requirements for environmental performance. In 2024, a test run of the first of the four waste-to-energy plants under construction in the Moscow Region was carried out successfully. The plant will help avoid waste burial and will produce energy to provide electricity supply to local residents.

The Division fulfils contractual obligations related to building and supporting the operation of industrial facilities designed for the safe processing and recycling of hazard class 1 and 2 waste in the Russian Federation.

The Mechanical Engineering Division is the chief designer and single-source supplier of all marine reactor units. The Division is developing the shipbuilding business with a focus on Arctic projects.

In the reporting year, the Division successfully supplied key equipment for two nuclear icebreakers. In addition, first criticality was achieved and the power start-up of the reactor unit of the third icebreaker was performed.

In 2024, the Mechanical Engineering Division achieved impressive results in the production of special steel for the nuclear industry. Key projects of the year included the production of the first batch of steel for the reactor vessel of power unit No. 4 of El Dabaa NPP in Egypt and the start of production of the reactor vessel for Paks NPP in Hungary. The Division develops its production capacities and introduces innovations in order to meet the strict requirements of the nuclear industry.

Contribution to ensuring safety, reliability and self-reliant technological development in Russia

The Mechanical Engineering Division contributes to ensuring safety, reliability and self-reliant technological development in Russia by producing high-technology mechanical engineering equipment and implementing R&D projects; this includes:

- Developing new nuclear reactor technologies to enhance the safety and efficiency of the use of nuclear energy;
- Providing solutions enabling stable electricity supply from green energy sources in remote and hard-to-reach areas;
- Developing and introducing new materials for steel production which help reduce metal intensity and, consequently, reduce energy costs and resource consumption in the course of production of mechanical engineering equipment;
- Remaining a leader in R&D aimed at developing new mechanical engineering solutions;
- Producing blanks and finished steel products from plain carbon steel and special stainless steel for the nuclear power industry, the oil, gas and petrochemical sector, general mechanical engineering, the thermal power industry and the metals industry;
- Participating in government programmes aimed at developing Russian technologies for the oil and gas industry;
- Developing innovative solutions and integrated systems for wastewater treatment, including as part of efforts to provide local residents with clean water.

Plans for 2025

The development of new businesses and investment in nuclear technology innovations provide the basis for further strengthening the positions of the industry on the Russian and international markets.

The Division intends to expand the range of equipment that it produces, develop proprietary technologies and new products for the energy sector, and develop its production capacities.

The Division implements large-scale investment projects focused on upgrading infrastructure at its production sites. These initiatives include upgrading process equipment, repairing existing and buying new equipment, and building new production sites and utility systems in order to expand production capacities.

Plans for 2025 include the following:

- Increasing revenue, including revenue from the sales of new products;
- Carrying out existing contracts and developing cooperation with foreign companies and industrial partners;
- Securing the foothold in target markets;
- Expanding the range of equipment supplied by the Division;
- Supplying key equipment;
- Upgrading and expanding production capacities.

4.4. Power Engineering Division

Operating results	2021	2022	2023	2024
Nuclear power generation, billion kWh	222.437	223.372	217.398	215.523
Key factors contributing to a reduction in electricity output compared to 2023 included the following: *– The shutdown of power unit No. 2 of Kursk NPP for decommissioning;* *– The reconstruction of a generator transformer at power unit No. 1 of Kalinin NPP.*				
Performance against the balance target for electricity output set by the Federal Antimonopoly Service, %	102.19	102.52	101.49	100.70
The target was exceeded.				
Average headcount in the Division, persons	57,278.57	63,551.66	67,027.86	79,201.15
The change in the headcount was caused by a change in the scope of consolidation, the inclusion of sales companies in the scope of the Division, and the staffing of NPPs currently under construction and overseas projects.				
Lost Time Injury Frequency Rate (LTIFR)	0.04	0.12	0.05	0.05
In 2024, as in 2023, there were no fatal accidents involving NPP personnel or contractors at NPPs.				
Spending on charity, RUB million	2,110.9	1,924.1	3,049.2	4,433.2
The change in the amount of funding was due to changes in the list of beneficiaries and the number of events.				

Key results and events in the reporting year

- Nuclear power generation totalled 215.523 billion kWh (100.7% of the target set by the Federal Antimonopoly Service of Russia).
- The NPP capacity factor stood at 85.61%.
- The share of power generation by NPPs operating in the Unified Power System (UPS) of Russia totalled 18.5%.
- Repairs scheduled for 2024 were carried out in full and to the required standard.
- Performance against the targets of the investment programme stood at 102%.
- The Division achieved the strategic goal of preventing work-related fatalities at NPPs; there were also no serious injuries among NPP personnel and contractors.
- On 31 January 2024, power unit No. 2 of Kursk NPP was shut down in preparation for decommissioning.
- A radioactive waste processing facility was put into operation at Kursk NPP.
- A technological solution for the management of substandard spent fuel assemblies from RBMK reactor units was adopted at power unit No. 1 of Leningrad NPP.
- Changes were made to the terms of licences for the pilot operation of power unit No. 2 of Novovoronezh NPP-2 and power unit No. 1 of Leningrad NPP-2 with an 18-month fuel cycle; the first batches of fuel were loaded as part of the transition.
- All key milestones for Kursk NPP-2, Leningrad NPP-2 and Smolensk NPP-2 construction programmes were reached.
- The share of new and international businesses in the consolidated revenue of the Power Engineering Division exceeded 40%.

The Power Engineering Division is the only NPP operator in Russia and a major player on the Russian electricity market. The Division ranks first among power generation companies in terms of the share in the total electricity output in Russia.

The Division makes a significant contribution to the social and economic well-being of local communities and environmental protection in its regions of operation and the locations of nuclear power plants, as well as globally.

The Division includes a holding company (the central office, branches and a standalone division): 11 nuclear power plants, the Yakutia Small Nuclear Power Plant branch and 22 subsidiaries.

The Division is a member of more than 20 industry and third-party non-profit organisations (associations).

The Division's main business areas include power and heat generation and capacity supply by NPPs and the operation of nuclear facilities (nuclear power plants), radiation sources, and storage facilities for nuclear materials and radioactive substances, in accordance with Russian legislation.

New and international businesses are also a significant area of the Division's business, including a wide range of services for both nuclear and non-nuclear markets in the Russian Federation and abroad.

Contribution to ensuring safety, reliability and self-reliant technological development in Russia

The Division's innovation activities are aimed at accomplishing the objectives of the New Nuclear and Energy Technologies National Project, which is aimed at achieving technological leadership, in order to achieve the goal set by the government: to strengthen the innovative potential of Russian nuclear technologies and expand the scope of their application. Innovative development is a necessary prerequisite for maintaining the technological leadership of both the Division and the entire nuclear industry.

The main innovation management tool is the Innovative Development and Technological Modernisation Programme of ROSATOM until 2036 with an outlook until 2045 (in the civilian sector).

The development of new technologies is planned on the basis of a review of priorities of ROSATOM and its competitors in the sphere of scientific and technological development, business objectives, a search for technology ideas, expert support, as well as the findings of a patent search enabling the assessment of a rationale for the development of new technologies and associated risks.

The Power Engineering Division is an acknowledged leader in terms of the output of innovative products in the industry; in 2024, it generated revenue from the sales of innovative products and services exceeding RUB 376 billion, which is RUB 32 billion more than in 2023.

In the course of its operations, the Division and its organisations use various approaches to implementing innovations. The main focus is on innovative development driven by the introduction and use of technologies and competences developed at the request of the Division at NPP power units, and the implementation of research, development and technology (R&D) projects. R&D plans are implemented as part of the capital investment programme (CIP).

All key R&D projects scheduled for 2024 were implemented in full.

Changes in R&D financing, RUB million

The portfolio of the main innovative solutions developed as part of ongoing R&D projects (more than 70 projects) includes the following:

- Enhancing design solutions for the conventional pressurised water reactor (VVER) technology;
- Developing new design solutions for advanced medium-sized power units equipped with VVER reactors, namely designs featuring spectral shift control (VVER-S) and supercritical coolant pressure in the primary circuit (VVER-SKD);

- Developing new technical solutions to support safety cases and extend the service life of power units equipped with VVER and RBMK reactors;
- Developing solutions aimed at making power units more cost-effective, developing and introducing new fuel cycles for VVER and RBMK reactors, and validating the start/stop characteristics of power units of Leningrad NPP-2 and power units No. 1 and 2 of Novovoronezh NPP-2;
- Developing new hydrogen-based nuclear technologies, including designing an NPP for hydrogen production comprising a high-temperature gas-cooled reactor and chemical processing facilities, developing nuclear fuel production technologies, and addressing safety issues; the development of an investment case for the construction of a facility of this kind in the Republic of Tatarstan was started; work was underway to build a pilot facility for the testing of hydrogen production technologies at Kola NPP;
- Providing a rationale for the development and licensing of designs for NPPs with small reactors featuring a RITM-200N reactor unit for a site in the Sakha Republic (Yakutia);
- Developing and introducing new technical solutions for equipment in order to improve the performance of the *Akademik Lomonosov* floating power unit;
- Performing a package of work to validate the improved efficiency of the use of nuclear fuel for fast neutron reactors and develop more efficient equipment for power units equipped with fast neutron reactors;
- Implementing a comprehensive R&D programme to develop a low-waste technology for the processing and conditioning of liquid radioactive waste;
- Developing effective techniques and technologies for radioactive waste management at NPPs;
- Implementing a programme to develop innovative technologies for projects to decommission NPP power units;
- Developing computer codes for safety cases and technical solutions for new and existing NPP power units.

Practical development of new nuclear power generation technologies formed part of a federal project titled ‘New Nuclear Power Industry, Including Small Nuclear Reactors for Remote Areas’ included in the Comprehensive Programme ‘Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024’ (hereinafter referred to as the Comprehensive Programme). One of the aims of the Comprehensive Programme is to develop new technologies for small and medium-sized nuclear power plants for their subsequent implementation in accordance with the General Scheme for the Locations of Power Facilities in the Russian Federation, to be followed by the launch of these technologies on growing global markets.

New products and businesses

All new businesses of the Division support the achievement of technological sovereignty and structural adaptation of the Russian economy; these include engineering and energy services, the isotope business, the development of a system of certificates of origin of energy, digital products, robotics, charging infrastructure and biogas reactors, and service provision throughout the life cycle of overseas NPPs. The Division systematically searches for and develops new products.

The following results were achieved in 2024:

- The Centre of High Medical Technology of the Vishnevsky National Medical Research Centre of Surgery and the first stage of the Innopolis data centre were commissioned;
- The Division maintains a 30% share in the global market for cobalt-60 for sterilisation;
- The range of medical isotopes produced by the Division was expanded; pilot batches of samarium-153 and lutetium-177 were produced;
- Leningrad NPP, Kalinin NPP and Balakovo NPP underwent the qualification procedure for issuing ‘nuclear’ certificates; the first ‘nuclear’ certificates were issued and redeemed;
- Work was started on a project to re-extend the service life of power unit No. 2 of the Armenian NPP;
- Eight scheduled preventive maintenance projects were implemented at Russian-design overseas NPPs;
- The first long-term contract was signed for scientific and technical support for the operation of the Belarusian NPP;
- 156 charging stations were put into operation, including 90 stations in Moscow (accounting for 60% of the local market for fast charging infrastructure).

Plans for 2025

- The target for electricity output for 2025 has been set at 215.3 billion kWh (in line with the balance target of the Federal Antimonopoly Service of Russia and the target of the Government Programme of the Russian Federation ‘Development of the Nuclear Power and Industry Complex’);
- Carrying out 34 repairs at NPP power units with a total scheduled duration of 1,597 days (target). Optimising scheduled repairs at NPP power units; optimising work related to managing the service-life performance of reactor units and in-core monitoring of graphite stacks at power units with RBMK-1000 reactors in order to ensure that the government target for electricity output is met in full;
- Achieving first criticality and performing the power start-up of power unit No. 1 of Kursk NPP-2, obtaining a permit for its commissioning;
- Obtaining licences for the extended service life of power unit No. 3 of Beloyarsk NPP and power units No. 3 and 4 of Leningrad NPP;
- Obtaining licences for the operation of power unit No. 2 of Smolensk NPP, power unit No. 1 of Kalinin NPP and power unit No. 5 of Novovoronezh NPP;
- Carrying out construction and installation operations to replace steel cable structures in the turbine hall of power unit No. 2 of Kalinin NPP;
- Supplying hardware forming part of the hardware and software system for the monitoring and control system of the second safety train at power unit No. 2 of Kalinin NPP;
- Carrying out the government contract for the processing of radioactive waste (in federal ownership) accumulated at NPPs in full.

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

5

INNOVATIONS AND NEW PRODUCTS

Nikolay Dollezhal (1899–2000)

Nikolay Dollezhal was an energy scientist, designer of nuclear reactors (including the first industrial reactor, 'A', nicknamed 'Annushka') and professor. He contributed to peaceful nuclear development by participating in the project to build the world's first nuclear power plant and by designing propulsion units for ships and submarines. The institute headed by Dollezhal was subsequently named after him and currently specialises in designing research reactors for various applications.

CHAPTER 5. INNOVATIONS AND NEW PRODUCTS

5.1. Research and Innovations

Key results in 2024*

- In 2024, the share of young researchers totalled 39%.
- Almost 1,900 people joined the Research Division, of which 58% were young employees aged under 35.

** Taking into account the results of ROSATOM*

Innovative development of the nuclear industry as a global energy company involves ongoing work aimed at addressing strategic, technological, economic and other tasks that necessitate searching for and applying new knowledge, continuously accelerating innovative development and improving its efficiency.

In 2024, innovation activities in the nuclear industry spanned a wide range of areas and involved mastering advanced technologies and products and promoting them in new markets.

The main innovation objectives and targets for the industry, as well as the mechanisms for achieving them, are set out in the Corporation's Innovative Development and Technological Modernisation Programme until 2036 with an outlook until 2045 (in the civilian segment) (hereinafter referred to as the IDP). As part of the new IDP, the Corporation continues to give priority to the development of nuclear technologies, innovative non-nuclear technologies and related technologies that complement nuclear power generation and produce a multiplier effect across the industry as a whole.

The holding company of the Research Division is the key nuclear organisation responsible for scientific research. An important area of the Company's operations is the development and commercialisation of the Division's technological competences, the search for and structuring of technologies and their subsequent sale in the domestic and foreign markets.

The activities of the Research Division have been grouped into three units focused on specific disciplines: the Physics and Energy Unit, the Electrophysics Unit, and the Chemical Technology Unit. Twelve companies within the Research Division are directly involved in R&D and innovation activities.

Given the Division's extensive research and technological capabilities in the field of nuclear medicine, in 2024, ROSATOM's management made the decision to integrate competences in these areas into a single management hierarchy. Two research institutes and an industry integrator responsible for selling and promoting isotope products manufactured by ROSATOM's enterprises were included in the Research Division.

Comprehensive Programme 'Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024'

Between January 2021 and December 2024, ROSATOM implemented a comprehensive programme titled 'Development of Technical Capabilities, Technology and Scientific Research in the Use of Nuclear Energy in the Russian Federation until 2024' (CP DTTS), which covered key initiatives aimed at developing new nuclear, thermonuclear fusion and plasma technologies and related high technology, upgrading and expanding R&D capabilities and pilot production facilities, designing and building innovative nuclear power units.

In 2024, performance against the targets set in the CP DTTS stood at 100%.

Federal Project 'New Nuclear Power Industry, Including Small Nuclear Reactors for Remote Areas'

As part of the development of small NPPs to provide power supply to consumers in remote areas with a high export potential that are isolated from the unified power system, in 2024, engineering designs were developed for a line of SHELF-M and Elena-AM small reactor units.

In addition, as part of R&D, a preliminary design was developed for a reactor unit using spectral shift control (VVER-S); it meets the requirements of the Uniform System of Design Documentation and technical specifications for the VVER-S design.

Proryv Project

As part of efforts to shape a new nuclear power industry, ROSATOM is implementing the Proryv (Breakthrough) Project, which is aimed at developing fast neutron reactors and closing the nuclear fuel cycle. It will result in the development of technologies that will help to solve the problem of radioactive waste accumulation and make nuclear power plants more cost-effective. The following activities were carried out in 2024:

- The module producing nitride fuel for the BREST-OD-300 fast neutron reactor in Seversk (Tomsk Region) started pilot operation. Production processes are fully automated. This is the first of the three facilities forming part of the Generation IV Pilot and Demonstration Energy Facility (PDEF) that is being built as part of the strategic industry-wide Proryv Project. The PDEF is unique in the global nuclear industry;
- The construction and commissioning of the second stage of the PDEF training and information centre were completed. 30 employees of the fabrication/refabrication module (FRM) underwent training using the ATOM software and hardware system;
- An innovative pilot sample of a reactor coolant pump (RCP) was produced for the first BREST-OD-300 reactor unit forming part of the Generation IV energy facility;
- Technologies were developed for the fabrication and refabrication of mixed uranium/plutonium fuel and for closing the nuclear fuel cycle.

Federal Project ‘Construction of Modern Experimental Test Facilities for the Development of Technologies for a Two-Component Nuclear Power Industry Based on a Closed Nuclear Fuel Cycle’

In 2024, the technical upgrade of a pilot fast neutron reactor with a heat generation capacity of 60 MW (stage 2) was completed. The project has made it possible to upgrade the system of the BOR-60 research reactor in order to improve its safety and reliability and ensure compliance with regulatory requirements. This will make it possible to continue to operate the reactor unit, extend its service life and meet the demand for research to be conducted using the reactor unit in order to address the tasks facing the nuclear power industry.

As part of the construction of the MBIR multipurpose fast neutron research reactor, in 2024, unique custom-made oversized products were delivered to the site in Dimitrovgrad, namely intermediate heat exchangers, which are designed to remove residual heat from the reactor core. Components of the fuel handling system for the first circuit of the MBIR reactor delivered to the site were moved into final position, which will make it possible to concrete a section of the ceiling of the central hall with an area of about 100 m^2 and to start equipment installation.

Federal Project ‘Development of Controlled Thermonuclear Fusion Technologies and Innovative Plasma Technologies’

Technical upgrades were completed, and a pilot site for the production of superconductors with improved performance was put into operation.

In 2024, a preliminary design was developed for a unique tokamak with reactor technologies to be built in Troitsk. It is designed primarily to test and demonstrate the operability of technologies that will form the basis of a full-scale nuclear fusion reactor, which will provide a virtually inexhaustible source of energy.

A prototype of a plasma jet engine with improved thrust and specific impulse designed for long-distance spaceflight was produced. In the future, the use of such engines will enable Russia to take deep space exploration to a new level and conduct interplanetary spaceflight missions.

The MEPhIST-0 tokamak at NRNU MEPhI (one of ROSATOM’s core universities) was connected to the Shared Information Space for Nuclear Fusion Research that is being developed by the Corporation; this has opened up new opportunities for students. The Information Space is a unique information network connecting the country’s key research centres that conduct research on controlled nuclear fusion. Not only students at the university but also researchers from other Russian towns and cities will be able to conduct experiments using the training tokamak; in the latter case, this will be done remotely.

Federal Project ‘Development of New Materials and Technologies for Advanced Energy Systems’

Two new types of carbon fibre were developed in 2024. One of them is based on silicon carbide and is designed for fuel elements and components of fuel assemblies with a length of 5 metres or more. This is one of the most promising materials that can improve the strength of fuel cladding. The other is intermediate modulus carbon fibre made from PAN precursor (feedstock produced from refined petroleum products); it outperforms analogues in terms of tensile elasticity and improved strength. This material will be in demand in the nuclear industry, aircraft engineering, shipbuilding, the wind power industry, construction and other industries.

New types of steel were developed. Materials were produced from oxide dispersion-strengthened (ODS) steel for cladding tubes of various types of reactors. Tests have shown that the alloy has unmatched high-temperature strength: it retains its physical state in a salt composition heated to 750 °C for more than 4,000 hours.

A rationale was provided for the use of a new high-strength steel grade for SNPP equipment; it helps reduce the specific amount of metal used in equipment by almost a quarter.

In the sphere of additive manufacturing, in 2024, the Company completed the development and production of nine 3D printers using 10 different technologies, including the printing of complex-shaped parts from refractory metals. 16 different products were produced and underwent the required tests. The development and production of cluster laser optical systems were completed; these systems make it possible to print parts with a diameter of 95 cm or more from silicon carbide.

A universal hardware and software platform was developed which incorporates digital tools for computer-based materials science that are designed to predict the properties and search for new polymer composite and metallic materials. A database on the properties of polymers, ceramic, steel and other materials was compiled; it incorporates the functionality for the monitoring of the additive manufacturing process and the preparation of the relevant data sheets, as well as smart feedback mechanisms.

Techniques were developed for the rapid assessment of physical and mechanical properties of materials using ion accelerators; they will significantly speed up the assessment of resilience of structural materials to radiation and will help optimise the duration of reactor testing.

As part of the fundamental task of synthesising new superheavy elements, a high-current multi-charged ion injector was produced; it will greatly improve the sensitivity of experiments. In addition, a high-performance electromagnetic mass separator was produced, which will be used to produce isotopes required to obtain element 120.

Pursuant to Decree No. 309 of the President of the Russian Federation dated 7 May 2024 on the National Development Goals of the Russian Federation until 2030 and for the Future until 2036, the New Nuclear and Energy Technologies National Project (hereinafter referred to as the NN&ET NP), which is aimed at achieving technological leadership, was approved in 2024.

Federal projects focused on nuclear topics that will be launched as part of the NN&ET NP in 2025 build on the groundwork laid as part of the CP DTTS, which has been run successfully since 2021 by ROSATOM in cooperation with the National Research Centre Kurchatov Institute, the Russian Ministry of Science and Higher Education, and institutes and universities affiliated with the Russian Academy of Sciences.

Russia’s industry has been tasked with achieving technological sovereignty and adopting state-of-the-art technologies as soon as possible. The government and major Russian companies allocate resources to accelerate the development of Russian research and technology capabilities and infrastructure. The introduction of innovations and new high-technology equipment enables the Company and its organisations to occupy new market niches and make the nuclear industry and Russian industry as a whole more competitive.

International projects

In 2024, the Company concluded contracts with partners from South Korea, Germany, China, Belarus and Brazil for the provision of services and experiments at Russian research facilities, as well as contracts with partners from India, the US, China, Hungary, the Netherlands, Cuba, the UK, Kazakhstan, the Czech Republic and Germany for the supply of isotope products.

The main subjects of the contracts included reactor research and post-irradiation examination, the supply of high-purity substances and materials and radioisotope products, and the development of technologies.

The Company is developing solutions and services for overseas Nuclear Research and Technology Centres (NRTCs): in 2024, technical specifications were approved for an NRTC in Bangladesh, and the compilation of data was started for the reactor and laboratories that will form part of an NRTC in Vietnam.

In 2024, active steps were taken to promote cooperation with the Republic of Belarus on the implementation of the Comprehensive Russian-Belarusian Programme for Cooperation on Nuclear Non-Energy and Non-Nuclear Projects. Working groups were established with institutes of the National Academy of Sciences of Belarus; projects and programmes of the Union State are being developed with a focus on medical equipment, radiopharmaceuticals, power electronics and other areas. In 2024, the Brachium gamma radiation therapy device was registered in the Republic of Belarus; a tender application was submitted for the supply of brachytherapy equipment for the Polotsk Cancer Detection Centre.

Talent development

In 2024, almost 1,900 people joined the Company's Research Division, of which 58% were young employees aged under 35. The most in-demand professions included researchers, materials scientists, chemical engineers, process engineers, designers, IT specialists, analysts, as well as cross-disciplinary specialists (such as medical physicists and data scientists) and highly skilled workers, including research workers.

As a result of the Company's active efforts to train and recruit young science talents, young employees aged under 35 make up 27% of 11,500 employees of the Division (among research workers, the share of this age segment totals 39%). Young specialists are actively involved in research; many of them are promoted to project leaders or heads of laboratories and standalone divisions within two to three years.

In 2024, 120 students from 22 Russian universities were selected for the Research Internship Programme in eight research organisations of JSC Atomenergoprom in Moscow and the Moscow Region, Saint Petersburg, Obninsk and Zarechny (Sverdlovsk Region). They studied digital tools, new materials, nuclear technologies and other competences relevant to the nuclear industry. 570 students were enrolled on the programme between 2020 and 2024, and more than 220 of them have been hired by nuclear organisations.

Experienced colleagues and leading researchers in the Company's enterprises provide support to young specialists. More than 150 employees of organisations in the industry act as research supervisors and mentors to interns and other young employees and help them to successfully defend their PhD theses. As a result of this practice, highly qualified personnel are getting younger: the average age of employees who defended their PhD theses in 2024 was 28 years, and the youngest Candidate of Sciences was 25 years old. The defence of a PhD thesis helps speed up career advancement.

The effectiveness of the HR policy is reflected in the recognition of achievements of employees of the research unit at the highest level: in 2024, 28 employees were presented with government awards; 17 employees received awards from the President of the Russian Federation, and 303 employees were nominated for industry awards. In the reporting year, eight employees in the industry won government awards in the field of science, engineering and technology, including the most prestigious prize: the Russian Federation National Award for Science and Technology.

As part of an award for achievements in science and innovation established by ROSATOM for young researchers, in 2024, five research teams and one specialist were awarded RUB 1 million each for projects that help make the nuclear power industry and quantum technologies more competitive.

A record 200 career guidance events were held with assistance from 100 researchers (primarily young people aged under 35, including members of ROSATOM's Council of Young Scientists and the Division's Youth Council), who told school and university students and even preschoolers about job prospects in the nuclear industry.

Contribution of the nuclear industry to ensuring safety, reliability and self-reliant technological development

The Company's researchers built a bioreactor for growing bioartificial blood vessels up to 10 cm long. A blood vessel grown in a bioreactor cell is 6 to 10 cm long and 3 to 5 mm in diameter and consists of three layers: the endothelium, smooth muscle and connective tissue; its mechanical and biological properties are similar to those of native blood vessels. Plans include further development of bioprinting technologies, which will make it possible to produce more complex organs, such as the thyroid gland, the kidney, the liver, etc.

Pilot samples of microsources for brachytherapy based on iridium-192 were produced. The new product will replace foreign analogues and will enable sparing cancer treatment using the Brachium gamma radiation therapy device.

Fully integrated production of customised implants with a special coating was launched. The materials consist of a hard metallic frame with a ceramic coating; this is a promising technique for the reconstruction of damaged bone tissue. These implants will be in demand in traumatology, orthopaedics, and oral and maxillofacial surgery.

In 2024, the Company expanded the sales footprint of isotope products for medical applications both in Russia and abroad. Timely supplies of the necessary products enable early detection and treatment of various types of cancer for thousands of patients every year and help improve the share of positive outcomes. New healthcare institutions in Kaliningrad, Tula and Moscow received the first batches of technetium-99m generators; starting from 2023, a drug produced using technetium-99m generators is supplied to clinics in the Republic of Belarus on a weekly basis. Technetium-99m generators produce isotopes used in diagnostic procedures for detecting cancer, heart conditions, neuroendocrine and other diseases. ROSATOM has helped resume regular deliveries of 123I-mIBG, a vital radiopharmaceutical for children, to healthcare institutions in Moscow.

This radiopharmaceutical is used for the functional assessment of the sympathetic nervous system when diagnosing neuroblastoma (one of the most widespread and aggressive types of malignant tumours) in small children.

In 2024, the Company started to supply iodine-131 and molybdenum-99 to healthcare institutions on Cuba on a regular basis. The Research Division conducted pre-clinical studies of a targeted radiopharmaceutical based on the thorium-227 isotope (with clinical studies scheduled to start in 2025); it will be used to treat prostate cancer. A technology was developed for the production of the carbon-13 isotope through low-temperature distillation of carbon monoxide. Basic technical specifications were drafted for the launch of commercial production. The product will be used to detect *Helicobacter pylori* bacteria.

As part of the project to build a radiopharmaceuticals plant compliant with GMP standards, work aimed at closing the thermal envelope was completed in 2024. It is expected that the plant's production lines will produce more than 10 advanced radiopharmaceuticals for cancer diagnostics and treatment and for the diagnostics of cardiovascular and other diseases.

In 2024, a unique mobile laser system (MLS) developed by JSC Atomenergoprom was used for the first time to dismantle decommissioned high-rise steel structures (transfer cranes). Laser fragmentation operations were carried out at the site of the coal storage yard of Kurgan CHPP. Specialists used the laser system to cut up the supporting columns of two cranes that were up to 40 metres high and had a lifting capacity of up to 32 tonnes. The operations were complicated due to the fact that the structures to be dismantled were situated in close proximity to warehouse infrastructure. This equipment, which is unique in Russia, enables the remote cutting of steel structures up to 300 mm thick using laser beams from a distance of up to 200 metres. This innovative solution has made dismantling operations safer, more efficient and cost-effective.

Since 2024, a project is underway in Dimitrovgrad to launch the production of components for the MC-21 aircraft, which is the key project in Russia's aircraft industry. Pre-commissioning of equipment purchased for the project, namely five-axis CNC machining centres and a water jet cutter, was completed in the pilot production and mechanical assembly division, and tests were conducted to assess manufacturing precision. Maintenance personnel and operators completed a training course and successfully started to apply state-of-the-art technologies.

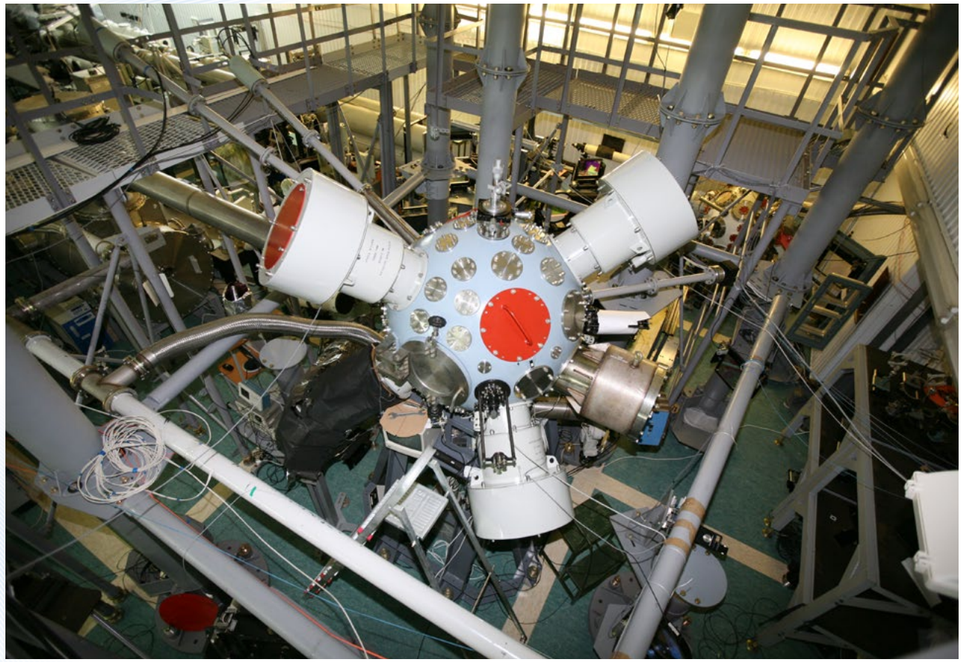
The Company's researchers developed a prototype of a selective laser sintering machine equipped with a new cluster laser optical scanning system. This solution will make it possible to print large-sized parts from silicon carbide, which can replace heavier and less wear-resistant metallic alloys. Parts made from silicon carbide have unique properties and are in demand in multiple sectors of modern industry, from nuclear power to the automotive industry. Parts made from this material are harder than conventional steel or aluminium (slightly less hard than diamond), have a high structural strength and thermal conductivity, a low coefficient of thermal expansion and an excellent tribological performance. The use of this technology makes it possible to produce parts with a complex design with a high degree of precision and reduce the lead time.

A hydrometallurgical processing technology was developed for the recycling of black mass from lithium-ion batteries; this makes it possible to close the life cycle of critical metals used in battery production. The technology enables the production of battery-grade lithium carbonate, nickel and cobalt sulphate. In addition, graphite with a purity of up to 97% is produced during processing as a by-product; it is also a valuable material for the Russian market. This technology can be adapted in order to directly produce cathode precursors for lithium-ion batteries.

The Company's researchers built a modular test bench for the testing of a technology for the production of low-carbon hydrogen and hydrogen-containing mixtures using heat generated by a high-temperature gas-cooled reactor (HTGR). This work forms part of an investment project to develop Russian technologies for large-scale production and consumption of hydrogen and hydrogen-containing products. While building the test bench, Russian specialists developed unique equipment that will make it possible to study non-stationary processes, test catalysts and sorbents, and study heat exchange, gas dynamics and combustion processes.

In 2024, the Company launched fully integrated production covering all stages, from the growing of crystals of A3V5 semiconductor compounds to the manufacture of epi-ready wafers. The chemical and mechanical treatment of wafers is of special importance. Single-crystal calibration, the division of a crystal into wafers, mechanical and chemical/mechanical treatment of wafers make a significant impact on the quality of finished products (substrates) and, consequently, the yield of good devices. The Company controls all stages of the production cycle and guarantees wafer surface quality in terms of structure and geometry. Newly developed technologies include the growing of scintillation and semiconductor crystals for detecting gamma radiation, including for the use in nuclear medicine.

As part of a joint project, a technology for the production of high-purity phosphorus was developed to replace imported solutions; it is a domestically developed process chain involving phosphorus purification and the synthesis of phosphorus compounds. The solution will help address the current shortage of high-purity elements used in the production of special materials for the aerospace and computer industries.



GRI 2-6

5.2. Business Diversification

Key results in 2024*

– Revenue from the sales of new products outside the scope of the nuclear industry totalled RUB 1,473.8 billion, which is 29.1% above the target.

– The 10-year portfolio of orders for new products outside the scope of the nuclear industry reached RUB 3,894.4 billion, which is 25.6% above the target.

** Taking into account the results of ROSATOM.*

GRI 3-3

Despite the current geopolitical instability and restrictions, the Company remains a leader in the nuclear market and continues to fulfil all its contractual obligations.

The development of competitive high-technology non-nuclear products is a strategically important business area prioritised by the Company. Projects are implemented taking into account both the needs of the domestic market and the export potential of the Company's products.

More than 10 years of operation in this area have resulted in a diversified portfolio of products which match and, in some cases, even outperform the best foreign analogues.

The system for managing the Company's new businesses at the level of ROSATOM is focused on the implementation of 16 strategic programmes, which include wind power, industrial and consumer waste management, the programme to launch the production of composite materials, development of the nuclear medicine and technology product line, energy storage systems based on electrochemical cells, additive manufacturing, digital products, gold mining, etc.

At the same time, the Company is actively searching for areas that could become strategically important in the near future.

Results in 2024

Revenue from the sales of new products outside the scope of the nuclear industry totalled RUB 1,473.8 billion, which was RUB 331.9 billion, or 29.1%, above the target (RUB 1,141.9 billion).

The integrated target for revenue from the sales of new products was exceeded by 27.3%, which was due to an increase in volumes in such segments as trading, logistics services and services provided by the nuclear-powered icebreaker fleet, shipbuilding, special steel, the decommissioning of facilities posing nuclear and radiation hazards, special chemicals, etc.

ROSATOM's 10-year portfolio of orders for new products outside the scope of the nuclear industry reached RUB 3,894.4 billion, which is RUB 794.4 billion, or 25.6%, higher than the target (RUB 3,100 billion).

Wind power

Wind power is an important part of clean and low-carbon energy solutions offered by JSC Atomenergoprom. Greenhouse gas emissions over the life cycle of the Company's WPPs are minimal and total 8.7 g of CO_2e/kWh, which is lower than average estimates based on the findings of international research (IPCC: 11 g of CO_2e/kWh). The operation of the Company's wind farms helps reduce greenhouse gas emissions and serves as a mechanism supporting the climate agenda.

As part of the Wind Power business, the Company builds and operates wind power plants (WPPs) in the Russian Federation. According to the General Scheme for the Locations of Power Facilities until 2042,[1] renewable energy capacities are expected to increase by 17.4 GW by 2042.

Following competitive selection as part of the DPM RES and DPM RES 2.0 government programmes aimed at promoting the development of renewable energy generation in the Unified Power System of Russia, by year-end 2024, the Company formed a portfolio of projects with a total capacity of approximately 1.7 GW, with the portfolio of overseas orders totalling 100 MW. JSC Atomenergoprom's share on the Russian wind power market totals about 40%. The Corporation plans to expand its order portfolio in key segments of the renewable energy market, including solar and wind power, both in Russia and abroad.

In 2024, the Wind Power Division generated revenue totalling RUB 34.0 billion.

In 2024, the Company completed the construction of the second stage of the Trunovskaya WPP (35 MW) in the Stavropol Territory and started the construction of the Novolakskaya WPP with a total installed capacity of 300 MW in the Republic of Dagestan. The Novolakskaya WPP will become the biggest wind farm in Russia. This status is currently held by another of ROSATOM's WPPs, the Kochubeyevskaya WPP.

Overall, by year-end 2024, nine wind farms with a total capacity of 1,035 MW were in operation; the remaining WPPs are scheduled to be commissioned between 2025 and 2027. Plans for 2025 include commissioning the Novolakskaya WPP in the Republic of Dagestan with installed capacity of 300 MW.

In 2024, wind power generation totalled 2,752 billion kWh, up by 482 billion kWh year on year. In 2023, wind power generation totalled 2,270 billion kWh.

The Company produces components for 2.5 MW wind turbines in-house; it is currently the only Russian producer of wind turbines in the megawatt range. At year-end 2024, local content in equipment produced by the Company stood at 68%.

Given the tightening of local content requirements as part of the Russian programme to develop renewable energy, the Company continues to take steps to further increase the share of domestically produced equipment and components in its 2.5 MW wind turbines and to upgrade the existing wind turbine technology. In December 2024, the Company launched the production of wind turbine blades in Ulyanovsk, which will enable it to increase the share of local content to 85% in 2025.

1. Approved by Order No. 4153-r of the Government of the Russian Federation dated 30 December 2024.

Nuclear medicine

JSC Atomenergoprom (including the portfolio of ROSATOM) is a global leader in the production of medical isotopes for the manufacture of radiopharmaceuticals. The sales geography includes 600 organisations across Russia, 100 companies in neighbouring countries, and more than 50 countries globally. Demand for ROSATOM's isotope products is growing steadily: in 2024, exports increased by 7%.

The construction of Europe's largest radiopharmaceuticals plant compliant with GMP standards is underway in Obninsk. The plant will produce a wide range of radiopharmaceuticals and active pharmaceutical ingredients. It is expected that the production line at the radiopharmaceuticals plant will produce about 20 types of isotope products for cancer diagnostics and treatment and for the diagnostics of cardiovascular and neurodegenerative diseases.

GRI 3-3 Healthcare infrastructure facilities are being built in several regions of Russia in order to improve the accessibility of high-technology medical care using nuclear medicine technology. The Nuclear Medicine Building of the Dmitry Rogachev Centre has been commissioned. Projects to expand and renovate the Dmitry Rogachev National Research Centre of Paediatric Haematology, Oncology and Immunology and to build a cyclotron unit that will supply radionuclides for the Bakulev National Medical Research Centre for Cardiovascular Surgery are being implemented pursuant to orders of the Government of the Russian Federation. Radionuclide therapy centres are being built in Ufa and Lipetsk, and the radiology department building of the East Siberian Cancer Centre is under construction in Irkutsk. CIS, Asian, African and Latin American countries express considerable interest in the Company's technologies for the design and construction of healthcare infrastructure facilities.

The Company is successfully implementing projects focused on batch production of 16 types of medical equipment and products for medical applications. In 2024, revenue from the sales of special medical equipment totalled RUB 538.1 million. The portfolio of contracts concluded by the Company is worth more than RUB 20 billion.

An enterprise of the Company is successfully implementing a project to develop and produce a Russian-made haemodialysis machine, with subsidies for R&D provided by the Russian Ministry of Industry and Trade.

In 2024, more than 140 Tianox devices were produced and supplied to healthcare institutions.

By 2030, the Company plans to launch the production of new types of high-technology medical equipment, including SPECT/CT scanners, linear particle accelerators, etc., as well as the relevant consumables.

In 2025, the Company plans to launch a production facility that will produce more than 140,000 titanium implants per year and will meet at least 30% of demand of the Russian healthcare market for high-quality medical implants for traumatology and orthopaedics.

Additive manufacturing

Batch production of nine models of medium-sized 3D printers was launched, with the sales volume totalling about RUB 400 million; the pilot sample of the RusMelt 600M printer was marked with letter 'O'.

As part of the project to develop a pilot sample for a product line of additive manufacturing equipment using the direct metal deposition (DMD) technique, Technology Readiness Level (TRL) 6 was achieved for a DMD machine.

A contract was concluded for the supply of 3D printing equipment worth a total of USD 1.86 million to foreign customers.

The Company jointly with RUDN University ran a partner continuing professional education programme focused on additive manufacturing technologies in the nuclear industry (52 academic hours of face-to-face training in the 'summer school' format).

Three RM310 printers were supplied. Confirmation was received of the purchase of two FORA F300 printers for the upgraded Nuclear Technology Information Centre in Dhaka (Republic of Bangladesh).

Preliminary tests were conducted in order to mark detailed designs for the DMD machine with letter 'O' in 2024.

The Company won a tender for the supply of an EBAM printer for a national space centre (Vikram Sarabhai Space Centre (VSSC), India); steps are being taken to conclude dealership agreements.

Two Shared Additive Manufacturing Centres (SAMCs) were opened in 2024 at Tomsk Polytechnic University and Belgorod Agrarian University.

A titanium powder production site is about to be commissioned, and a project to produce superalloys was launched in Glazov.

An agreement was concluded with the Russian Ministry of Industry and Trade to provide subsidies for R&D totalling RUB 99 million in 2024 and 2025.

A pump impeller produced on a RusMelt 300M 3D printer was delivered to an enterprise of the Company in Seversk.

New materials

Composite materials produced by the Company's enterprises are widely used as part of efforts to ensure technological independence in various industries in the Russian Federation. In 2024, the Composite Materials Division comprised five business units, 31 companies and 17 plants in 15 regions of the Russian Federation. The forecast for revenue from this business for 2024 has been revised upwards from RUB 77 billion to RUB 140 billion on the back of an increase in carbon fibre production from 1,200 to 3,200 tonnes.

Starting from early 2024, composite materials are used for the production of metal-composite high-pressure cylinders (69 MPa, with a capacity of 50 litres or more) for the hydrogen energy sector; the cylinders have been successfully tested at the request of the Power Engineering Division.

In May 2024, composite materials produced by the Company for the vertical stabiliser of the MC-21 aircraft were successfully tested; this involved a simulation of 10,000 flights. In September 2024, a Tango four-seat light aircraft made from composite materials produced by JSC Atomenergoprom was tested.

The use of composite materials produced by the Company has made it possible to extend the flight range of a two-seat powered parachute piloted by the traveller Fyodor Konyukhov from 900 to 1,300 km.

The Company develops new production operations: it has launched the production of consolidated plates made from composite materials; the first sets of blades for wind turbines produced in-house in Ulyanovsk have been delivered.

In 2025, the Company plans to continue to expand carbon fibre and pre-preg production capacities.

GRI 3-3

Environmental protection

As part of the Environmental Well-Being National Project (formerly the Ecology National Project), the Company is building infrastructure for the management of hazard class 1 and 2 waste, namely a network of industrial facilities for waste processing.

Preparatory work has been completed at the Western Siberia facility (Tomsk Region), the Vostok facility (Irkutsk Region) and the RG Centre facility; civil engineering work is underway, and equipment is to be delivered.

The site of the left-bank municipal waste landfill in Magnitogorsk (Chelyabinsk Region) has been commissioned following its reclamation.

GRI 203-2

Smart City

More than 110,000 consumers used digital services on the Smart City platform and more than 40,000 enquiries were handled in 2024.

A digital utility system was introduced in one of Russia's border regions; this helped ensure efficient and reliable provision of utility services for thousands of local residents and visitors to the region.

In 2024, solutions developed by the Company and successful cases in this area won awards in industry competitions: the Best Municipal Practice Nationwide Competition organised by the Ministry of Construction, Housing and Utilities of the Russian Federation, PROF-IT.Innovation 2024, and the 2nd National Award for Contribution to the Digitisation of Municipal Services.

A demonstration laboratory based on the Infrastructure IoT Platform software was included in Russia's first ranking 'Demonstration Laboratories for the Testing of Russian IT Solutions in 2024'. This is a ranking covering a new segment of the IT market focused on the provision of services related to the testing of Russian software and computing equipment.

In order to enhance technological independence, a service centre specialising in the maintenance of gas turbine units produced by GE and Siemens was established. The Company acquired capabilities for ongoing maintenance of gas turbine units produced by GE (LM6000/LM2500) and Siemens (SGT-600, SGT-800). Services provided by the centre include annual inspection, borescope inspection, adjustment of the combustion mode, and repairs of gas turbine units.

Hydrogen energy

JSC Atomemergoprom, jointly with other nuclear enterprises, is developing several key technological initiatives:

- R&D for the project to build a nuclear power plant for hydrogen production comprising high-temperature gas-cooled reactors and chemical processing facilities: the main technical solutions for the chemical processing facilities have been approved; the development of technological solutions is scheduled to be completed in 2025;
- The development of Russian electrolysis units of various capacities: the first Russian electrolysis units with a capacity of 5 and 50 Nm^3/h have been built; they are currently undergoing service life tests;
- Steps are being taken to set up a pilot site for hydrogen production based on the water electrolysis technique using electricity generated by an NPP (design documentation and the findings of engineering surveys were approved in early 2025);
- High-pressure cylinders made from composite materials have been produced; they have a capacity of 80 to 210 litres and are designed for an operating pressure of 392 atm.

In addition, taking into account the available government support measures, the Company and its partners are examining opportunities for the development of the transportation sector, including building the relevant infrastructure based on hydrogen energy solutions. The Company is exploring prospects for the implementation of pilot projects focused on large-scale hydrogen production for the metals and chemical industries, for export markets, and standalone power supply systems for isolated areas.

In terms of export-oriented projects, the Company focuses on market and customer research, primarily in the Asia Pacific Region, in order to gain an insight into opportunities for the sales of hydrogen and ammonia to be supplied from potential hydrogen production sites in Russia.

Electric vehicles and energy storage systems

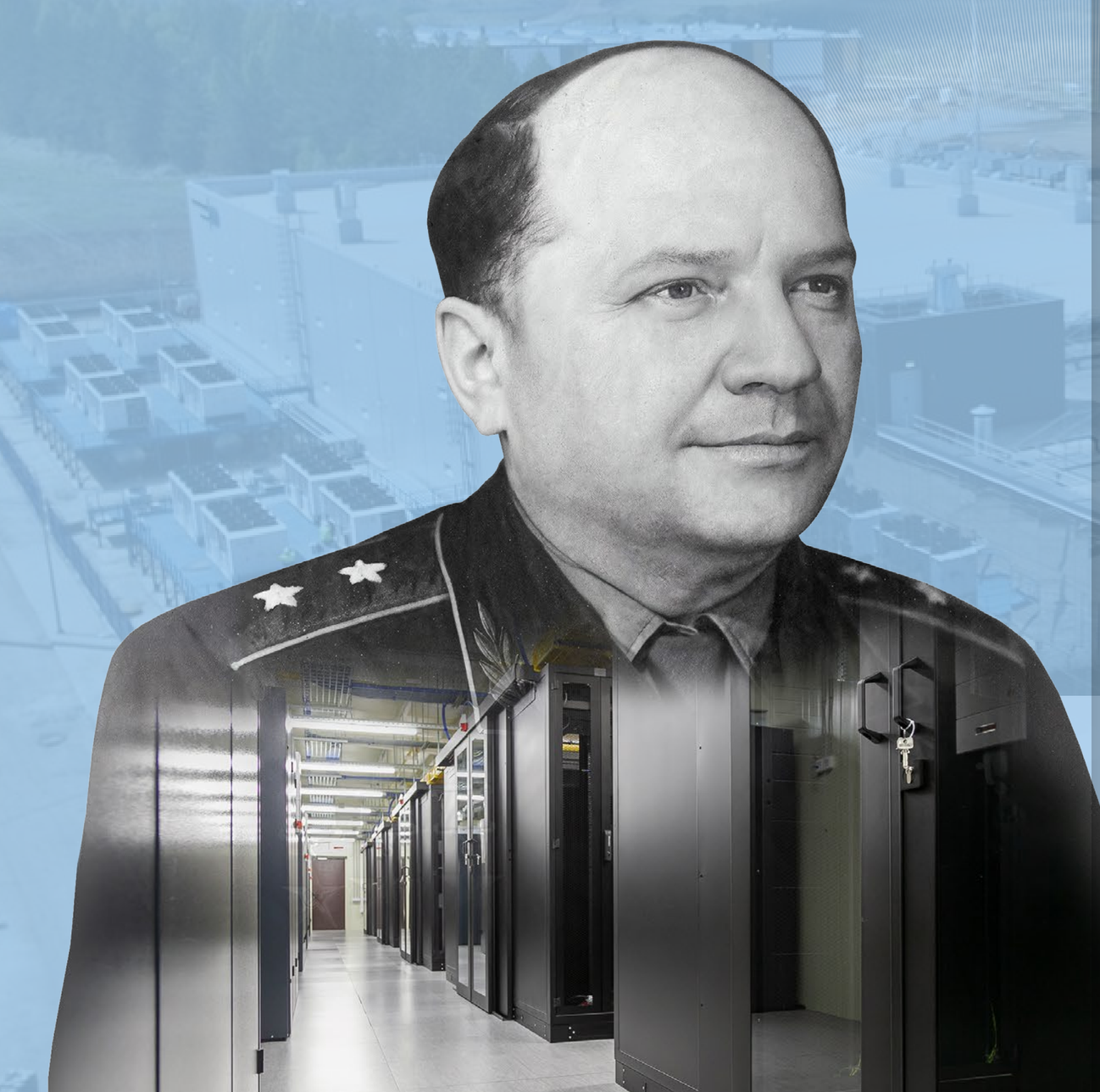
A network of 171 fast charging stations was formed in seven regions, including 90 stations in Moscow (accounting for 60% of the local market for fast charging infrastructure), as well as two EV charging hubs in Kaliningrad comprising 15 stations with a total capacity of more than 2 MW. Up to three EVs can be connected simultaneously to fast charging stations, with the time to full charge ranging from 30 to 60 minutes.

An agreement was signed on the production of lithium-ion batteries at a site of Avtotor. The production facility will have a capacity of up to 10,000 batteries per year with a potential for further development.

An energy storage system based on a lithium-ion battery was installed at the Krasnopolyanskaya HPP (Sochi) to ensure its uninterrupted operation.

The production of electric traction drives was launched in the Lipetsk Region. The newly built factory will meet the needs of the growing Russian EV market for key components produced in Russia.

For details, see also section 3.2. 'New Products for International Markets'.



6

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

DIGITAL TRANSFORMATION

Nikolay Dukhov (1904–1964)

Nikolay Dukhov designed automatic control units for nuclear weapons. He supervised the development of the first three generations of instrumentation and controls (oscilloscope-based systems, compact equipment that does not rely on oscilloscopes, and automated systems with data recorded in digital form) that have enabled the reliable operation of devices forming part of our country's nuclear shield.

CHAPTER 6. DIGITAL TRANSFORMATION

Key results in 2024

- Prototypes of quantum processors based on four main technological platforms were developed, including two 50-qubit quantum processors.
- Digital twins were designed for NPPs, uranium mining (ISL) and polymer composite production processes.
- Two new data centres (Moscow-2 and Innopolis) were launched; the Moscow-2 data centre has become the first in Russia to obtain the Tier IV Constructed Facility certification.
- Memoranda were signed with universities in Uzbekistan; exchange programmes for specialists were launched with BRICS countries.

GRI 3-3

6.1. Uniform Digital Strategy

JSC Atomenergoprom as a company managed by ROSATOM has been implementing a Uniform Digital Strategy (UDS) since 2018. The Strategy defines key focus areas of digital transformation: fulfilling government tasks in the sphere of digitisation, developing flagship digital products for the Russian and international markets, and internal digitisation in the nuclear industry. The UDS defines the goals of digital transformation in the nuclear industry until 2030 taking into account changes in the internal and external environment.

In 2024, ROSATOM became one of the first state corporations to obtain approval for its UDS from the Russian Ministry of Digital Development, Communications and Mass Media; the UDS complies with all regulatory requirements.

Key stakeholders in the implementation of the UDS include JSC Atomenergoprom's organisations, as well as partner companies that are potential consumers of the Company's digital products, and the Government of the Russian Federation, which monitors the implementation of the Digital Economy National Programme.

All organisations managed by the Company contribute to the digitisation of the nuclear industry.

The UDS prioritises the achievement of the following digitisation goals in the industry by 2030:

- Accomplishing 100% of tasks set by the government;
- ROSATOM as a global technological leader;
- A 10-fold increase in digital revenue;
- Digital technologies/solutions developed by the Company to be applied in 30 countries worldwide;
- 100% of products to be supplied by businesses with a high level of digital maturity;
- 100% quality of digital services;
- The share of routine operations to be reduced to 0%;
- The share of people using or adopting digital technologies in their work to reach 100%;
- 5% share in the Corporation's EBITDA.

In 2024, extensive methodological activities and expert work were carried out in order to provide a regulatory, methodological and scientific framework for digitisation in the industry and support the achievement of the goals set in the UDS:

- A methodology for assessing the digital maturity of enterprises and core products is being developed;
- A register of best practices for the implementation of digital technologies in various types of production operations and various functions is being updated;
- JSC Atomenergoprom coordinates all aspects of activities of its IT organisations in terms of aligning pricing and facilitating the sales of IT services and products;
- A methodology for calculating benchmarks for monitoring the achievement of the UDS goals is being developed.

Economic benefits

Digitisation is one of the most important drivers of the Company's business efficiency. JSC Atomenergoprom is actively developing an approach based on a comprehensive assessment of effectiveness of IT projects in the nuclear industry.

In 2024, the Company expanded the uniform methodological framework for calculating benefits from the implementation of IT projects and continued to provide training in project impact assessment for managers.

To unlock the significant potential of digitisation as a driver of the Company's business efficiency, JSC Atomenergoprom is developing an approach to increasing the level of digital maturity of existing processes in its organisations which involves applying digital tools in the manufacture of all core products in the industry.

Digital hierarchy

The digital hierarchy is in place in 20 Divisions of ROSATOM, including organisations managed by JSC Atomenergoprom. To maintain a high professional level of chief digital officers (CDOs) managing digitisation initiatives in the Divisions and key organisations, in 2024, the Company held strategic sessions and events aimed at sharing experience in digital transformation both in the Divisions and across the industry.

Digitisation programmes in the Divisions

Digitisation programmes in the Divisions are a key tool for the decomposition of the UDS goals. In 2024, the Company launched a project to automate the monitoring of the implementation of digitisation programmes in the Divisions.

GRI 3-3

6.2. Participation in Digitisation in Russia

JSC Atomenergoprom as a company of ROSATOM actively participates in the implementation of the Digital Economy National Programme:

- ROSATOM is a founder of the Autonomous Non-Profit Organisation Digital Economy, which is involved in managing the implementation of the Digital Economy National Programme (the relevant regulations were approved by Decree No. 234 of the Government of the Russian Federation dated 2 March 2019);
- ROSATOM performs the functions of a competence centre for the Digital Technology Federal Project forming part of the Digital Economy National Programme, pursuant to Decree No. 234 of the Government of the Russian Federation dated 2 March 2019, and is a contractor responsible for individual deliverables under the Digital Technology Federal Project;
- ROSATOM has been assigned responsibility under letters of intent signed with the Government of the Russian Federation for the development of individual high-technology areas, including Quantum Computing and New Industrial Software (previously New Production Technologies).

In addition, JSC Atomenergoprom's representatives are members of working groups on federal projects forming part of the Digital Economy National Programme under the Autonomous Non-Profit Organisation Digital Economy.

JSC Atomenergoprom and its organisations also actively participate in other initiatives launched by the Government of the Russian Federation to develop the digital economy and achieve technological sovereignty. More specifically, in 2023 and 2024, pursuant to a list of instructions from the President of the Russian Federation,[1] JSC Atomenergoprom and nuclear organisations actively participated in developing a new national project, Data Economy and Digital Transformation of the State, until 2030. The project will build on R&D groundwork laid earlier as part of the Digital Economy National Programme.

Quantum computing

Under the agreement between the Government of the Russian Federation and ROSATOM, the Company continues to implement the road map for the development of the Quantum Computing high-technology area until 2030 (hereinafter referred to as the QC Road Map).[2] The aim of the project for the period until 2030 is to strengthen global technological leadership in the sphere of quantum computing and accomplish tasks in the sphere of research and technology in order to ensure Russia's technological sovereignty in the field of quantum technology through domestically developed state-of-the-art solutions and their implementation in various sectors of the economy and in the social sphere. As part of the implementation of the QC Road Map, in 2024, the Company developed prototypes of quantum processors based on four main technological platforms for quantum computing (atoms, ions, superconductors and photons), including two 50-qubit quantum processors based on trapped ions and on neutral ultra-cold atoms. Russia is currently one of the six countries that have developed quantum processors with a similar (or greater) computing power and ranks among the three leading countries (along with the US and China) that have operational quantum processors based on four main platforms.

1. List of Instructions No. Pr-1734 dated 3 September 2023; List of Instructions No. Pr-616 dated 30 March 2024 on Implementing the Presidential Address to the Federal Assembly; Decree No. 309 of the President of the Russian Federation dated 7 May 2024 on the National Development Goals of the Russian Federation until 2030 and for the Future until 2036.
2. Approved under the resolution of the Presidium of the Government Commission of the Russian Federation on Digital Development and the Use of Information Technology to Improve the Quality of Life and the Business Environment.

The outcomes of ROSATOM's initiatives have enabled it to meet the targets set for the Digital Technology Federal Project forming part of the Digital Economy National Programme in terms of the development of quantum computing. In the sphere of quantum software development, the Company has developed a Russian cloud platform providing access to quantum computing devices designed to perform tasks using quantum algorithms. 34 quantum algorithms were developed between 2020 and 2024 (including 12 in 2024); they are used on quantum computing devices built by the Company for test activities and for solving model problems in the field of quantum optimisation, quantum chemistry, quantum modelling, big data processing, etc. 121 items of intellectual property were produced as part of the QC Road Map and 11 patents for inventions and utility models were registered between 2020 and 2024.

In order to develop the talent pipeline and provide early career guidance, starting from 2022, ROSATOM, jointly with the Autonomous Non-Profit Organisation Digital Economy, the Russian Ministry of Digital Development, Communications and Mass Media, the Russian Ministry of Education and the Russian Quantum Centre, holds a Digital Lesson on quantum computing as part of the Digital Lesson Nationwide Educational Project (hereinafter referred to as the Project). Between 7 April and 30 April 2024, a lesson titled 'A Journey to the Micro Universe: Quantum Computing and Healthcare of the Future' was hosted on the Project's online platform (Урокцифры.рф); it included an educational video, educational simulators and teaching aids developed by a company in the nuclear industry jointly with the Autonomous Non-Profit Organisation Digital Economy.

In 2024, the reach of the Digital Lesson on quantum computing totalled 3.4 million school students and teachers (a total of more than 8.5 million people between 2022 and 2024). The participants of the project included school students from 89 regions of Russia and students of Russian-language schools in more than 130 countries. Lessons on quantum technology were also held as part of international Digital Lessons in the Republic of Belarus and the Republic of Uzbekistan. The Company's representatives participated in major federal educational projects with quantum technology on the agenda, including the World Festival of Youth and Students; Your Move, Russia's main project targeted at students; a nationwide academic competition for students 'I'm a Professional'; the National Technology Contest, etc.

In 2024, ROSATOM initiated a new educational project titled 'Quantum Weeks'. It is aimed at helping school and university students and teachers, as well as research workers at universities, to learn more about state-of-the-art quantum technologies through active immersion. The project is run in Yekaterinburg, Tomsk, Nizhny Novgorod and Saint Petersburg, as well as four cities in the Republic of Uzbekistan (Tashkent, Samarkand, Jizzakh and Olmaliq).

Russia's first English-language Master's degree programme on Quantum Electronics and Photonics was launched jointly with Saint Petersburg Electrotechnical University; seven first-year students enrolled in 2024. The first cohort of students will graduate in 2026.

A Bachelor's degree programme on Quantum Engineering continues to be run jointly with NRNU MEPhI; 59 students are doing the course. The first cohort of students will graduate in 2026.

A continuing professional education programme focused on quantum technology titled 'Quantum Computing' is run by the Rosatom Corporate Academy for CDOs; 145 specialists, including Chief Technology Officers and technical specialists in the nuclear industry, completed professional development courses in 2024.

In order to establish and develop professional communities in the field of quantum computing, raise awareness among Russian and international specialists and encourage them to contribute to the development of quantum computing, and in order to promote this subject among communities in related areas, 26 international and domestic events were held in 2024 with quantum computing on the agenda. These included specialised meetings, sessions, workshops and presentations at the St. Petersburg International Economic Forum (SPIEF), the Eastern Economic Forum, and the Russia International Exhibition and Forum.

At the Future Technologies Forum held on 14 February 2024, working prototypes of Russian quantum processors were presented to the President of the Russian Federation, including state-of-the-art Russian 20-qubit trapped-ion and 25-qubit atomic computing devices; the application of quantum computing in healthcare of the future was demonstrated: a quantum algorithm was run which helps detect the signs of pneumonia in X-ray images.

As part of the QC Road Map, work is ongoing to establish cooperation with the international scientific community in friendly countries. In 2024, three memoranda of cooperation were signed with leading universities of the Republic of Uzbekistan, the Innovative Development Agency under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan and the Fund for Financing Science and Innovation Support under the Ministry of Higher Education, Science and Innovation of the Republic of Uzbekistan. As part of visits to BRICS countries, Uzbekistan and Kazakhstan, the Company's representatives visited 25 universities and research centres. Exchange programmes for specialists were launched with universities in BRICS countries and the Republic of Uzbekistan. The Company is preparing to expand the scope of experience-sharing and internship programmes for research workers.

In 2024, a programme was launched to introduce quantum computing in the nuclear industry; it is focused primarily on quantum algorithms. 15 projects are being implemented in cooperation with 17 companies in the nuclear industry. Between 2025 and 2030, the Company plans to test quantum algorithms on model problems ('simplified' real-life problems that help to gain insight into the most promising applications of quantum computing technology, its impacts and potential) and progress from model to real-life problems. These include, for instance, problems related to the optimisation of nuclear fuel production, solving systems of linear equations as part of heat transfer problems, simulation and mathematical modelling of physical processes taking place in individual components, etc.

Plans for 2025

Between 2025 and 2030, funding for the implementation of measures included in the QC Road Map will be provided as part of the Applied Research and Advanced Developments Federal Project forming part of the new national project, Data Economy and Digital Transformation of the State.

Objectives set for the next stage of development of the technology, which will be launched in 2025, include not only the scaling of quantum registers and improving the accuracy of operations, but also the miniaturisation of quantum devices, which will require innovative technologies and new engineering ideas, streamlined circuit designs and integrated circuit layouts, various packaging methods, the development and production of special electronic devices, etc.

In 2025, the Company will continue to implement a set of R&D projects focused on developing quantum computing devices based on various technological platforms and developing specialised software, including quantum algorithms, codes, and error correction and suppression techniques. By the end of 2025, the Company plans to unveil a prototype of a 70-qubit quantum processor.

The aim of the project to be achieved by 2030 is to ensure Russia's technological sovereignty in the field of quantum computing through domestically developed state-of-the-art solutions, their implementation in various sectors of the economy and in the social sphere, and the start of their practical application in various industries. As a result of the implementation of the Russian quantum computing programme, by 2030, Russian quantum computers will be used to accomplish practical tasks in science, the economy and the public sector.

Contribution of the nuclear industry to ensuring safety, reliability and self-reliant technological development

Participation in the implementation of systemic measures of the Government of the Russian Federation to ensure the technological independence of the Russian economy

In 2024, JSC Atomenergoprom and its organisations continued to participate in the implementation of Instructions No. MM-P10-10127 of the Prime Minister of the Russian Federation Mikhail Mishustin dated 16 June 2022. This involved initiating a set of large-scale systemic measures at the federal level in order to replace foreign solutions and software used in the industry with Russian analogues in prioritised areas. The measures are implemented with financial assistance from the government and in cooperation with major customers in the industry and independent Russian developers.

In order to align software supply and demand in the industries, the Government of the Russian Federation has established industrial competence centres responsible for replacing imported digital products and solutions (ICCs) and competence centres responsible for developing Russian system-wide and applied software (DCCs).

Participation in ICCs and DCCs

Nuclear enterprises actively participated in the work of a number of ICCs and DCCs. JSC Atomenergoprom's organisations participate in the implementation of a number of projects aimed at developing and introducing industrial IT solutions that are scalable across entire industries and are critical for ensuring the technological independence of Russian enterprises.

New industrial software

An updated letter of intent to develop the New Industrial Software high-technology area (hereinafter referred to as the LOI and NIS respectively) was signed with the Government of the Russian Federation on 29 December 2022.

The main mechanism for the implementation of the LOI is the NIS Road Map until 2030.[1]

The key goal of the implementation of the NIS Road Map is to ensure the technological independence of the Russian Federation by encouraging the development and rollout of new Russian industrial software. The main deliverable is to develop a fundamentally new digital landscape in Russian industry and to proactively replace imported solutions.

1. Approved in 2022 under the resolution of the Presidium of the Government Commission of the Russian Federation on Digital Development and the Use of Information Technology to Improve the Quality of Life and the Business Environment (hereinafter referred to as the Presidium) dated 14 December 2022. Updated under the resolution of the Presidium dated 11 April 2024.

6.3. End-to-End Digital Technologies and Data Management

In 2024, JSC Atomenergoprom continued to focus on advanced digital technologies, including digital twins, artificial intelligence and data management.

As part of methodological work and the development of the Digital Twins focus area, a number of steps were taken in 2024:

1. Development of the regulatory framework for digital twins. A corporate standard titled 'Digital Twins. Terms and Definitions' was drafted jointly with representatives of nuclear enterprises.

2. Pursuant to the Order of ROSATOM on Approving the Plan (Road Map) for the Development and Roll-Out of Digital Products during the Construction of Nuclear Facilities in Russia and Abroad, work on an IT solution called 'Digital Twin of an NPP' was initiated; the key issues were formulated, and proposals were collected from key nuclear enterprises with regard to the concept of the digital twin of an NPP at all stages of its life cycle.

3. Research was conducted to identify major long-term trends in the development of digital twin technologies in the nuclear industry. A draft classification system for digital twin technologies was prepared; an archive of more than 500 activities

with a structured dataset was created, which includes projects and research supporting the development of the Digital Twins area in the nuclear industry until 2030.

4. The concept of a comprehensive solution for digital materials science focused on polymer composite materials was developed based on JSC Atomenergoprom's digital solutions. The proposed concept is an ecosystem for computer simulation of a composite material throughout its life cycle.

5. Criteria for assessing the level of digital maturity in the sphere of application of digital twins were updated. Additional criteria were formulated to supplement the methodology for assessing the digital maturity of ROSATOM's enterprises based on the Digital RPS Enterprise status.

In 2024, the Company continued to implement practical projects aimed at developing digital twins in the nuclear industry. Companies in the Mining Division took steps to digitise the in-situ leaching (ISL) process, which involved developing digital twins of the site and of mining processes. The digital twin of the ISL process was developed taking into account challenging climatic conditions, geographical remoteness and a large number of items to be monitored. This has made it possible to increase the solution grade by 3–5%, extend the service life of borehole equipment and reduce the failure rate, and minimise man-made environmental impacts.

The Fuel Division continues to implement projects focused on predictive analytics. Following the completion of a project, an enterprise in the Division conducted a full-scale experiment and confirmed direct benefits. A development project was launched, and the installation of additional sensors on manufacturing equipment was initiated. A number of enterprises are rolling out the AtomMind platform designed to predict product quality and equipment status. Inspections, the testing of hypotheses and design work have been completed. The roll-out of the system in the enterprises has been started.

The holding company of the Fuel Division plans to launch the development of a centralised segment of the AtomMind platform. An application has been prepared for submission to the ICC for General Mechanical Engineering. The project has been included in the list of critical projects of the ICC for General Mechanical Engineering. A set of documents has been prepared for obtaining grants in accordance with the requirements of the Russian Information Technology Development Foundation. The project data sheet has been prepared and approved by the EDT&DM Steering Board.

6.4. Internal Digitisation

In 2024, JSC Atomenergoprom continued to work towards achieving technological sovereignty and incorporating state-of-the-art domestically developed IT solutions into its own IT landscape. The share of Russian software in procurement reached 95%; on average, it accounts for 80% of software used in the industry. In addition, the Company has established a competence centre responsible for supporting the transition of nuclear organisations to the use of Russian radio and electronic products.

The Company continues to implement critical IT projects managed by the ICCs for General Mechanical Engineering and Construction. More than 17,000 employee workspaces have been migrated to automated workstations that do not rely on imported solutions; a total of 151,000 workspaces have been upgraded. As part of projects to replace imported 'heavy' CAD and PDM systems, the design of a domestically developed solution has been successfully completed. The development of solutions for the digitisation of Arctic operations forming part of an Integrated Platform of Digital Services for the Northern Sea Route is another important focus area. The platform is being developed by the Company's IT teams as part of the federal project to develop the Northern Sea Route.

27 services for navigational and cartographic communication and the provision of information on the weather and ice conditions became fully operational in 2024. The functionality of the services has been tested on three nuclear icebreakers: *Ural, Arktika* and *Vaygach.*

Organisations managed by JSC Atomenergoprom actively participate in the development of the Russian IT market: 74 solutions were included in the Unified Register of Russian Computer Software and Databases by nuclear organisations in 2024. Overall, ROSATOM has rights over more than 420 solutions included in the Register.

Two new data centres, Moscow-2 and Innopolis, were launched in 2024. The site in Moscow has become the first in Russia to obtain the Tier IV Constructed Facility certification, which corresponds to the highest level of reliability and fault tolerance in accordance with international industry standards. In 2024, ROSATOM ranked among the top three companies in the data centre market in the Russian Federation in terms of commissioned capacities (6,570 rack spaces).

7

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

GOVERNANCE SYSTEM

Boris Vannikov (1897–1962)

Boris Vannikov was appointed as senior executive of the nuclear industry on the very day of its establishment, 20 August 1945. He was responsible for engineering activities forming part of the project, for the siting and the commissioning schedule of production facilities, for staffing various sections of the Technical Council with researchers and engineers, and selecting experts to address specific issues. He supervised the establishment of the first nuclear industry hubs in the country and contributed to laying the groundwork for the use of nuclear technology in the energy industry, healthcare and other sectors.

CHAPTER 7. GOVERNANCE SYSTEM

7.1. Corporate Governance

Objectives, principles and mechanisms of corporate governance

JSC Atomenergoprom exercises the powers of a shareholder/member with regard to organisations in the nuclear industry in accordance with the applicable Russian corporate legislation in order to maintain a high standard of corporate governance. Since ROSATOM holds 100% of voting shares in JSC Atomenergoprom, decision-making by the shareholder/member with regard to certain organisations in the nuclear power sector is aligned with ROSATOM's position.

JSC Atomenergoprom's actions with regard to organisations in the nuclear industry are aimed at improving their performance in order to help to achieve the strategic goal of ROSATOM, namely to ensure the security and competitiveness of the Russian Federation.

The corporate governance system in the nuclear industry is currently underpinned by the following key principles:

- Standardisation of governance in organisations in the Russian nuclear power sector and organisations specialising in nuclear and radiation safety, nuclear science and technology and personnel training;
- Removing non-operating and inactive companies from the nuclear industry and eliminating redundant corporate ownership levels;
- Avoiding excessive expansion of the area of competence of corporate governance bodies of nuclear organisations and transferring a number of 'optional' issues to the level of cooperation between them based on regulatory documents adopted in the industry with regard to various groups of business processes;
- A division-based management model within the civilian part of the nuclear industry, which involves creating core business divisions of ROSATOM (e.g. the Mining, Fuel, Mechanical Engineering, Power Engineering and Engineering Divisions), as well as a number of incubated divisions and functional industry organisations whose holding companies own/manage various organisations in the nuclear industry, depending on their areas of business.

Key governance mechanisms include the following:

- Performance of corporate governance functions: currently, ROSATOM directly or indirectly (through its subsidiary, JSC Atomenergoprom) exercises the powers of an asset owner or a shareholder/member with regard to nuclear organisations, as stipulated by applicable legislation of the Russian Federation;
- Engagement on operational matters in certain areas of operations of the said organisations based on the regulations adopted in ROSATOM and its organisations.

GRI 2-10
GRI 2-9

Governing bodies

Board of Directors

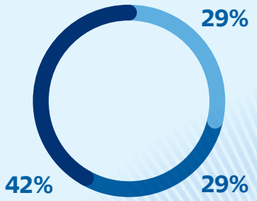
MED 37
MED 44

Between 1 January 2024 and 31 December 2024, the Board of Directors of JSC Atomenergoprom consisted of seven members.[1] During the reporting period, there were no changes in the composition of the Board of Directors.

Out of the seven members of the Board of Directors, two are the Company's employees, while five are not the Company's employees (as at 31 December 2024).

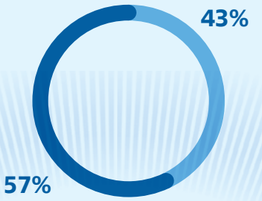
The procedure for nominating and selecting candidates to the highest governance body is set out in the Charter of the organisation.[2] The Board of Directors is formed taking into account considerations such as whether a candidate has professional experience in the relevant areas, a university degree and practical knowledge. At the same time, the Company recognises the importance of diversity and seeks to ensure that the composition of the Board of Directors is well-balanced.

Tenure of the members of the Board of Directors



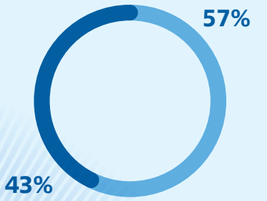
- Less than 5 years
- 5 to 10 years
- More than 10 years

Gender composition of the Board of Directors



- Men
- Women

Age of the members of the Board of Directors



- 30–50
- 50+

GRI 2-18

There are no independent members of the Board of Directors.

The Board of Directors carries out self-evaluation on an annual basis in accordance with the Regulations on the Board of Directors of JSC Atomenergoprom (paragraph 3.6).

The self-evaluation of the Board of Directors for 2023 was carried out in 2024. The self-evaluation of the Board of Directors for 2024 will be carried out in 2025. The results of the self-evaluation of the Board of Directors are recorded by the secretary and, if necessary, are taken into account when organising corporate events.

1. See the 'Information / Constitutional Documents and Internal Regulations' section of the website at atomenergoprom.ru.
2. Paragraphs 80–82 of the Charter of JSC Atomenergoprom (version No. 43 dated 18 March 2024). https://atomenergoprom.ru/#info

Competences of the members of the Board of Directors

GRI 2-12

The Board of Directors functions in accordance with the Charter. The main task of the Board of Directors is to pursue a policy that promotes the Company's dynamic growth, enhances its sustainability and increases the Company's profit.

In accordance with the Charter, the Board of Directors approves the Company's annual report on an annual basis, reviews and approves its sustainability reports and appoints a person responsible for sustainable development matters from among the Board members, among other things.[1] Responsibility for sustainable development matters has been assigned to Kirill Komarov, a member of the Board of Directors of JSC Atomenergoprom.[2]

The competences of the Board of Directors related to managing the Company are defined in paragraph XIII of the Charter.

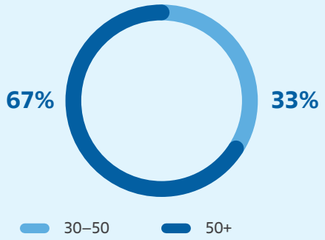
Educational profile of members of the Board of Directors,[3] persons

GRI 2-12
GRI 2-9

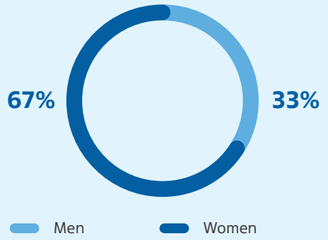
Audit Committee

To enable the Board of Directors of JSC Atomenergoprom to effectively perform its functions related to overseeing JSC Atomenergoprom's financial and business operations and to assist it with regard to other matters, an Audit Committee has been established under the Company's Board of Directors. The area of competence of the Audit Committee includes a number of matters, including considering the approval of sustainability reports and making the relevant recommendations to the Board of Directors of JSC Atomenergoprom. The members of the Audit Committee are not employees of JSC Atomenergoprom. In accordance with the Regulations on the Board of Directors of JSC Atomenergoprom, resolutions of the Audit Committee are advisory in nature. The Audit Committee consists of three members; all members of the Audit Committee have been serving on the Committee since 2021.

Age of the members of the Audit Committee



Gender composition of the Audit Committee



1. Subparagraphs 31, 40 and 41 of paragraph 85 of the Charter of JSC Atomenergoprom (version No. 43 dated 18 March 2024).
2. Minutes of the meeting of JSC Atomenergoprom's Board of Directors No. 517 dated 29 April 2021.
3. The data take into account the fact that some members of the Board of Directors hold more than one degree.

Educational profile of members of the Audit Committee,[1] persons

GRI 2-13

Director of JSC Atomenergoprom

The Director of JSC Atomenergoprom is the Company's sole executive body. Kirill Komarov was appointed as Director of JSC Atomenergoprom as from 14 April 2020.[2] In April 2025, Kirill Komarov was reappointed for a new term.

GRI 2-16

Report of the Board of Directors

MED 36

In 2024, the Board of Directors of JSC Atomenergoprom held 89 meetings. The attendance rate at meetings of the Board of Directors of JSC Atomenergoprom[3] stood at 92.5%.

Sustainability matters and critical concerns are communicated to the Board of Directors during its meetings.

Under the resolution of the Board of Directors dated 27 May 2024, the Company's annual financial statements (accounts) for 2023 were approved.

Under the resolution of the Board of Directors dated 13 May 2024, the auditor for 2024 was approved.

Shareholders as at 31 December 2024

Shareholder	Interest in the Company's authorised share capital	Portion of ordinary (voting) shares in the Company held by the shareholder
State Atomic Energy Corporation Rosatom	95.3577%	100%
Russian Federation represented by the Ministry of Finance	4.6423%	0%

Resolutions of the sole shareholder

In 2024, the shareholder owning all voting shares adopted four resolutions, including on profit distribution for 2023 and election of the Board of Directors, as well as the payment of dividends for 2023, for the six months of 2024 and for the nine months of 2024.

1. The data take into account the fact that some members of the Board of Directors hold more than one degree.
2. Minutes of the meeting of JSC Atomenergoprom's Board of Directors No. 481 dated 13 April 2020.
3. An indicator established in the Methodological Recommendations on Sustainability Reporting approved by Order No. 764 of the Ministry of Economic Development of the Russian Federation dated 1 November 2023: MED 36. Attendance rate at meetings of the Board of Directors of JSC Atomenergoprom (the indicator can be calculated as the ratio of the number of Board members attending the meetings to the total number of Board members).

Payment of declared (accrued) dividends on JSC Atomenergoprom's shares

Under the resolution of ROSATOM as the holder of 100% of voting shares in JSC Atomenergoprom, in 2024, dividends were declared and/or paid (see the table).

Dividends declared and paid in 2024

Date	Type of payment	Amount, RUB million
January	Outstanding dividends for 9M 2023 on preferred shares in favour of the Russian Federation represented by the Russian Ministry of Finance	13,443
June	Dividends declared for 2023 (paid in August 2024)	27,874
September	Dividends declared for 6M 2024 (paid in October 2024)	12,584
December	Dividends declared for 9M 2024 (paid in January 2025)	10,658

Major transactions and non-arm's length transactions

In 2024, JSC Atomenergoprom did not conclude any major transactions.

In accordance with paragraph 17.1 of the Charter of JSC Atomenergoprom, the provisions of Chapter 11 of the Federal Law on Joint-Stock Companies do not apply to the Company.

GRI 2-6

Key changes in the corporate structure in 2024

1. The holding company of the Critical Information Infrastructure Division (an incubated division) was established.
2. Shares/interests in certain Russian and foreign companies were acquired, and a number of joint ventures were established in order to:
   - Develop new businesses and critical infrastructure (including launching the production of printed circuit boards; replacing imported industrial software for a 'heavy' PLM system; establishing an industry mobile virtual network operator; trading in chemicals; establishing a Shared Additive Manufacturing Centre (SAMC); launching integrated production of exhaust gas processing systems; developing the robotics business; developing the manufacture of glass fibre-based finished products, etc.);
   - Ensure guaranteed delivery of seaborne cargo when supplying products to foreign counterparties, and launching a year-round container line connecting Russian ports and the ports of certain foreign countries;
   - Develop capabilities for building physical protection systems for Russian-design nuclear facilities built abroad;
   - Ensure that drilling operations are performed within the scope required to achieve the targets set in production programmes; etc.
3. Shares/interests in a number of companies were sold, and the companies were excluded from the scope of JSC Atomenergoprom.

Compliance with the principles and recommendations of the Corporate Governance Code recommended by the Bank of Russia

JSC Atomenergoprom adheres to the key corporate governance principles stipulated by Russian legislation and the Corporate Governance Code (e.g. respect for shareholder rights, the procedure, format and scope of information disclosure), with some exceptions stemming from the nature of the business and the legal status of JSC Atomenergoprom and its organisations (restricted civil circulation of shares of joint-stock companies appearing on the lists approved by the Russian President and comprising Russian legal entities that may be holding nuclear materials or nuclear facilities).

GRI 2-19

Key provisions of the policy on remuneration and/or reimbursement of expenses; information on remuneration and/or reimbursement of expenses

GRI 2-20

Board members who are full-time employees of the Company are remunerated for their work in accordance with the Standardised Industry-Wide Remuneration System instituted by ROSATOM and adopted by the Company in 2009.

Remuneration, including salary, paid to those Board members who are full-time employees of the Company, is regulated by employment contracts and applicable local regulations of the Company and ROSATOM on remuneration.

Under the resolution of the General Meeting of Shareholders, members of the Board of Directors may receive remuneration and reimbursement for expenses related to the performance of their functions as members of the Board of Directors. The amount of such remuneration and reimbursement is established by the General Meeting of Shareholders. There are no KPIs for Board members who are full-time employees of the Company, including with regard to sustainability matters. Clawback mechanisms are described in internal regulations of the Company and ROSATOM on remuneration.

There are no sign-on bonuses or recruitment incentive payments for members of the highest governance body or senior executives. Members of the Board of Directors do not receive any termination payments or retirement benefits. Rules on termination payments and retirement benefits that apply to ROSATOM's senior executives are the same as those for other employees.

No decisions were taken in 2024 to pay out remuneration and/or reimburse expenses incurred by the members of JSC Atomenergoprom's Board of Directors; no remuneration for serving on the governing body or reimbursement for expenses were paid out.

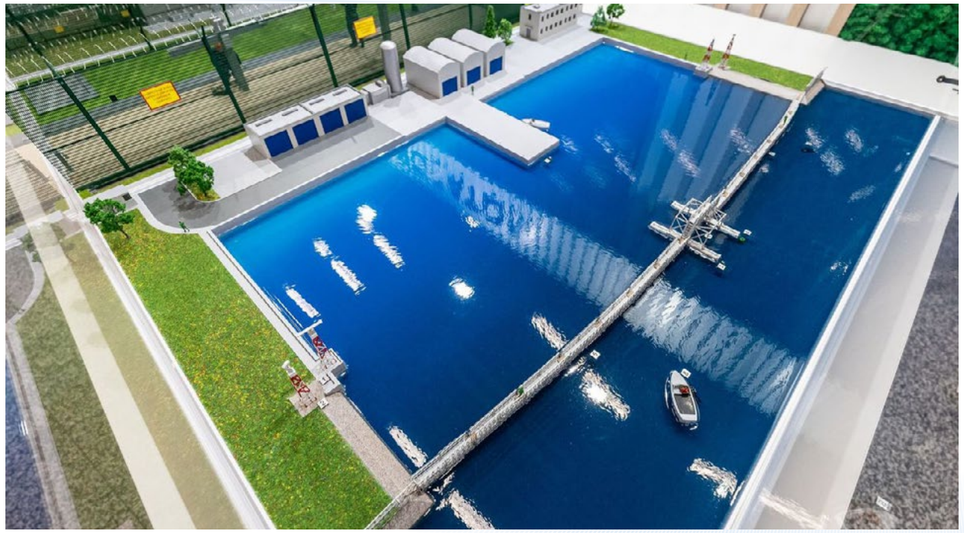
7.2. Risk Management

Risk management system

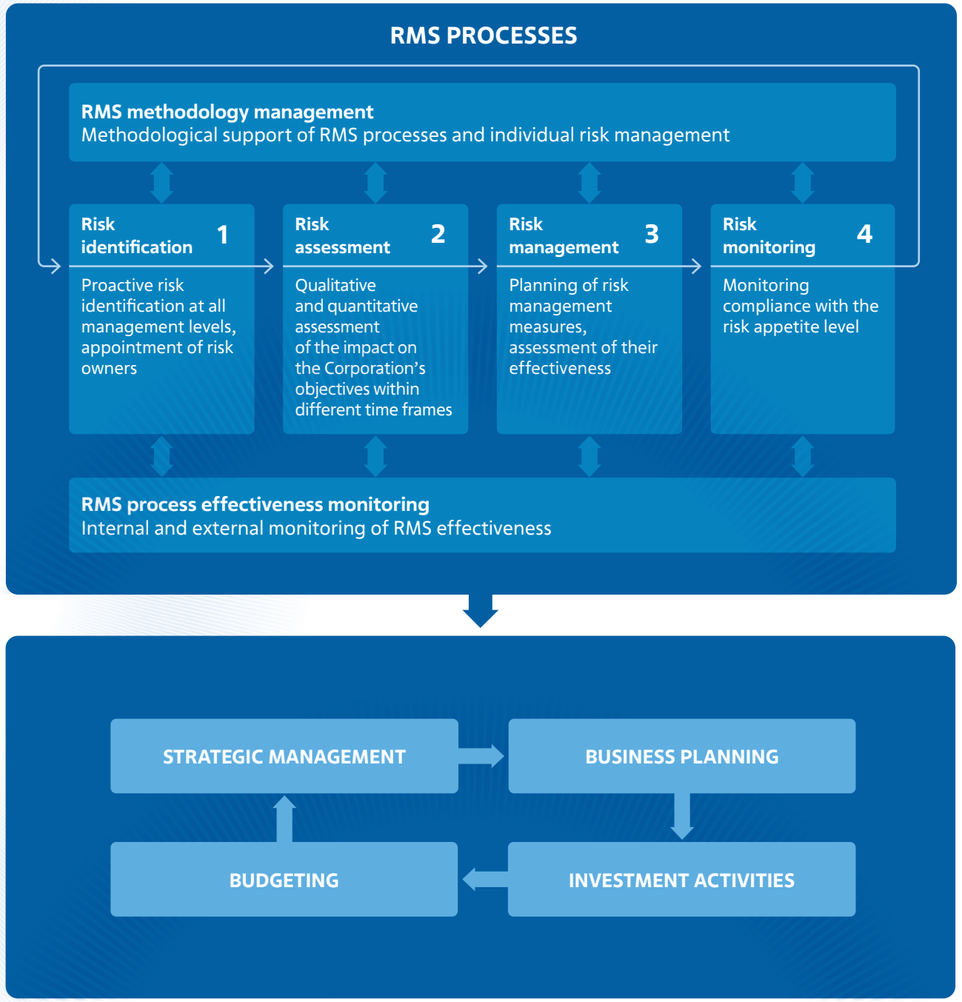
The industry-wide risk management system (RMS) is integrated into the Company's planning and management processes. The RMS is based on a continuous cyclical process of identifying, assessing and managing the risks that can affect JSC Atomenergoprom's short- and long-term performance and the implementation of its strategy.

In 2024:

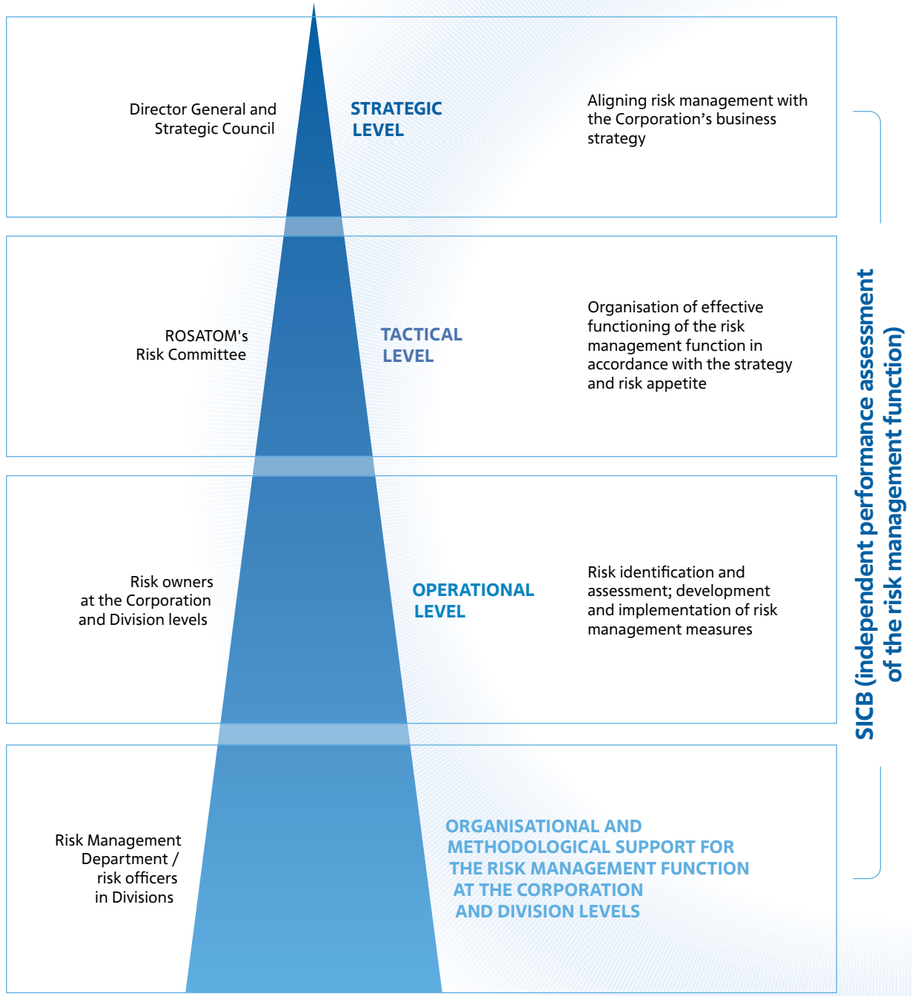
- The Industry-Wide Risk Management System (IRMS), an information system developed as part of project B-RM1-1 to build an Industry-Wide Risk Management System, was in operation;
- The list of key risk indicators was updated, including a description, the calculation algorithm and frequency, sources of information and thresholds (baseline, warning and response thresholds);
- A system for early response to risks related to the Government Programme 'Development of the Nuclear Power and Industry Complex', national and federal projects was in place; key risks were monitored;
- Key risks affecting the key financial and economic indicators (ROSATOM's KPIs) were identified and assessed;
- Workshops, risk sessions and conferences were held to enable risk officers and employees within the hierarchy of the Risk Management function and the relevant divisions to share their experience.



Risk management process in JSC Atomenergoprom



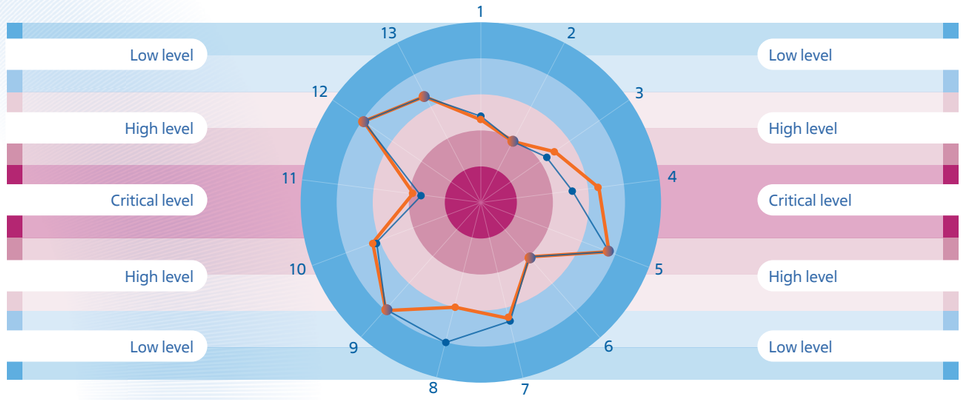
Organisational model of ROSATOM's risk management system applied in the Company



Key business risks[1]

As part of the functioning of the RMS, a list of key risks was compiled; risk owners were appointed; risks were assessed, and risk management measures were developed and implemented.

JSC Atomenergoprom's risk radar



1. Currency risk
2. Interest rate risk
3. Credit risk
4. Liquidity risk
5. NFC product and service market risk
6. Electricity and capacity market risk
7. Reputational risk
8. Risk of a decrease in power generation
9. Health, safety and environmental risks
10. Risk of loss of and damage to assets
11. Project risks
12. Climate risk (including environmental risk)
13. Social and political risks

Comprehensive risk management measures largely offset the negative impact of external factors on the implementation of the strategy of the nuclear industry. Information on key risks, the relevant risk management approaches applied by the Company and results achieved in 2024, as well as the link between the risks and ROSATOM's strategic goals, is provided in the table.

1. The annual report does not contain an exhaustive description of all risks that may affect ROSATOM's operations; it only provides information on key risks.

GRI 3-3

Risk management outcomes in 2024

Strategic goals of ROSATOM:

1. To increase the international market share
2. To reduce production costs and the lead time
3. To develop new products for the Russian and international markets
4. To achieve global leadership in state-of-the-art technology

Risk name (risk owners)	Risk description	Connection with strategic goals
Economic risks		
1. Currency risk (Executives of the Company's Divisions)	Adverse changes in exchange rates	1 2 3

MANAGEMENT PRACTICES

Management approaches:

- Applying currency clauses in commercial contracts and locking in exchange rates (where possible);
- Switching to settlements with counterparties in the currencies of friendly jurisdictions and in Russian roubles;
- Examining the possibility of switching to settlements with counterparties through banks in friendly jurisdictions;
- Using long-term pricing mechanisms with counterparties;
- Exploring opportunities for engaging Russian suppliers and contractors in order to reduce the foreign exchange position;
- Continuously monitoring exchange rates to enable prompt decision-making to mitigate currency risk;
- Setting the highest possible conversion rates when negotiating the terms of expense contracts;
- Monitoring the terms of foreign currency payments under revenue contracts and expense contracts concluded as part of performance of revenue contracts;
- Maintaining a balance of claims and liabilities denominated in foreign currencies (natural hedging);
- Examining opportunities for the use of financial hedging instruments.

Results:

- An optimal ratio of assets and liabilities denominated in the same currency was maintained;
- Foreign currency liabilities were met without raising additional funds to compensate for exchange rate fluctuations;
- Divergent trends in the exchange rates of currencies in which project financing, key items of capital expenditure and operating cash flows are denominated were taken into account.

2. Interest rate risk (ROSATOM's Treasury Department)	Adverse changes in interest rates, different timing of interest income and interest expenses	1 2 3

MANAGEMENT PRACTICES

Management approaches:

- Maintaining a balance of interest income and interest expenses in terms of timing and amounts;
- Reasonable selection of interest rates (fixed or floating) for the expected maturity period. Taking into account projected changes in the key rate and the required term of the loan, the Company may prefer either fixed-rate or floating-rate loans. At the same time, all things being equal, the Company prefers loans with the option of penalty-free early repayment;
- If there is a risk of an increase in the interest rate on floating-rate loans, the Company examines opportunities for refinancing them.

Risk name (risk owners)	Risk description	Connection with strategic goals

Results:

- The Company maintains a stable long-term loan portfolio;
- There was no significant increase in the risk level in 2024 due to the effective use of the risk management approaches described above.

For details, see section 7.3. 'Financial Management'.

3. Credit risk (ROSATOM's Treasury Department; executives of the Company's organisations)	Failure by counterparties to fulfil their obligations in full and on time	1 2

MANAGEMENT PRACTICES

Management approaches:

- Setting and monitoring limits for counterparty banks;
- Using suretyship, guarantees, restrictions on advance payments in favour of external counterparties;
- Monitoring the status of accounts receivable and the financial position of counterparties;
- An internal counterparty solvency rating system;
- Using an extended list of potential collateral to secure counterparties' obligations; closer communication with counterparties in order to monitor the performance of work and the financial position.

Results:

- Losses through the fault of counterparties were minimised.

4. Liquidity risk (ROSATOM's Treasury Department / executives of Divisions)	Lack of funds for the fulfilment of obligations by the Company and its organisations	1 3

MANAGEMENT PRACTICES

Management approaches:

- Centralised cash management (cash pooling);
- Rolling liquidity forecasts and cash flow budget;
- Maintaining required amounts of open lines of credit with banks (funds committed by banks);
- Reducing the period of keeping spare cash on bank deposits when this is advisable from an economic perspective;
- Discussing matters related to state support measures with Russian federal and regional executive authorities;
- Active use of project financing instruments as part of implementation of projects and programmes by ROSATOM and its organisations;
- Maintaining the credit ratings assigned to JSC Atomenergoprom and to the Corporation by national rating agencies, JSC Expert RA and ACRA, at the highest possible level.

Results:

- The Company maintained sufficient liquidity to repay liabilities on time, preventing unacceptable losses and reputational risks.

For details, see section 7.3. 'Financial Management'.

Risk name (risk owners)	Risk description	Connection with strategic goals
Commercial risks		
5. Nuclear fuel cycle (NFC) product and service market risk (Executives of the relevant Divisions of the Company)	Adverse changes in the pricing environment and demand on markets for natural uranium and uranium conversion and enrichment services	1 2 4

MANAGEMENT PRACTICES

Management approaches:

- Maintaining an optimal balance between market-focused and escalation pricing (benchmark price inflation) in contracts;
- Embedding quantitative flexibility and options in contracts with suppliers to align purchase and sales volumes;
- Discussing the volume of future orders with customers in advance;
- Promoting products in new market segments;
- Improving the technical and economic characteristics of nuclear fuel; introducing new types of fuel;
- Establishing partnerships in the form of joint ventures (JVs) with foreign suppliers of NFC products and services to partially localise production abroad in order to maintain and secure access to the markets of these countries for Russian organisations;
- Using long-term pricing mechanisms. Aligning pricing mechanisms used for procurement and those used in contracts with a high level of commodity risk;
- Taking into account the current market performance and established operational limits in the course of transactions;
- Product supply diversification;
- Promptly changing the structure of product sales; exploring alternative sales channels.

Results:

- There were no significant changes in the risk level, as quotations for natural uranium and the separative work unit are currently low, which limits their downside, while creating an upside if the market environment improves.

6. Electricity market and capacity risk (Head of the Power Engineering Division)	Adverse changes in electricity and capacity prices	1

MANAGEMENT PRACTICES

Management approaches:

- Participating in the methodological work focused on the market model and in the working group on forecasting hosted by the Russian Ministry of Energy and the Association NP Market Council;
- Monitoring short- and long-term price drivers on electricity and capacity markets;
- Updating price forecasts for electricity markets on a monthly basis.

Results:

- Actual prices did not deviate significantly from forecast levels, which has helped minimise the risk of failure to achieve targets for the Corporation's revenue and market share.

Risk name (risk owners)	Risk description	Connection with strategic goals
7. Reputational risk (Communications Department of ROSATOM and executives of Divisions)	Changes in stakeholder perception of the trustworthiness and appeal of ROSATOM and its organisations	1 3

MANAGEMENT PRACTICES

Management approaches:

- Measures to shape a positive public opinion on the development of the Corporation's technologies and projects (both nuclear and non-nuclear) through improved information transparency and open stakeholder engagement, including the functioning of an industry-wide public reporting system;
- Continuous efforts to improve the recognition and appeal of ROSATOM's HR brand (both in the industry and among prospective employees and within the expert community);
- Continuously monitoring and analysing news reports in the national and international media and information obtained during business meetings, industry conferences and workshops;
- Implementing communication, humanitarian and educational projects in cooperation with foreign partners. The Company has successfully introduced the practice of holding online events in overseas organisations and virtual tours;
- Technical tours and media tours of Russian facilities for foreign media representatives;
- Maintaining a presence on social media: the number of followers of ROSATOM's official community pages on social media is growing steadily, with the largest increase in the number of followers recorded for social media platforms focused on visual content;
- Participation of ROSATOM's representatives in international trade fairs as speakers/delegates;
- Producing printed materials and videos targeted at various stakeholder groups in order to raise public awareness about the nuclear power industry;
- Setting up various types of communication platforms with assistance from the expert community to discuss matters related to the development, safety and environmental friendliness of nuclear technology.

Results:

- Projects implemented in Russia and abroad are supported by governments;
- The opinion poll conducted in 2024 shows that 78% of the Russian population have a positive opinion of nuclear power (2023: 77%);
- This upward trend shows that a growing number of people perceive the Corporation as a developing high-technology company that contributes to enhancing the defence capability and ensuring the sovereignty of our country. A high level of openness and transparency in ROSATOM is confirmed by the appreciation of quality of the Corporation's public reports. In the competition of annual reports held by the RAEX rating agency, ROSATOM's public report won in the Best Annual Report (Non-Financial Sector) category and was awarded 5 stars (the highest score) in the ranking of reports for the fifth year in a row;
- In 2024, the level of reputational risk remained unchanged due to successful communication activities; the risk level remains low.

For details, see section 8.3. 'Stakeholder Engagement'.

Risk name (risk owners)	Risk description	Connection with strategic goals
Operational risks		
8. Risk of a decrease in power generation (Head of the Power Engineering Division)	Decrease in power generation due to equipment shutdowns and unavailability	1

MANAGEMENT PRACTICES

Management approaches:

- Optimising repairs and improving their quality; building centralised reserves;
- Updating the traffic and analysing orders for equipment that has gone out of service;
- Implementing measures to improve the quality of operational management at NPPs;
- Implementing measures to improve the resilience of power units under capacity supply agreements;
- Implementing measures to improve reliability and ensure safety;
- Addressing flaws in the designs of NPP and FTNPP power units;
- Implementing RPS projects to optimise the duration of scheduled preventive maintenance at NPP and FTNPP power units;
- Implementing measures to prevent the recurrence of deviations in NPP operation;
- Implementing plans to replace imported equipment.

Results:

- All incidents and equipment failures were properly investigated. Corrective and preventive measures were developed in order to address the root causes of the incidents and prevent their recurrence;
- The implementation of risk management measures and the use of tools of the ROSATOM Production System make it possible to offset the impact of negative factors.

For details, see section 4.4. ‘Power Engineering Division’.

Risk name (risk owners)	Risk description	Connection with strategic goals
Nuclear and radiation risks		
9. Health, safety and environmental (HSE) risks (Executives of the Company’s Divisions)	Major accidents/incidents in nuclear enterprises	4

MANAGEMENT PRACTICES

Management approaches:

- Occupational safety and health monitoring in nuclear organisations, including inspections and preventive visits, development of action plans and implementation of risk mitigation measures;
- Implementing measures in order to improve industrial and environmental safety in enterprises, including maintaining and expanding the scope of rerouting (repairs, renovation) of heating networks amid a rise in prices and tariff constraints by raising financing from regional development funds and reducing accounts receivable from consumers;
- Monitoring the environmental situation in ROSATOM’s regions of operation;
- Constant readiness of emergency and incident response teams and equipment;
- Special reserve funds formed by the Corporation to ensure safety at all stages of the life cycle of its production facilities;

Risk name (risk owners)	Risk description	Connection with strategic goals

- Arranging civil liability insurance against damage resulting from accidents for enterprises that own hazardous industrial facilities;
- Calculating and monitoring indicators used for assessing the probability of potential negative impacts of industrial safety violations at hazard class 1 and 2 industrial facilities;
- As part of the Environmental Well-Being National Project, the Corporation is building the Gorny, Schuchye, Maradykovsky, Kambarka, Vostok, Western Siberia and RG Centre industrial facilities for the processing, recycling and treatment of hazard class 1 and 2 waste;
- Timely updates to internal regulations of the organisations, as required by legislation and federal rules and standards;
- Technical inspection of equipment used at hazardous industrial facilities;
- Maintaining a high level of professionalism, accountability and safety culture among employees, including certification of operating personnel at hazardous industrial facilities;
- Continuously monitoring the use of personal protective equipment by employees in the workplace;
- Improving project management practices in the sphere of occupational safety and health;
- In 2024, the Corporation launched a project to develop a methodology for managing environmental risks in ROSATOM and its organisations, which involves developing the Uniform Industry-Wide Guidelines on Environmental Risk Management in ROSATOM and Its Organisations and implementing them in the industry in 2025.

Results:

- Safe operation of ROSATOM’s organisations, including hazardous industrial facilities.

For details, see chapter 8 ‘HR and Social Policy. Developing the Host Towns and Cities’ and chapter 9 ‘Safe Operations’.

Corruption risks		
10. Risk of loss of and damage to assets (Asset Protection Department of ROSATOM)	Corruption and other offences leading to a damage to/loss of assets	1 2

MANAGEMENT PRACTICES

Management approaches:

ROSATOM and its organisations have adopted an industry-wide system for the prevention of corruption and other offences, which includes the following:

- Continuous assessment of corruption risks across all business processes implemented in the Company and all accounting events;
- Professional development of employees focused on combating corruption, including employees newly hired by ROSATOM and its organisations and appointed to positions involving responsibility for compliance with anti-corruption standards; executives that have been assigned responsibility for preventing corruption in the organisations; employees involved in the procurement of goods, work and services;
- Introducing online anti-corruption training based on mobile platforms accessible to every employee in the industry;
- Reporting evidence of corruption and other offences, including through feedback mechanisms (the hotline);
- Reviewing and updating industry-wide regulations on asset protection and combating corruption in line with updates to anti-corruption legislation;
- Detection, timely prevention and resolution of conflicts of interest;
- Prioritised implementation of industry-wide anti-corruption regulations in new businesses.

Risk name (risk owners)	Risk description	Connection with strategic goals

Results:

– JSC Atomenergoprom and its organisations implemented all the relevant measures stipulated in the National Anti-Corruption Plan for the period from 2021 through 2024 (Decree No. 478 of the President of the Russian Federation dated 16 August 2021); the Anti-Corruption Plan of ROSATOM and Its Organisations for the period was implemented in full; the requirements of anti-corruption laws and the Corporation's internal regulations were fulfilled, which supported corruption risk management.

Technical risks		
11. Project risk (Executives of the Company's Divisions)	Changes in the macroeconomic indicators of the countries participating in the projects; contractors' failure to fulfil their commitments with regard to the schedule and quality of work to be performed	1 3 4

MANAGEMENT PRACTICES

Management approaches:

– Full-cycle risk management applied in NPP construction projects, including risk identification and assessment, development and implementation of risk management measures, risk monitoring, updates to the risk register, and reporting;
– Improving project management and risk management systems;
– Negotiating the main terms and conditions of contracts with customers in advance;
– Developing risk maps for new business areas;
– Regular monitoring and control of achievement of key milestones, financial and physical targets for overseas projects;
– Regular monitoring and communication with customers concerning the schedule for NPP maintenance and training of foreign NPP personnel abroad, as well as other matters related to the implementation of overseas projects;
– Implementing best project management practices (including ROSATOM's industry-wide risk management system and the TCM NC cost and schedule management methodology) and ROSATOM's industry-wide guidelines for projects and investment activities in project companies;
– Steps taken both by shareholders and at the operational level to enhance risk-based project management;
– Developing action plans for engagement with foreign customers;
– Concluding long-term contracts and locking in electricity prices;
– Developing standardised design solutions;
– Implementing a programme to reduce the cost and duration of NPP construction;
– Using opportunities for the redistribution of available credit resources between projects;
– Concluding agreements that impose penalties for the full or partial repudiation of commitments;
– Developing alternative projects meeting the established criteria;
– Concluding long-term offtake contracts;
– Searching for new, more efficient technological solutions and implementing measures to keep costs within budget.

Results:

– Given the continuing influence of factors such as more complex logistics arrangements for equipment supply, special features of payment processes, as well as the effects of accelerated import substitution efforts amid persisting sanctions pressure, there were no significant changes in the risk level.

Risk name (risk owners)	Risk description	Connection with strategic goals

Nature and climate risks		
12. Nature and climate risks (Executives of the Company's Divisions)	Adverse climate change/impacts of natural disasters on the operations of ROSATOM and its organisations; risk of environmental damage from the operation of nuclear facilities and other facilities in the industry	1 4

MANAGEMENT PRACTICES

Management approaches:

– Implementing industry-wide policies on sustainable development and environmental protection;
– Monitoring environmental protection in nuclear organisations, including inspections and preventive visits;
– Managing nature and climate risks taking into account the approaches defined in Decree No. 812 of the President of the Russian Federation dated 26 October 2023 on Approving the Climate Doctrine of the Russian Federation; implementing the Uniform Industry-Wide Guidelines on Nature and Climate Risk Management in ROSATOM and Its Organisations;
– Taking into account adverse natural phenomena (including earthquake tendencies) at the stage of design of nuclear facilities; for instance, at the stage of NPP design, the Company carries out a comprehensive assessment of nature and climate risks and environmental characteristics of the region where the proposed NPP construction site is situated;
– Radiation monitoring at the locations of nuclear facilities, which provides timely information on the status of the environment and helps assess and forecast changes in the environment to minimise the potential negative impacts of radiation on people and the environment;
– Taking active steps to maintain a high level of environmental safety of the natural uranium mining and processing cycle and ensuring strict compliance with the relevant technological standards at all stages of the production process.

Results:

– Approaches applied by the Company in the course of operation of nuclear facilities and other facilities in the industry have helped prevent the risk of environmental damage.

Social risks		
13. Social and political risks in the regions of operation (ROSATOM and executives of the Company's Divisions)	Loss of public approval for the location of infrastructure facilities	1 3 4

MANAGEMENT PRACTICES

Management approaches:

– Implementing projects to build and renovate (upgrade) social infrastructure facilities in cooperation with regional and municipal governments as part of federal projects and target programmes;
– Engaging with regional and municipal governments on matters related to promoting regional development, increasing regional tax revenue and maintaining social and economic stability in the regions;
– In order to reduce social risks in its regions of operation, the Company implements a set of measures (public consultations, engagement with non-governmental organisations and the media) to inform the general public about the operations of its regional manufacturing enterprises, plans for their future development and their stability, and the fact that its operations do not pose any environmental risks.

Risk name (risk owners)	Risk description	Connection with strategic goals

Results:

– The situation in the Company's host towns and cities remains stable. Constructive engagement with regional and municipal governments has helped prevent the negative impacts of social and political factors.

Other risks

Risk of shortcomings in technological solutions

Decreased competitiveness of technologies that the Company is developing and introducing may affect the achievement of innovative development and technological modernisation goals. In order to ensure the competitiveness of technologies that it is developing and introducing, the Company implements measures to reduce material intensity, adopt industrial construction techniques, maintain quality and apply state-of-the-art management tools.

The Company works to accomplish its goals and support the future development of the nuclear industry as part of efforts to ensure national sovereignty in the sphere of science and technology; this involves implementing the following measures:

– Developing the required technologies to replace imported solutions;
– Digitisation of corporate procedures;
– In-house development of IT systems for the Company;
– Expanding the range of research and development initiatives;
– Establishing world-class in-house research and education centres;
– Launching in-house production of software, new materials and robotics solutions that do not rely on imported technology;
– Developing research and production capabilities for the closed nuclear fuel cycle and a two-component nuclear power industry, including in order to provide exclusive NFC services to foreign partners in countries not included in the list of foreign countries and territories that take hostile steps against the Russian Federation, Russian legal entities and individuals.

Risk of shortage of qualified personnel

The demographic crisis, a declining economically active population and a rise in the cost of qualified human resources pose a risk of shortage of workforce in general and specific professions.

Efforts to accomplish ROSATOM's objectives of ensuring technological leadership and sovereignty of the Russian Federation also drive demand for highly qualified personnel.

To reduce this risk, JSC Atomenergoprom and its organisations take steps to recruit employees from other regions, provide social security for employees, pay market-rate salaries, and support professional development of employees in the organisations by developing a talent pool. Based on the findings of analysis of statistical information on the causes of employee turnover, the relevant managerial decisions are taken, if necessary. The Company cooperates with universities and specialised educational institutions on an ongoing basis (this includes concluding direct contracts for the training of specialists, participating in open days and job fairs, arranging internships and work placements, graduation projects done by students in the Company's enterprises, running educational programmes, workshops and special training courses for school and university students, and contributing to the funding and establishment of school and university laboratories and classrooms).

Risk insurance

Risk insurance is one of the main risk management approaches used by JSC Atomenergoprom.

To improve the reliability of insurance coverage, in 2024, the Company and its organisations continued to cooperate with the insurance community in order to insure Russian operators against property risks. A significant share of liability of Russian NPPs for potential nuclear damage was transferred for reinsurance to the Russian Nuclear Insurance Pool (RNIP) and the Russian National Reinsurance Company (RNRC). This proves that the insurance community acknowledges the safety and reliability of Russian NPPs to be adequate.

In 2025, the Company plans to continue to engage RNIP and RNRC experts to audit key enterprises in the industry for insurance purposes.

In order to mitigate commercial, operational and other risks, in addition to the risk management approaches outlined in the Report, the Company takes a number of additional steps, including arranging insurance against the risk of early contract termination, maintaining a reserve stock of equipment and components to ensure the uninterrupted operation of facilities and comply with the investment project schedule, etc.

Objectives for 2025 and the medium term

The following objectives for the development of risk management in the Russian nuclear industry have been set for 2025:

– To develop a set of industry-wide tools to be integrated into the Company's planning and management processes;
– To develop a practice of adopting uniform approaches to risk management, including in terms of support for the implementation of new national projects in which JSC Atomenergoprom and its organisations participate as joint contractors;
– To expand the range of tools for monitoring the implementation of investment projects, including applying the risk-based approach;
– To revise the list of key risks taking into account the current challenges and to update the approach to early risk response (key risk indicators);
– To update internal regulations governing the risk management function in ROSATOM and its organisations;
– To complete the integration with investment management systems applied in the industry as part of the project to develop the IRMS information system.

7.3. Financial Management

Implementation of JSC Atomenergoprom's financial strategy in 2024

Given the scale of business of JSC Atomenergoprom as a company of ROSATOM in Russia and abroad, the Company's management attaches special importance to the financial resilience of nuclear organisations in a changing external environment. The financial strategy is an integral part of the overall business strategy of ROSATOM and JSC Atomenergoprom. The main aim of the financial strategy is to ensure the financial resilience of ROSATOM and its organisations in a changing external environment and to maximise the efficiency of financing and financial risk management.

ROSATOM's key financial transactions have been centralised. Cash flow management is centralised through:

- A single industry-wide legal framework regulating financial management (including the Uniform Industry-Wide Financial Policy);
- Vertical integration of treasury departments in subsidiaries and affiliates, which are functionally accountable to ROSATOM's Treasury Department. The established treasury structure enables 100% control of funds in the industry;
- Concentration of principal treasury functions of nuclear organisations in ROSATOM's Treasury Department, which communicates with nuclear organisations in a shared information space and is essentially a liquidity management centre;
- An industry-wide automated system for recording treasury transactions (the Corporate Settlement Centre Information System), which enables the recording of all treasury transactions across the group on a daily basis.

Targets set for 2024 in the financial strategy in terms of engagement with banks, debt portfolio management as part of the day-to-day operations and projects of the Company and its organisations, and further centralisation of financial transactions were met. In order to improve the performance of the treasury functions, in 2024, the Company continued to work towards:

- Accumulating spare cash in the accounts of pool leaders;[1]
- Improving the accuracy of payment scheduling (a rolling liquidity forecast);
- Maintaining a competitive cost of servicing of the consolidated debt portfolio;
- Centralising treasury transactions (complying with the financial policy);
- Introducing project financing instruments as part of project implementation by the Corporation and its organisations.

In 2024, the Company continued to implement and expand the scope of the project focused on further centralisation of the treasury function, including the rollout of the Payment Factory at JSC Atomenergoprom (hereinafter referred to as the Payment Factory). This project is aimed at further improving the performance of the treasury function in the industry.

1. A pool leader is an organisation of the Corporation on whose accounts spare cash is accumulated and subsequently redistributed between ROSATOM's organisations through loan agreements. The organisation performing the functions of a pool leader is appointed under the resolution of ROSATOM's executive bodies.

Green bonds

At year-end 2024, JSC Atomenergoprom had three outstanding bond issues as part of a programme to issue series 001R exchange-traded bonds worth a total of up to RUB 100 billion inclusive.

In 2021, JSC Atomenergoprom placed the first issue of green exchange-traded bonds (series 001R-01) with a par value of RUB 10 billion. The bonds have a maturity of five years.

In 2022, the Company placed the second issue of green exchange-traded bonds (series 001R-02) with a par value of RUB 9 billion and a maturity of three years.

In addition, in October 2024, the Company placed an issue of exchange-traded bonds (series 001R-03) with a par value of RUB 20 billion and a maturity of three years.

Receiving and maintaining credit ratings

In the reporting year, JSC Atomenergoprom continued to take steps to maintain the credit ratings assigned by a national rating agency JSC Expert RA and ACRA.

As at 31 December 2024, the following ratings assigned to JSC Atomenergoprom were confirmed:

Rating agency	Rating	Outlook
JSC Expert RA	ruAAA	Stable
ACRA	AAA(RU)	Stable

Raising financing for day-to-day operations and for projects

Despite turbulence on the Russian financial market amid unprecedented sanctions pressure on financial and industrial sectors of the Russian economy, throughout 2024, ROSATOM maintained sufficient liquidity to ensure that it and its organisations operate normally and fulfil their contractual obligations on time.

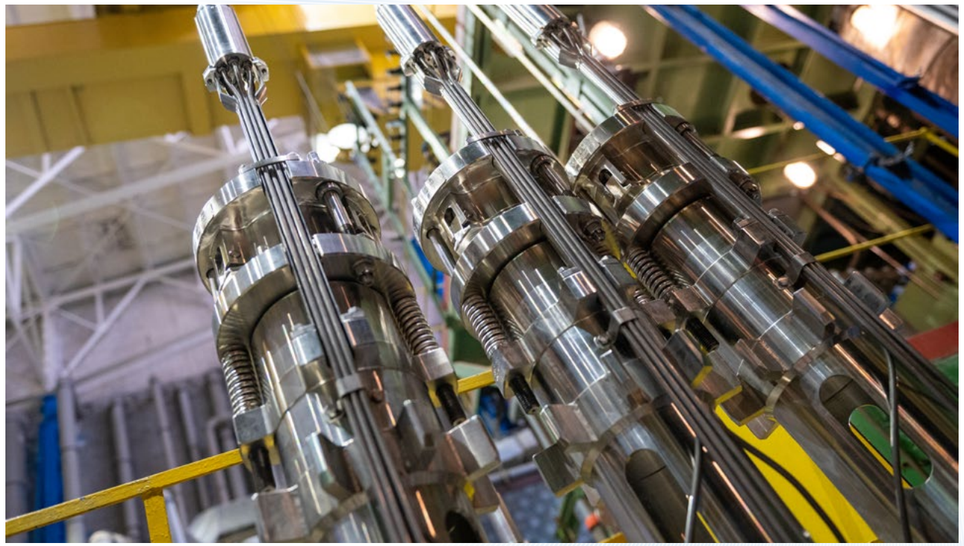
Both JSC Atomenergoprom and other organisations of ROSATOM continued to obtain funding on preferential terms as part of government support measures and programmes.

The Company continued to use suretyship to secure obligations of organisations in the industry to their counterparties. This measure helps to reduce both the cost of bank guarantees and the cost of financing raised by the Company (including interest expenses).

JSC AtomCapital (a wholly owned subsidiary of the Corporation acting as a pool leader in intra-group financing of FSUEs) enabled an optimal debt burden distribution between JSC Atomenergoprom and organisations and enterprises outside its scope.

The Company continued to search for sources of financing for projects in traditional and new business areas, including (but not limited to) the following:

- Binding documents were signed and loans were raised to finance the project to build WPPs between 2025 and 2027, which is being implemented by an organisation in the Wind Power Division, JSC WindSGC-3. Loans to be raised will total RUB 61.5 billion;
- Following the singing of loan documents with a consortium of banks in 2023 (under a syndicated loan agreement based on the principles of the Project Finance Factory), in the reporting year, the Company continued to raise financing for the project to build a plant that will produce lithium-ion batteries and energy storage systems in the Kaliningrad Region and signed a syndicated loan agreement worth RUB 27.2 billion to finance a project to build a 4 GWh plant that will produce battery cells, modules and packs and stationary systems based on lithium-ion cells in Moscow;
- The Company continued to take active steps to raise loans for the Akkuyu NPP construction project;
- The Company continued to actively engage with the Industry Development Fund on matters related to the financing and support of ROSATOM's projects, including through a cluster investment platform (Decree No. 295 of the Government of the Russian Federation dated 22 February 2023).



Plans for 2025 and for the medium term

- To roll out the Payment Factory project;
- To ensure a consistent payment discipline for intra-group financing;
- To improve the accuracy of medium-term cash flow planning;
- To prevent internal competition for credit resources between organisations;
- To continue to centralise cash management;
- To fulfil all obligations (including covenants) to existing lenders and rating agencies;
- To discuss JSC Atomenergoprom's project financing arrangements in order to reduce recourse on the group and minimise the use of ROSATOM's consolidated investment resources (including through the use of project financing instruments);
- To expand the range of financing instruments used by the Company (where it is economically feasible to do so) in order to reduce the cost of debt service and ensure timely and full financing of the investment programme of organisations in the industry on acceptable terms and conditions;
- To continue to discuss potential areas of cooperation in the sphere of digitisation, including the use of digital financial assets, with credit institutions.

7.4. Investment Management

Key results in 2024

- The investment programme was 81% completed (-4 p.p. compared to 2023).
- Return on the investment portfolio stood at 22.9% (+4.4 p.p. compared to 2023).

Key approaches to investment management

- A distributed system has been built for investment decision-making by the governing bodies of the Company and its organisations; it is aligned with the distribution of competence centres in the industry;
- A phase-gate approach is applied to project implementation, with decisions on key milestones made in a staged process;
- Key projects are monitored at the corporate level;
- Investment decisions related to day-to-day operations of assets are delegated to the Company's organisations in order to speed up the decision-making process;
- To improve the quality of investment decision-making, opinions of experts independent from the project initiator are taken into account;
- The Company's project portfolio is built as a set of projects of organisations in the industry for a year and for the medium term based on available investment resources and the required rate of return;
- Experts are engaged to perform an in-depth probabilistic risk analysis for significant projects; the findings of analysis are incorporated in the decision-making system;
- A comprehensive audit is conducted, which helps to formulate recommendations on how to improve project planning and implementation;
- Measures to raise external financing for projects are being developed.

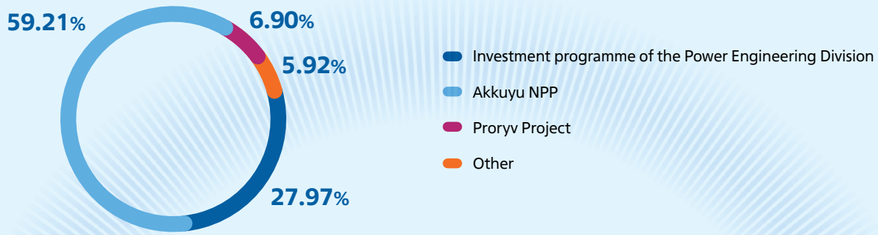
Results in 2024

In 2024, the Company's investment programme was 81% completed.[1] Performance against the targets of the investment programme (including in the Divisions) decreased by 4 percentage points compared to 2023 due to restrictions on payments as part of overseas projects.

At the same time, return on the Company's investment portfolio reached 22.9%,[2] up by 4.4 percentage points compared to 2023. The increase in return on the investment portfolio was driven primarily by a revision of the methodology for cash flow calculation for a number of projects.

1. Including the investment programme of the Power Engineering Division.
2. Calculated for the period from 2024 through 2099.

Breakdown of the Company's investments in significant projects



Measures to improve investment efficiency

In the reporting year, steps were taken in the nuclear industry to improve process quality and introduce tools to automate routine operations. Robots were developed for calculating the balance of investment resources and for automated monitoring of project data sheets; AI-powered solutions are being piloted. A chatbot for organisational and management projects became fully operational.

Systematic work continued to develop project management competences. In 2024, the Project Management School continued to provide training for project managers and members of project teams. A total of 443 people completed training, which is 14% more than in 2023. Three new programmes in the form of face-to-face practical courses were developed. Face-to-face employee development events were attended by 647 people, which is 48% more than in 2023.

Special focus was given to network scheduling. Regulations on network scheduling were developed jointly with the Project Management Competence Centre and implemented in 10 Divisions; an industry expert review process was launched for network schedules; face-to-face and online training courses were developed.

The efficiency of services provided by the secretary of collective governing bodies increased significantly: as the scope of work was expanded while the headcount remained unchanged, labour productivity increased by 28%.

In response to changes in the external environment, a financial and economic modelling competence centre was established in the industry; its tasks include accelerating efforts to secure government support.

The regulatory framework governing investment activities and projects continued to evolve. The investment decision-making system was streamlined; regulatory requirements were formulated for providing project teams with highly qualified specialists; the Uniform Industry-Wide Guidelines for the Application and Modelling of Real Options for Components of ROSATOM's Investment Portfolio were approved.

Significant progress was made in 2024 as part of efforts to replace imported software. The Risk Analytics software replacing imported solutions was developed and successfully piloted; it is designed for quantitative assessment of risks associated with investment projects.

Plans for 2025 and for the medium term

- To speed up investment and project processes through process automation, the introduction of state-of-the-art information technologies (robotic process automation, machine learning, artificial intelligence) and alignment of related processes (investment planning, business planning, developing and updating investment strategies);
- To develop project management competences by working systematically with project teams, improving the quality of project planning, and establishing a network scheduling competence centre;
- To review projects more thoroughly and increase return on projects through the active use of quantitative risk assessment and real options valuation techniques;
- To improve the investment decision-making system by developing portfolio management and adopting an approach to investment decision-making taking into account the impact of investment decisions on the portfolio's performance;
- To develop an effective mechanism for early termination of projects whose goals cannot be achieved, and simultaneously simplify the decision-making process with regard to projects that are on track;
- To further develop the Sirius information system by integrating it with industry-wide systems, including the risk management system.

7.5. Internal Control System

Key results in 2024

- Award-winner in the Internal Audit Service category (Association Institute of Internal Auditors).
- Award-winner in the Best Company in Terms of Development of Best Independent Internal Control Practices in Russia category (National Association of Internal Auditors and Controllers).
- Based on the findings of monitoring, internal control performance was highly rated by internal customers, with a score of 6.6 out of 7 against a target of 5.7.
- Internal control performance was highly rated by government monitoring and supervisory agencies, with internal financial audit given a 100% score by the Russian Ministry of Finance and a High Level score by the Accounts Chamber of the Russian Federation.

The internal control system in ROSATOM and its organisations (including JSC Atomenergoprom) is based on:

- Russian laws and regulations;
- The IAEA requirements;
- The COSO model (The Committee of Sponsoring Organisations of the Treadway Commission);
- Guidelines for Internal Control Standards for the Public Sector by the Internal Control Standards Committee of the International Organisation of Supreme Audit Institutions (INTOSAI).

Key characteristics of the internal control system (ICS) include the following:

- Preventive control and development of timely, comprehensive and practicable corrective measures;
- Efficient communication and cooperation with operating divisions at all stages of operations;
- Proactive change management;
- Growing demand from executives in ROSATOM's organisations for advisory services provided by specialised internal control bodies (SICBs) of the organisations.

Results in 2024

1. **The following measures were implemented in order to improve the internal control system (ICS):**

- Coordinators from among experienced employees were included in the hierarchy of independent control functions in ROSATOM in order to improve communications and adapt the relevant processes at new assets;
- The institution of internal control advisors to deputy CEOs and senior executives was piloted; predictive analytics is being developed in order to minimise risks when managing significant projects, including construction projects;
- A continuous audit methodology was introduced for construction projects; it provides reasonable assurance when forecasting the achievement of key milestones;
- Steps are taken jointly with the management to improve the efficiency of the ICS by demonstrating its value to employees in the industry (this includes regular meetings with business process owners, developing and screening videos on the subject);
- A mechanism was introduced to enable the SICB youth council to engage with youth councils in nuclear organisations.

2. **Large-scale efforts were undertaken to incorporate IT practices into the ICS and embed internal control mechanisms into business development and digitisation processes:**

- A preventive control mechanism was introduced to monitor the achievement of supporting and key milestones in construction projects;
- The efficiency of the system for monitoring corrective measures was improved; the system enables real-time monitoring of the status of tasks and the relevant deadlines;
- Steps were taken to introduce software robots in order to automate routine tasks and improve data processing speed and accuracy;
- The Digital Auditor project was launched in order to improve the digital analytics system in internal control functions through data sorting, smart search across data from corporate information systems and data analysis across multiple dimensions.

3. **Further steps were taken to promote ROSATOM's practices in the Russian Federation and globally and ensure professional sovereignty:**

- Active participation in the drafting of new versions of the Global Internal Audit Standards, the National Internal Control Standard and the National Internal Audit Standard;
- Publication of articles and multiple presentations on internal audit, internal control, risk management and corporate governance on various platforms, including international conferences in Kazakhstan and Turkey and a working meeting with partners in Brazil;
- Participation as part of the delegation of the Institute of Internal Auditors (IIA) of Russia in the signing of a cooperation agreement with the IIA Saudi Arabia;
- A session on internal audit held in partnership with the Institute of Internal Auditors at the 13th ATOMEXPO 2024 International Forum; the session featured foreign partners as speakers (Belenergo (Belarus), IIA Kazakhstan, IIA Bangladesh).

4. **Special focus was given to developing the internal professional community of independent control functions in the nuclear industry:**

- The library of best practices and techniques in the sphere of internal control and audit was updated; it includes 36 webinars on various topics and information on techniques and practices applied in Russia and abroad;
- Online meetings of internal auditors and controllers in the nuclear industry are held on a monthly basis in order to share best practices and practical experience (every event is attended by more than 200 employees);
- Six centralised training sessions were held on end-to-end internal audit based on a uniform methodology for assessing the efficiency of a specific business process in nuclear organisations; the training sessions were attended by more than 300 people;

- 104 SICB employees in nuclear organisations underwent an independent assessment of compliance of their qualifications with the professional standard for internal audit specialists (internal auditors).

Outcomes of inspections conducted by SICBs in 2024

In the reporting year, SICBs of ROSATOM and its organisations conducted 445 inspections in JSC Atomenergoprom's organisations.

Based on the findings of the inspections, 2,454 corrective measures were developed, and disciplinary sanctions were imposed on 315 employees of the Company's organisations, including 10 senior executives.

Stakeholder control

The Company continues to maintain a public information system for calculating the business reputation score of suppliers, which is one of the key risk assessment tools used in the course of procurement in the nuclear industry. The implementation of a project to develop the practice of applying the business reputation score, the Nationwide Business Reputation Rating, was approved.

As part of methodological initiatives to improve procurement practices in the nuclear industry, methodologies for monitoring the development of statements of work for conducting procurement procedures and determining whether the initial maximum price is justified amid declining competition were developed and sent to SICBs of the organisations for the purpose of preventive control in the sphere of procurement.

As part of advisory activities, explanatory letters on individual issues are sent in order to prevent similar violations; advice is provided to employees in procurement departments regarding the application of provisions of the Uniform Industrial Procurement Standard (UIPS) and the business reputation score of suppliers. A Q&A forum for employees in the industry is in operation as part of the Partner Special Monitoring and Analytics Unit.

GRI 2-25

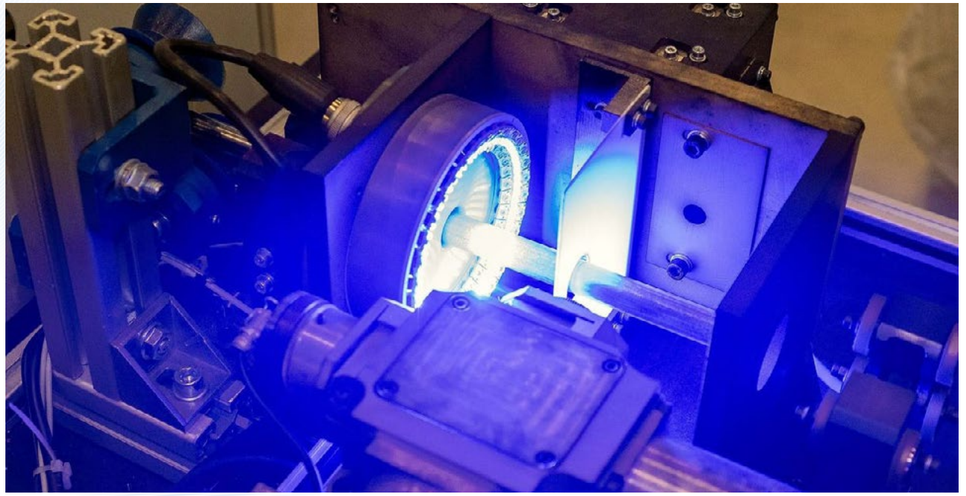
Bodies responsible for out-of-court settlement of disputes in the sphere of procurement in the nuclear industry (the Central Arbitration Committee and the arbitration committees of the Power Engineering and Fuel Divisions) received 517 reports (complaints) from stakeholders regarding violations of procurement rules established by legislation. 337 complaints were investigated; 85 complaints (25.2% of the total number of investigated complaints) were deemed to be valid. Other complaints were withdrawn by complainants or were dismissed on the following grounds:

- Because the deadline for filing the complaint had expired;
- Because a similar complaint had been accepted for investigation or investigated by the Federal Antimonopoly Service;
- Because the complainant was not entitled to file a complaint (after the deadline for submitting bids has expired, complaints may only be filed by bidders that have submitted a bid);
- Because the defendant had taken corrective measures to address the violation before the complaint was investigated by the Arbitration Committee.

Steps were taken to enhance the stakeholder control mechanism in a new environment. An increase in the number of complaints was due to the fact that they can be submitted to industry arbitration committees on the procurement page on electronic trading platforms as part of a non-public procurement process and an appeal may be filed with the Central Arbitration Committee using the Brief solution, a new procurement method introduced in 2024. The number of valid complaints as a percentage of the total number of purchases in the industry increased by 29%, from 0.07% in 2023 to 0.09% in 2024.

Systematic efforts of the arbitration committees, including explanations provided to customers/procurement authorities during the investigation of complaints concerning the nature of detected violations, the publication of reviews and a library of arbitration practices maintained on the official website, presentations at forums and meetings, the provision of advice and the holding of webinars have helped ensure that procurement processes in the industry are legitimate and minimise the number of violations.

In addition, the Central Arbitration Committee reviewed 45 complaints related to the calculation of the business reputation score of suppliers (all complaints were found to be invalid) and 47 requests for the inclusion of information in the supplier blacklist of the nuclear industry (information on 14 entities was included).



Plans for 2025

In 2025, control activities will be focused primarily on improving the cost efficiency of JSC Atomenergoprom's investment activities and projects and ensuring its competitiveness in the future.

Further improvement of the ICS will be supported by the implementation of a set of measures including the following:

- Updating the risk-based approach at all stages of control activities;
- Ensuring that risk factors that may affect project implementation are identified more promptly;
- Developing digital tools to support control activities of independent control functions and the monitoring of construction projects: launching an integration of the IT system supporting the Internal Control and Audit Function and the Navigator Digital Management System, automating the process of independent monitoring of construction projects, replacing imported solutions for the Partner Special Monitoring and Analytics Unit, etc.;
- Addressing matters related to incorporating control procedures/reports for the purpose of independent control into the existing information systems within the scope of JSC Atomenergoprom, including project management information systems;
- Developing a targeted learning system using a tailored approach;
- Building a talent pipeline for the hierarchy of independent control functions in ROSATOM;
- Ensuring that SIBCs of ROSATOM and its organisations remain leaders in the Russian professional community and in the international arena.

8

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

HR AND SOCIAL POLICY. DEVELOPING THE COMPANY'S HOST TOWNS AND CITIES

Efim Slavsky (1898–1991)

During his tenure of almost 30 years as the head of the Ministry of Medium Machine-Building of the USSR, Efim Slavsky transformed the Ministry into an influential entity, which was described as 'a state within the state'. He was actively involved in the development of nuclear towns and cities, and in the construction of social facilities in the Urals, Siberia and in Central Asia, e.g. Shevchenko (currently Aktau, Mangystau Region), Ozersk (Chelyabinsk Region), Seversk, Zelenogorsk and Zheleznogorsk. Slavsky gave the approval for special construction divisions of the Ministry of Medium Machine-Building of the USSR to build the Akademgorodok ('Academic Town') research centres in Novosibirsk and Tomsk, the Belokurikha resort in Siberia, etc.

CHAPTER 8. HR AND SOCIAL POLICY. DEVELOPING THE COMPANY'S HOST TOWNS AND CITIES

Key results in 2024

- The average monthly salary totalled RUB 150,000 (up by 11.3% compared to 2023).
- 29.2% of employees were aged under 35.
- 1,165 graduates of core universities were hired by the Company.

8.1. Personnel Management

To achieve the strategic goals of the nuclear industry, it is necessary to fully unlock the potential of its employees. Accordingly, people are the Company's most important capital. The Company's HR policy prioritises the rapid development of competences, the ability to work in a new, changing environment and the training of leaders at all levels.

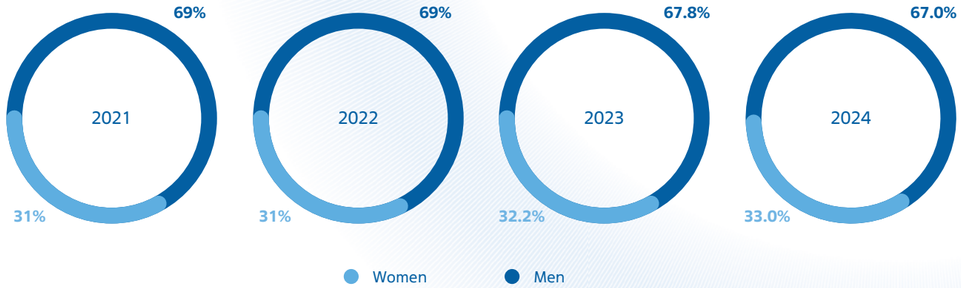
GRI 2-7
MED 25

By year-end 2024, the number of employees of JSC Atomenergoprom and its organisations reached 227,900 people[1] (the average headcount for 2024 totalled 215,200 people).

125,200 employees have a university degree.

1,640 employees are Candidates or Doctors of Sciences.

Gender composition of JSC Atomenergoprom's workforce, %



1. The increase in the headcount was driven by a rise in the headcount in existing enterprises in various Divisions and the inclusion of new assets in the scope of the Company.

The male/female ratio in the Company is determined by the nature of the industry. The age of employees averaged 42.4 years, with 29.2% of employees aged under 35.

GRI 2-8

The average number of employees of JSC Atomenergoprom and its organisations working under independent contractor agreements totalled 553 people. Such agreements are usually concluded with contractors performing temporary work; the predominant type of work is not identified. The increase in the number of employees was driven by the expansion of the scope of work across the Corporation's business areas.

GRI 401-1

In 2024, JSC Atomenergoprom and its organisations hired 57,900 new employees, which totals 26.9% of the average headcount.

MED 33

34,400 employees were dismissed in 2024; the personnel turnover rate reached 16.0%.[1]

JSC Atomenergoprom's organisations operate in 77 regions of Russia and have a headcount of 208,300 employees.

The Company's organisations with the highest headcount are situated in the following regions:

- Moscow and the Moscow Region: 50,200 people;
- Saint Petersburg and the Leningrad Region: 21,100 people;
- Kursk Region: 11,500 people;
- Sverdlovsk Region: 10,400 people;
- Rostov Region: 9,600 people;
- Voronezh Region: 9,500 people;
- Nizhny Novgorod Region: 8,300 people.

JSC Atomenergoprom's organisations operate in 29 foreign countries, where they employ 19,500 people[2] (8.6% of the Company's total headcount), with the highest headcount in the following countries:

- Turkey: more than 14,900 people;
- CIS countries (Republic of Belarus, Republic of Kazakhstan, etc.): over 2,300 people.

Personnel costs

MED 24

In 2024, personnel costs totalled RUB 524.0 billion,[3] up by 27% year on year. Costs per employee increased from RUB 2,149,900 in 2023 to RUB 2,414,000 in 2024.

Structure of personnel costs, %

Indicator	2021	2022	2023	2024
Payroll	74.9%	75.5%	74.1%	74.7%
Insurance contributions	20.3%	19.9%	21.2%	20.6%
Social and other expenses (including training)	4.8%	4.6%	4.7%	4.7%

1. Management turnover rate. An increase in the personnel turnover rate compared to 2023 was due to the consolidation of new assets with a high personnel turnover rate and the completion of the latest stages of construction as part of overseas projects in the Engineering and Power Engineering Divisions. The personnel turnover rate is calculated only for full-time employees.
2. For details, see Appendix 4.
3. Including payroll costs, social expenses, expenditure on personnel training, development and evaluation, and other personnel costs.

Performance management

GRI 3-3 In order to standardise approaches to the development and implementation of the HR policy in the nuclear industry as part of a uniform governance approach, a performance management system has been introduced in the Company's organisations.

The Deputy Director General for HR of ROSATOM is also responsible for HR management in JSC Atomenergoprom.

The current industry-wide performance management system ensures the continuity of the Company's long-term and operational goals and helps to align them with the goals and objectives of employees. The key performance indicators of JSC Atomenergoprom are decomposed from the top management level to executives of industry organisations up to and including the sixth management level.

The industry-wide approach to performance management is based on standardised principles, which provide uniform criteria for decision-making on remuneration, horizontal and vertical movement of employees, their inclusion in succession plans and nomination as candidates for inclusion in the succession pool.

The performance management process is automated through an integrated industry-wide system, RECORD.

Remuneration system

The Company's current remuneration system:

- Provides competitive remuneration matching the level of remuneration in the best companies in Russia;
- Is result-based: the size of an employee's salary is linked to their efficiency, professionalism and achievement of key performance indicators (KPIs).

The Company has in place a flexible remuneration system which includes a variety of tools ensuring that employees achieve business targets and are closely focused on results.

In accordance with the requirements of the Integrated Industry-Wide Remuneration System and the Uniform Industry-Wide Performance Management Policy, the size of the annual bonus paid to employees depends on achieving KPI targets and reflects progress in achieving the key performance targets of the Company and its organisations. KPIs of executives are based on strategic goals, priorities and key performance indicators; strategic objectives set for organisations are converted into KPI maps of their executives and cascaded down to business units and employees.

In 2024, the average monthly salary per employee of JSC Atomenergoprom increased by 11.3% compared to 2023 and totalled RUB 150,000 per month.

Personnel development

Executive succession pool

In order to ensure succession and train employees to be appointed to managerial positions, an executive succession pool (ESP) is being formed and developed in the nuclear industry.

In order to select development programmes that are best suited to the target positions of ESP members, the ESP is divided into four levels:

- ROSATOM's Assets and ROSATOM's Assets. Basic Level (top and senior executives);
- ROSATOM's Capital (middle-level executives);
- ROSATOM's Talents (promising specialists and junior executives).

Since the establishment of the executive succession pool, the number of its members has exceeded 6,700.

Number of ESP members with a breakdown by gender

Gender	2021		2022		2023		2024	
	Number	Share	Number	Share	Number	Share	Number	Share
Men	4,279	77%	4,614	78%	4,928	78%	5,157	77%
Women	1,186	23%	1,306	22%	1,426	22%	1,542	23%

Appointments of ESP members to a new position, %[1]

Indicator	2021	2022	2023	2024
Share of ESP members appointed to vacant top and senior executive positions (top 30 and top 1,000 executives in the industry)	70.4	70.8	74.1	77.7
Share of ESP members among senior, middle-level and junior executives appointed to a new (management) position	91.0	92.0	94.0	96.0

A special feature of succession pool development programmes is their practical focus. Executives not only complete training modules, but also work on their own projects contributing to the achievement of ROSATOM's strategic goals.

1. The promotion of succession pool members is assessed based on the number of ESP members appointed to new positions over the last three reporting years. In 2024, the assessment focused on the share of promoted ESP members who had been included in the ESP in 2022.

Training as part of ESP development programmes

ESP level	Development programme	Key training topics	2021	2022	2023	2024
Senior executives	ROSATOM's Assets	Shaping the Future, Virtuosos of Management, Communication in Times of Change, Marketing, Finance	391	416	449	483
	ROSATOM's Assets. Basic Level	Strategy, Leadership and People Management, Change Management and Horizontal Interaction, Marketing, Finance	427	491	562	621
Middle-level executives	ROSATOM's Capital	Leadership and Project Management, Advanced Leadership Skills, Data Management, Situational Leadership	2,271	2,448	2,640	2,833
Junior executives	ROSATOM's Talents		2,376	2,565	2,703	2,855
Total			**5,465**	**5,920**	**6,354**	**6,792**

Successor assessment

The practice of assessing high-potential employees was introduced in 2018 in order to improve the quality of succession plans and the transparency of employee promotion processes. The methodology is based on the best practices adopted in major international companies. Executives are involved in talent assessment and are responsible for developing succession plans. In order to share experience and ensure that decisions are made objectively, the assessment methodology involves the possibility of cross-functional/cross-divisional cooperation, whereby executives participate in the assessment of other executives who are candidates for managerial positions. Successor candidates are assessed in terms of their commitment to corporate values, the relevant professional and managerial experience and knowledge, motivation and potential.

The number of executives who take part in the assessment of successors to be appointed to managerial positions is growing year by year. In 2024, more than 109 organisations carried out an assessment of successor candidates for higher management positions. The assessment is performed by the superiors of the potential successors and is facilitated by a certified expert. As part of this approach, executives have a greater personal responsibility for and are more actively involved in the development of succession plans; this also reduces the duration and cost of the assessment process. A total of 2,080 successors were evaluated. More than 170 certified successor assessment experts work in the industry; 37 of them obtained certification in 2024.

Career counselling

The career counselling service continued to function. Career counselling is provided by 39 industry experts. During 2024, 884 consultations were held in 117 organisations in the industry, including 183 consultations at the industry-wide career counselling centre for IT specialists opened in 2024 and hosted by an organisation of the Company.

In 2024, the service was highly rated by employees (77% of employees are willing to recommend the service to their colleagues, and 93% are satisfied with career advice).

The development of digital career management tools for employees has continued: in 2024, the online training course titled 'My Career in ROSATOM' was completed by more than 4,400 employees, and more than 1,000 participants used the Restart interactive career simulator. The number of subscribers to the 'My Career in ROSATOM' group on the ROSATOM LIFE corporate social media platform exceeded 2,400 people in 2024.

GRI 404-1

Employee training

The development of employee competences is a major priority of JSC Atomenergoprom's HR policy.

175,100 employees of JSC Atomenergoprom and its organisations underwent training or retraining or completed professional development programmes in 2024.

The number of training hours per employee in JSC Atomenergoprom's organisations averaged 57.1 hours in 2024. MED 31

Average annual training hours per employee in JSC Atomenergoprom's organisations by employee category

Employee category	2021	2022	2023	2024
Executives	81.4	77.2	96.1	87.2
Specialists and white-collar workers	50.7	43.8	55.5	46.7
Blue-collar workers	61.9	45.7	82.4	67.7

Average annual training hours per employee in JSC Atomenergoprom's organisations by employee gender, hours

Gender	2024
Women	34.31
Men	68.79

GRI 404-2 Training for specialists and executives in the industry is provided primarily by the Rosatom Corporate Academy (including the Andrey Sakharov Cultural and Education Centre Mayak Academy) and the Rosatom Technical Academy, which includes the main venue in Obninsk and three branches in Moscow, Saint Petersburg and Novovoronezh. Both academies run projects that directly support business development priorities.

GRI 403-5 The Rosatom Corporate Academy implements programmes focused on developing leadership and business competences, management training, developing corporate functions, encouraging the best graduates and professionals to work in the industry, competence evaluation, career counselling, training blue-collar workers and engineers, and developing the corporate culture, the youth community and the safety culture. The portfolio of the Rosatom Technical Academy includes 92 training programmes focused on occupational safety and health, industrial and fire safety.

The Rosatom Corporate Academy plays a leading role in the Company's key projects: People, Towns and Cities (focused on building a sustainable social environment in the Company's host towns and cities); Acceleration (aimed at reducing red tape); Blue-Collar Workers and Engineers for Production Growth and Technological Development; Safety Culture Development in ROSATOM, and ROSATOM's Values. New projects and programmes are rolled out every year, such as the L&D Academy for methodologists involved in educational programmes, the {In}Visible Power leadership programme for female executives, sustainability initiatives, etc.

One of the main objectives of the Rosatom Corporate Academy is to build a talent development ecosystem to meet today's challenges. During the year, the Academy held more than 2,900 events, with the amount of training (measured as the number of participants multiplied by the number of completed courses) exceeding 1.7 million person-courses. Its portfolio includes more than 250 educational and training programmes.

In 2024, the Andrey Sakharov Cultural and Education Centre Mayak Academy secured its status as the top venue in Nizhny Novgorod for major industry, regional and federal events. The Centre hosted a total of more than 135 events attended by more than 49,000 participants. The Mayak Academy actively cooperates with the National Centre for Physics and Mathematics, the Federal Agency for Youth Affairs, the Autonomous Non-Profit Organisation Russia – the Country of Opportunities, the government of the Nizhny Novgorod Region and other partners in developing educational and cultural initiatives. In recognition of its contribution towards developing the urban environment, the Centre received the Nizhny Novgorod of the Future 2024 award for the best renovation project.

GRI 404-2

Digital competences and culture

To achieve technological leadership, the Company continued to take steps to improve digital literacy among employees in the nuclear industry.

More than 30% of managers and industry specialists have completed digital literacy training.

In 2024, the amount of training provided as part of a programme to assist end users in the transition to domestic software (Astra Linux and My Office) totalled 18,500 person-courses.

In 2024, the Rosatom Technical Academy provided training in information security and information technology (programming, network and system administration) for 781 people.

Overall, the digital literacy level in the industry (among executives, specialists and white-collar workers) was rated at 78.2%, which is 10 percentage points higher than the national average.

The following programmes were implemented to develop digital competences among leaders and customers: Development of Digitisation Leaders in the Nuclear Industry, and the Digital Seasons engineering and manufacturing club. The coverage of the programmes totalled about 300 person-courses.

Information security culture is an important part of the Company's digitisation programme. In 2024, the coverage of face-to-face and online training courses on information security culture totalled about 24,500 person-courses.

Activities of Change Support Teams (CSTs)

A change support team is an important tool for driving changes across the industry. Projects implemented by CSTs provide executives in the industry with an insight into people's major concerns and help to identify areas that require more attention. For employees, participation in a CST project is a great opportunity for personal development and the acquisition of team management and leadership-without-authority skills, and the ability to influence, persuade, form and motivate teams.

The findings of the annual employee engagement survey indicate that CST members are more engaged than people in the industry on average, with a difference of several percentage points. In addition, 91% of CST members who took part in the survey said that they understood how their company contributed to achieving ROSATOM's 2030 Vision.

98 projects were implemented in 2024 (including 45 new projects), covering more than 42,000 employees of nuclear enterprises.

Competitions and professional events

The Company's employees actively participate in the Leaders of Russia competition: 1,548 employees participated in the fifth season of the competition; four employees of JSC Atomenergoprom won the competition and were awarded grants for training.

ROSATOM's team including the Company's employees traditionally ranks among leaders in terms of the medal count in professional skills competitions.

In 2024, employees in the nuclear industry participated in Russian and international professional skills competitions.

The 9th AtomSkills 2024 Industry-Wide Professional Skills Competition featured more than 2,000 participants from 12 countries and covered 42 competences. For the first time, the participants were divided into the main and student leagues.

The AtomSkills Student Forum was held as part of the AtomSkills 2024 Competition. Following its conclusion, seven teams comprising 40 students of core universities have launched their initiatives focused on the development of small towns, career guidance in enterprises, the development of mentoring, and vocational guidance for school and university students.

Technical tours of the Nuclear Energy Information Centre (NEIC) and the NPP museum in Sosnovy Bor, the Atom museum at VDNKh and the Company's enterprises were organised for more than 300 student leaders in partnership with the More than Work Project.

As part of the Professionals Competition, the Company set up career guidance stands for 3,000 school and university students and held strategic sessions focused on the development of the Professionality Project.

The Company's participation in competitions and awards won in 2024 (as part of ROSATOM's team)

Competitions	Competences represented	Total medal count	Gold	Silver	Bronze
High-Tech 2024	22	21	14	7	0
BRICS Future Skills & Tech Challenge International Competition	4	9 (2 in the Russian event and 7 in the international event)	4 (2 in the Russian event and 2 in the international event)	3 (Russian event)	2 (Russian event)
4th World Construction Championship	25	14	4	4	6
Total	**–**	**44**	**22**	**15**	**8**

ROSATOM's Person of the Year

In 2024, new records were set as part of the industry-wide recognition programme titled 'ROSATOM's Person of the Year': the organisers of the recognition programme processed 3,854 applications for participation in individual and team categories, which is 400% more than 2013; overall, the programme covered about 15,000 employees. In 2024, 536 employees of 150 nuclear organisations, 13 Divisions and ROSATOM's central office reached the finals in 77 categories. Since the launch of the programme, a total of more than 23,000 applications have been submitted and more than 3,500 finalists have received awards.

Development of digital services for employees

The Company is actively developing its own software products in order to replace imported solutions for HR process automation. In 2024, the Company started to integrate all its HR systems into a single ecosystem enabling employees to establish communication on HR processes and be provided with HR services on a one-stop-shop basis as fast as possible. More than 2,000 people in three nuclear enterprises have already become the first users of the ecosystem.

Import substitution efforts are ongoing to develop and roll out the Atomkor HR information system, which is expected to fully replace the personnel management and payroll functionality of the foreign SAP HCM system. In 2024, the Atomkor system was rolled out in another 10 enterprises in the industry; thus, 20 enterprises with a headcount of more than 25,000 employees have already switched over to the system.

Nearly 150,000 employees in the industry, including 50,000 blue-collar workers, use the Personal Account in the workplace. Users of the Personal Account continue to give it the highest rating as compared to other HR services: 4.8 points out of 5.

More than 40,000 employees in more than 80 nuclear organisations use the mobile version of the Personal Account. In 2024, a number of additional functions were made available to users, including the approval of overtime pay and applications for working overtime and at weekends, the signing of orders on changes in salary, and paperwork for various types of leave, such as days off for working at weekends and during holidays, time off for overtime work, regular health screening, medical checkups, idle time, psychophysiological evaluation, etc.

In 2024, import substitution efforts were ongoing to develop a new electronic document management system for HR, the Atomkor Employee's Account. In the future, it will replace the existing Employee's Personal Account based on SAP HCM. In 2024, the system was successfully piloted in a nuclear enterprise.

In 2024, the amount of training content available in the RECORD Mobile training system increased to 3,753 units, and more than 25,000 new users registered on the platform. At year-end 2024, a total of 252,000 people used the platform, including 2,100 people abroad. Every day, more than 4,000 employees do professional development courses on the platform, which means that it is a key corporate training tool. The user rating given to the RECORD Mobile platform reached a high level of 4.5 out of 5 points, which proves that the system is efficient and in demand.

In 2024, the RECORD 2.0 system (a solution developed in-house that does not rely on imported technology) was available to more than 190,000 users in 137 enterprises in the industry. The system is a powerful HR management tool that can be used to assess the performance of employees, their professional knowledge and skills, carry out a '360-degree assessment', as well as for training and career planning, successor assessment and selection of employees to be included in the succession pool, which supports employees' professional growth and development.

In the reporting year, the functionality of the ROSATOM LIFE corporate social media platform was further expanded. This is a digital platform for communication and teamwork, which is available to more than 120,000 employees. In 2024, the platform was used by 92,000 employees; 960 communities are being actively developed; 44,000 posts have been published, and more than 1,000 surveys have been conducted, which helps to promptly receive feedback and supports effective communication among users in groups and communities.

Corporate volunteering

Approaches and principles of volunteering

In 2018, ROSATOM made an official decision to launch a corporate volunteering programme in the Company's organisations. The Company, jointly with volunteers from its key Divisions, has identified the following five main areas of volunteer activity:

- Environmental conservation (awareness campaigns, clean-ups, planting of seedlings, waste management);
- Supporting socially disadvantaged groups (low-income families, orphans, the elderly) and veterans;
- Promoting a healthy lifestyle (blood donations, sports events); career guidance and mentoring (lessons at schools, guided tours for the general public, intellectual games, competitions);
- Intellectual volunteering (leveraging employees' professional skills in the regions of operation).

In 2024, more than 570 volunteer initiatives were implemented in the industry (including 12 industry-wide initiatives); according to the findings of surveys, the total number of volunteers has reached 57,000 people. The total number of beneficiaries has exceeded 1 million people. A medal for the development of volunteering was introduced in the industry; it is awarded to leaders of the volunteer movement in the nuclear industry in recognition of their achievements.

In 2024, comprehensive efforts were underway to involve local residents in nuclear towns and cities in the industry-wide volunteer movement and initiatives focused on promoting social activism.

The Region track was introduced for the first time as part of the #WEARETOGETHER International Award, with ROSATOM as its title partner; Usolye-Sibirskoye (Irkutsk Region) won in the Single-Industry Town category, with a total of five nuclear towns and cities reaching the final. A project titled 'Energetic People at the NPP – Architects of an Environmentally Aware Future' run by Novovoronezh NPP reached the final in the Responsible Business category.

Prioritised areas of volunteer activity

The Company's volunteers participate in annual industry-wide projects in various areas, such as blood donations, career guidance and mentoring, environmental volunteering, support for veterans, socially disadvantaged groups and animals. New initiatives are being actively developed; these include support for creative industries, the upgrade of public youth spaces, the implementation of cultural projects, urban improvement, and the development of infrastructure for waste sorting and recycling.

The Company's volunteers and organisations continued to provide humanitarian aid to local residents in regions affected by emergencies. For instance, 179.8 tonnes of humanitarian supplies were collected and RUB 64.6 million was raised to provide assistance to affected residents of the Kursk Region.

More than 6,000 donors from nuclear organisations (20% more than in 2023) took part in industry-wide blood donation campaigns. Active promotion of A Rare Match, an information resource on bone marrow donation launched jointly with the FMBA of Russia, has helped increase the number of employees registered on the Federal Register of Bone Marrow Donors to 1,000 people.

The amount of aid collected as part of the Fluffy Atom initiative, which is a flagship project run by volunteers in the Company's enterprises to support homeless animals, has increased dramatically: in 2024, organisations in the nuclear industry collected more than 16 tonnes of food, treats, harnesses and toys and raised more than RUB 3.8 million (including spending on medicines).

Traditionally, a large number of employees were involved in environmental volunteering campaigns. For example, about 40 nuclear organisations joined the federal waste paper collection campaign, BumBattle, and collected 50 tonnes of waste paper; more than 2 tonnes of waste were collected during the Green Distance plogging race. The Company's volunteers also took part in campaigns forming part of federal projects, such as the Clean Arctic, Clean Games, the Garden of Memory, the River Day, etc.

Volunteer training

Special focus was given to engagement with local communities and social leaders in the Company's host towns and cities. For instance, the traditional Sandbox.Fest Forum was held in six nuclear towns and cities (including four of the Company's host towns and cities) and was attended by more than 600 participants, who examined about 50 projects potentially eligible to receive grant support from ROSATOM.

The Company continued to implement strategic initiatives as part of its partnership with the Dobro.rf Association to promote the Dobro.Centres social franchise in nuclear towns and cities, and to run awareness-raising campaigns focused on volunteering. An educational and acceleration programme titled 'Territory of Kindness' was implemented; as part of the programme, teams from 22 towns and cities developed projects aimed at promoting social activism.

Educational programmes were run for CSR managers and leaders of non-profit organisations in the Company's host towns and cities, with more than 200 participants completing training courses and drawing up their own programmes to develop social initiatives at grassroots level.

Sandbox.Fest Forum

In 2024, the format of the Forum was expanded to include an open city-wide environmental festival. The programme of the festival included the following events:

- Series of awareness-raising lectures on environmental topics;
- Clothes and book exchanges and collection of clothes and books for charity;
- Setting up collection points for 17 types of recyclable materials;
- Setting up clothes and book exchange sites;
- Workshops on recycling.

As part of the festivals, 430 kg of recyclable materials and 180 bags of items to be donated to charity or recycled were collected in three towns and cities.

Corporate social responsibility initiatives

As part of the Social Leaders of Nuclear Towns and Cities grant competition, grants were awarded for 57 social and environmental projects.

Industry experts assisted in preparing eight applications for grants from the Presidential Grants Foundation for projects to be implemented in nuclear towns and cities; the Federal Agency for Youth Affairs provided grants for two youth spaces.

Special emphasis is placed on addressing the environmental agenda. The Company provides a system of opportunities in the field of environmental protection through professional fulfilment, technology development and promotion of environmental and social practices. 2024 saw the launch of a project titled 'ROSATOM's Environmental Accelerator', which is focused on searching for innovative ideas for environmental improvement in the Company's regions of operation. The most promising start-ups were selected from among hundreds of submissions; as a result, 16 projects were provided support totalling RUB 500,000.

Surveys were conducted with a focus on corporate volunteering and the environmental culture; a methodology for developing environmental standards for small towns was drafted.

In 2024, the practice of developing corporate volunteering was implemented at the Company's overseas sites. For instance, a contest of children's drawings was held to

mark the Nuclear Workers' Day at JSC Atomenergoprom's overseas sites; three blood donation campaigns were conducted in Kazakhstan and Kyrgyzstan; a grant competition for authors of social and environmental projects was launched in Egypt.

Volunteer and CSR projects received key federal awards: the #WEARETOGETHER International Award, Champions of Good Deeds, the Digital Leaders Awards, Best for Pets, ECO Best, Best Social Projects in Russia, Corporate Charity Leaders, etc. Best practices were presented at more than 25 federal forums. The Company continued to implement strategic initiatives as part of its partnership with the Dobro.rf Association to promote the Dobro.Centres social franchise in nuclear towns and cities, and to run awareness-raising campaigns focused on social activism for teams in its host towns and cities.

Cooperation with SMEs on socially important creative projects

The Company is actively developing a number of initiatives to support social entrepreneurship in its host towns and cities. As part of a project titled 'Creators from Nuclear Towns and Cities', an online catalogue of souvenir merchandise made by artisans from nuclear towns and cities has been produced (rosatomcreators.ru); by year-end 2024, the catalogue included more than 370 items. The project is expected to evolve into a full-scale programme including a training course and business events for the most active participants, which will help build a community of professionals in creative industries.

In December 2024, the first exhibition of merchandise was held as part of the Creators from Nuclear Towns and Cities project. Artists and artisans displayed jewellery, souvenirs, cotton wool Christmas ornaments, designer dolls inspired by Russian folklore, crockery, and other items of decor at the Mayak Academy in Nizhny Novgorod. Proceeds from the sales of merchandise went directly to the artisans.

A photography contest titled 'ROSATOM's People, Towns and Cities' was held for the first time in 2024. The main aim of the project is to promote the unique features of nuclear towns and cities, their natural, historical and cultural sites and traditions. The competition featured amateur and professional photographers who live in nuclear towns and cities or work for the Company's organisations. There were a total of 403 entries for the competition. The best 27 works by photographers from nuclear towns and cities were selected by the panel and by popular vote and were displayed at a touring exhibition.

Hospitable Towns and Cities programme

An industry-wide programme titled 'ROSATOM's Hospitable Towns and Cities' was launched in May 2024 to support the development of the leisure and hospitality sector in nuclear towns and cities. Five pilot towns and cities were selected in the first year of the programme: Zheleznogorsk, Tryokhgorny, Udomlya, Polyarnye Zori and Volgodonsk.

ROSATOM's Hospitable Accelerator was launched in order to provide training to local entrepreneurs; its participants included 24 entrepreneurs. Following training and presentations, six finalist projects received grants totalling RUB 3 million. In addition, RUB 25.2 million was raised to finance SME projects developed as part of ROSATOM's Hospitable Accelerator: The Northern Rubicon (Polyarnye Zori) and A Wonderful Place (Zheleznogorsk).

Teams from nuclear towns and cities drafted 21 strategies for the development of tourism as part of a continuing professional education programme titled 'Sustainable Development of Tourism in Towns and Cities Hosting Nuclear Enterprises'; participants of the programme included 119 people from 21 towns and cities, including Akkuyu (Turkey).

Three Tours of Opportunities in Nuclear Towns and Cities were developed and held in Volgodonsk, Zheleznogorsk and Polyarnye Zori. The unique feature of the tours is that their participants immerse themselves in the urban environment, get acquainted with local residents and learn about social and economic opportunities. The tours showcase projects of SMEs that have completed training as part of ROSATOM's Hospitable Accelerator. The tours generated RUB 6.4 million in revenue of SMEs and tax payments to local budgets; 100% of surveyed participants of the tours are willing to recommend the tour; 83% of them are willing to work in the nuclear industry, and 33% are willing to relocate to the town or city in question.

Social policy

JSC Atomenergoprom's social policy is designed to:

- Make the Company more attractive as an employer;
- Recruit and integrate young professionals and highly skilled specialists;
- Increase employee loyalty;
- Improve the efficiency of social expenditure.

Benefits provided to employees and retirees are aligned with the Uniform Industry-Wide Social Policy, which is based on standardised corporate social programmes

MED 28
GRI 403-6

Key corporate social programmes of JSC Atomenergoprom, RUB million

Programme	2021	2022	2023	2024
Voluntary health insurance	1,855.4	2,241.9	2,943.9	4,133.1
Accident and illness insurance	77.4	88.2	138.4	142.5
Health resort treatment and recreation for employees and their children, including:	729.6	1,042.8	1,334.7	1,468.5
– *health resort and rehabilitation treatment for employees*	*546.5*	*818.8*	*1,045.9*	*1,080.7*
– *health resort treatment and recreation for children*	*183.1*	*224.0*	*288.8*	*387.8*
Provision of housing for employees	532.6	582.0	690.6	903.4
Private pension plans	397.8	588.6	675.6	773.3
Support for retirees	874.9	1,244.4	1,014.4	1,032.1
Catering arrangements	412.0	1,073.4	1,086.4	1,130.9
Sporting and cultural events	1,042.9	1,272.0	1,813.4	1,904.2
Assistance to employees	1,089.2	1,507.9	1,974.1	2,625.7
Other	–	278.4	616.4	507.6
Total	**7,011.8**	**9,919.6**	**13,622.6**	**14,621.3**

The Company is actively developing a corporate social programme focused on employee well-being, which was launched in the industry in 2020; its main goal is to improve the quality of employees' life. The programme includes measures to promote employees' physical, emotional, social, professional and financial well-being: health days (including those focused on healthy eating and lifestyle improvement), consultations and webinars conducted by medical specialists, webinars on financial literacy, a mental health support line, as well as opportunities to participate in charity work and other social initiatives.

A mental health support line continues to be operated in the industry; it is available to employees in the industry, their families and local residents in nuclear towns and cities. In 2024, those calling the mental health support line sought to consult a psychologist about the following key concerns: 27% – emotional distress and intrapersonal issues; 25% – relationships within the family, relationships between parents and children; 19% – professional conflicts.

JSC Atomenergoprom attaches great importance to encouraging its employees, their family members and

residents of the Company's regions of operation to regularly exercise and do sports. One in every six employees regularly does sports.

Compensation and benefits under corporate social programmes implemented by the Company are provided to full-time employees.

In 2024, the Industry-Wide Agreement on Nuclear Power, Industry and Science for 2023–2025 (the Agreement) was in force. The Agreement is based on the established practice of social partnership in the nuclear industry and is aimed at implementing the Occupational Health and Safety Management System, the Integrated Standardised Remuneration System and the Uniform Industry-Wide Social Policy. Under the Agreement, ROSATOM and its organisations have assumed greater responsibility for observing and respecting human rights, the principles of equality and fairness, non-discrimination, informing employees about working conditions, ensuring the safety and protecting the health of employees, contractors' personnel and the population of the regions where they operate, regularly paying salaries, ensuring adequate social guarantees and job security and improving well-being, respecting the freedom of association and the right to collective bargaining, and developing the regions of operation and local communities.

The Agreement prioritises the protection of employees' life and health (see also the section 'Occupational Safety and Health'). Employers, jointly with the Russian Trade Union of Nuclear Power and Industry Workers, maintain records and analyse employee morbidity, including the results of periodic medical examinations and sick leave, and develop a comprehensive health improvement programme titled Health. The Agreement incorporates the opportunities provided by legislation with regard to special assessment of working conditions (SAWC) and establishes an additional mechanism for cooperating with the trade union in carrying out SAWC and analysing its findings.

GRI 2-30
MED 32

Collective bargaining agreements cover 67.2% of employees working in JSC Atomenergoprom's enterprises.[1] The minimum notice period is two months for significant operational changes and three months for situations that may lead to large-scale redundancies

Recruiting young professionals

In 2024, the Company continued to take active steps in the sphere of personnel training. A network of 300 schools with specialised engineering, nuclear, mining and Mendeleev classes operates in nuclear towns and cities. The number of nuclear classes has increased to 85 classes in 51 towns and cities, while the number of engineering classes has reached 87 classes in 29 towns and cities. The Company is developing the Network Engineering School online platform (rosatomtalents.team), which school students use to study STEM disciplines, including physics, mathematics and chemistry.

Work is ongoing in the field of teacher training. As part of the Teacher for ROSATOM project, 390 university students did teacher internships, and 12 graduates were hired. 17 teachers were awarded the Istok Prize (RUB 250,000). More than 100 physics and mathematics teachers from 18 towns and cities participated in the Festival of Teaching Excellence in Obninsk.

Career guidance and talent development remain an important focus area for the Company. As part of the Professionality Federal Project, 34 training programmes in 11 colleges were redesigned, with training provided in 40 professions; 400 teachers completed professional development courses. More than 90 learning spaces were created; 2,000 students were enrolled on programmes forming part of the project. The Sirius University continues to run a Master's degree programme in Mathematical Robotics and AI; 10 students graduated in 2024, and two of them were hired. New Master's degree programmes were launched: Applied Robotics (21 students) and Critical Information Infrastructure (20 students).

Special focus is given to science communication initiatives. In 2024, the fifth Icebreaker of Knowledge expedition was organised on board the *50 Let Pobedy* icebreaker.

For details, see the subsection 'Communication Projects' of section 8.3.

In addition, in 2024, 70,000 people participated online and 1,000 people participated in person in the activities of the Parents' League and ROSATOM's Council of Educators. The second cycle of the 'Mission: Talent' accelerator was completed, with support provided for 20 educational projects.

All these initiatives are aimed at supporting the development of engineering education, building the talent pipeline and integrating young people into the nuclear industry.

GRI 2-23

Human rights

The Company actively supports and complies with employment standards pursuant to the legislation of the Russian Federation, industry-wide and internal regulations, the Social Charter of the Russian Business and the Industry-Wide Agreement on Nuclear Power, Industry and Science.

The Industry-Wide Agreement on Nuclear Power, Industry and Science and ROSATOM's internal regulations contain no 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 towards religion, political opinions or membership of public associations.

The principles of the Code of Ethics[1] and the Uniform Industry-Wide Human Rights Policy are aligned with standards ratified by the Russian Federation, the Constitution of the Russian Federation, the provisions of UN conventions, including the Universal Declaration of Human Rights, the Guiding Principles on Business and Human Rights, the OECD Guidelines for Multinational Enterprises and the Voluntary Principles on Security and Human Rights. In 2020, the Corporation joined the United Nations Global Compact. ROSATOM is committed to complying with the Ten Principles of the UN Global Compact, including the principles pertaining to human rights.

The Human Rights Policy states that people have always been the top priority for the nuclear industry; accordingly, primary importance is attached to ensuring their safety, supporting them and respecting their rights. The industry-wide policy sets out seven key principles underpinning our approach to people:

- Occupational health and safety, which is central to the operation of the nuclear industry. People are the Corporation's main asset. Protecting their lives and health, improving safety and security is a top priority;
- Prevention of forced and child labour. The Company does not tolerate situations when people are forced to work through violence or intimidation; it provides an environment in which people work willingly and efficiently, and fulfils all its obligations in terms of salary and social benefits. The Company not only avoids the use of child labour, but seeks to eliminate it completely. In Russia, children can get employment,

1. Social and labour relations with employees not covered by collective bargaining agreements (32.2% of employees) are governed by local regulations in accordance with applicable labour laws of the Russian Federation.

1. Full name: Uniform Industry-Wide Code of Ethics and Professional Conduct of ROSATOM and Its Organisations.

even if it is just a summer part-time job, only after reaching the minimum age specified in the ILO Convention Concerning Minimum Age for Admission to Employment. By promoting Russian employment standards in its countries of operation, the Company contributes to protecting children's rights and shaping a responsible HR policy at the international level;

- Prevention of harassment and abuse in any form: physical, verbal, psychological or sexual. Aggressive behaviour, threats and insults are not allowed either in or outside the workplace. The Company protects the dignity and equality of individuals from any such attacks;
- Prevention of any discrimination. Every person is unique. And everyone has equal rights, regardless of ethnicity, colour, gender, religious beliefs or any other characteristics. Any personnel management decisions, from hiring to retirement, are based on the principle of equal opportunities;
- Equal access to opportunities and fair remuneration. All employees in the nuclear industry receive competitive salaries and have equal access to opportunities, such as social security and training enabling both professional and personal development. The Company's organisations comply with the laws in their regions of operation and local traditions governing working hours and time off work;
- Freedom of association and the right to collective bargaining. The Company and its organisations support freedom of association, recognise employees' inalienable right to collective bargaining and the right of each employee to collective representation of their interests, and respect employees' right to membership in organisations aimed at safeguarding and promoting their interests;
- Development of the regions of operation and local communities. The Company and its organisations have adopted a responsible approach to respecting the rights and promoting the well-being of local communities in their regions of operation, cooperate with government bodies and treat local residents in their regions of operation with respect.

Code of Ethics[1]

The Company has adopted the Uniform Industry-Wide Code of Ethics and Professional Conduct of ROSATOM and Its Organisations (hereinafter referred to as the Code), which was updated in 2024. The Code places greater responsibility on the organisations as employers for respecting the rights of employees, emphasises the importance of promoting an open culture of trust, respect and cooperation for the industry, sets out the norms and rules of business conduct that employees and managers are expected to comply with, and identifies the bodies responsible for handling complaints and enquiries in the organisations.

A three-level system of ethics committees was established in 2024. This included establishing committees in organisations and in the holding company and the Industry-Wide Ethics Committee in ROSATOM. The committees hold meetings to review ethics cases and matters related to the development of the ethical culture in the industry.

Employees have been informed about various channels available in the industry for submitting reports and enquiries, including the Russian Post and email, including the email address of the Director General. Reports and enquiries are recorded on the day when they are received; they are processed within the prescribed time frame, which includes conducting an investigation; if necessary, reports and enquiries are forwarded to the Ethics Committee. The Company also assists its employees by providing advice on policy implementation and the practice of responsible business conduct. GRI 2-25 GRI 2-26

1. Uniform Industry-Wide Code of Ethics and Professional Conduct of ROSATOM and Its Organisations: https://www.rosatom.ru/upload/iblock/91b/91bf213104edcbf5526e6ef2747010b7.pdf

Reports and enquiries related to social and labour relations, including those related to ethics and human rights, are reviewed jointly with a representative body acting on behalf of employees.

Webinars on handling reports and enquiries from individuals were organised and held for more than 200 industry specialists responsible for handling reports and enquiries. The webinars covered such topics as the rules and procedure for handling reports and enquiries from individuals, practical cases illustrating complex issues, as well as a process for communication between various divisions in order to draft objective and comprehensive replies to reports and enquiries. The Company will continue to organise and hold webinars on handling reports and enquiries from individuals in 2025.

The following educational programmes were developed:

- An online course titled 'Ethics in Practice: How to Follow the Code in the Course of Day-to-Day Work' was posted in the RECORD Mobile online training system and is available 24/7 to all employees in the industry;
- A programme for members of ethics committees was piloted, with plans to roll out the programme in 2025.

456 enquiries on HR and social matters were reviewed in 2024, covering the following topics: employment and cooperation; remuneration and social issues; training, work placements and internships; labour relations; human rights and ethics; industrial safety and occupational health and safety.

More than 50% of enquiries contain proposals for cooperation and requests to consider the possibility of employment, which reflects people's interest in the operations of the nuclear industry and demonstrates a high level of trust in cooperation with the Company.

The Company analyses systemic and recurrent enquiries in order to develop industry-wide approaches and solutions, establish procedures, analyse the risk of violation of ethical norms and human rights and prevent detected violations from recurring in the future.

Plans for 2025 and for the medium term:

- To work in the talent development ecosystem;
- To develop an online training system and increase the number of employees covered by training programmes;
- To develop technological education in order to facilitate a technological breakthrough;
- To create an environment for unlocking talents in the Company and in nuclear towns and cities;
- To roll out programmes focused on developing an inclusive environment for people with disabilities and physically handicapped people;
- To implement the youth support programme developed in 2024, which is particularly important in terms of encouraging young people, especially young engineers and researchers, to work in the industry.

GRI 3-3

8.2. Developing the Regions Where Nuclear Facilities Are Located

Key results in 2024

- RUB 343.7 million was paid in tax by Atomenergoprom's group of companies.
- All of the Company's host towns and cities have an urban environment quality rating above the nationwide benchmark.
- The total area of PDAs in the nuclear industry was increased by 20,175.8 sq. m.

JSC Atomenergoprom contributes to the social and economic development of the towns and cities where nuclear facilities are located in a number of ways. The Company makes a significant contribution to the energy security of a number of regions and is also a major taxpayer making tax payments to budgets of all levels. The Company makes a substantial economic impact on its regions of operation by creating a significant number of skilled jobs in the nuclear and related industries, providing not only employment, but also decent working conditions and remuneration.

Contribution to the implementation of national projects

In 2024, JSC Atomenergoprom continued to support the participation of its host towns and cities in national and federal projects pursuant to Decree No. 474 of the President of the Russian Federation dated 21 July 2020 on the National Development Goals of the Russian Federation until 2030 (hereinafter referred to as Decree No. 474) and Decree No. 309 of the President of the Russian Federation dated 7 May 2024 on the National Development Goals of the Russian Federation until 2030 and for the Future until 2036 (hereinafter referred to as Decree No. 309).

In 2024, funding for national projects in 27 nuclear towns and cities totalled RUB 6.883 billion.

Developing the town of Usolye-Sibirskoye

The Company continued to take steps to facilitate the implementation of industry projects in the town of Usolye-Sibirskoye and ensure that the town contributes to the achievement of development targets set by the President of the Russian Federation:

- The following industry-wide social initiatives are being implemented: ROSATOM's School, ROSATOM's Territory of Culture, educational projects run by the Rosatom Corporate Academy;
- The potential for business development at the site of Usolyekhimprom is being assessed, taking into account the construction of the Vostok industrial facility and the establishment of the Federal Chemical Industry Hub in Usolye-Sibirskoye as part of the relevant project. A master plan for comprehensive social and economic development of the town is being prepared. As part of the initiative, support was provided for a concert to celebrate the 355th anniversary of the foundation of the town (1,500 people); the Atomfest 2024 sports festival was held in the town (20,000 participants); an open space was created in Municipal State-Funded Educational Institution Gymnasium No. 9, which forms part of ROSATOM's School, an innovative network of educational institutions.

Plans for 2025 include implementing the master plan, and holding cultural, educational and sporting events, including as part of celebrations to mark the 80th anniversary of establishment of the nuclear industry.

Usolye-Sibirskoye

Funding of national projects in the Company's host towns and cities, RUB million

Indicator	2021	2022	2023	2024
Total	**5,376.50**	**6,906.89**	**8,653.32**	**6,882.71**
Including capital investment	2,171.93	3,776.68	3,269.48	2,336.50

As part of the Housing and Urban Environment National Project, in 2024, steps were taken to reduce substandard housing stock in three towns and cities (Balakovo, Glazov and Elektrostal). The related federal project titled 'Creating a Comfortable Urban Environment' is being implemented in all nuclear towns and cities. Another related federal project, Clean Water, was completed in 2024 and has helped improve the water supply and sewerage systems in Obninsk and Bilibino.

The majority of the Company's host towns and cities take part in the Culture National Project (23 towns and cities). As part of the project, culture development centres, modular municipal libraries and virtual concert halls were established in 2024; children's art schools were provided with musical instruments; grants are awarded every year to support creative teams.

As part of the Ecology National Project, 12 towns and cities participated in the following federal projects: the Clean Country, Clean Air, General Cleanup, Preservation of Lake Baikal, the Integrated System for the Management of Municipal Solid Waste, and Infrastructure for the Management of Hazard Class 1 and 2 Waste.

Urban environment

The Company's approach to developing the urban environment involves promoting the development of its regions of operation in cooperation with government bodies at all levels.

At the federal level, the Corporation has assisted in drafting the Strategy for Spatial Development of the Russian Federation until 2030 with an outlook until 2036, which has been approved by the Government of the Russian Federation. In 2024:

- A single list of core communities in the Russian Federation was compiled; it includes 31 municipalities hosting nuclear organisations;
- The Company contributed to the development of master plans for three core communities in the Russian Arctic: Polyarnye Zori (Murmansk Region), and Pevek and Bilibino (Chukotka Autonomous District). The lists of key measures for all the master plans include ROSATOM's projects (including the construction of Kola NPP-2 as part of the master plan for the Kirovsk – Apatity urban agglomeration);
- The development of a master plan for the town of Usolye-Sibirskoye (Irkutsk Region) was started with assistance from ROSATOM.

At the regional level, agreements have been signed with 30 constituent entities of the Russian Federation, 21 of which are ROSATOM's host regions, including 16 regions of operation of JSC Atomenergoprom.

At the municipal level, the Company has participated in national, federal and departmental projects in order to attract additional investment to support the development of towns and cities, including the implementation of the relevant master plans.

2024 saw the start of implementation of a long-term plan for comprehensive social and economic development of the town of Krasnokamensk until 2030. It builds on the master plan for the development of the town, which includes ROSATOM's projects (including the development of the Argunskoye and Zherlovskoye uranium deposits).

The Company works systematically to develop the urban environment in its host towns and cities:

- Lectures and expert discussions were organised; training was provided to municipal teams;
- Applications were prepared for participation in the National Competition for the Best Projects to Create a Comfortable Urban Environment (hereinafter referred to as the Competition) held by the Russian Ministry of Construction, Housing and Utilities. A long track record of developing the urban environment and an in-depth understanding of the special characteristics and needs of nuclear towns and cities and their residents make it possible for the majority of projects entered in the Competition to become winners. In 2024, 14 nuclear towns and cities won the Competition, and two towns won the 3rd Competition for the Best Projects to Create a Comfortable Urban Environment in the Regions of the Far Eastern Federal District. A total of 19 nuclear towns and cities participated in the competitions; five of them became winners for the fourth time.

ROSATOM provides methodological assistance and guidance to municipal and regional project teams.

Urban environment quality ratings assigned to nuclear towns and cities in 2024

The average urban environment quality rating for 1,116 towns and cities of the Russian Federation stood at 220 points in 2024.[1] The urban environment quality ratings assigned to Moscow and Saint Petersburg stood at 312 points and 283 points respectively. 20 out of 23 of the Company's host towns and cities were assigned an urban environment quality rating above the benchmark (180 points) and are characterised by a high standard of living.

The town of Usolye-Sibirskoye was given a score of 177 points and still ranks among towns and cities with an unfavourable urban environment. It should be pointed out that in 2018, Usolye-Sibirskoye started with a very low base but demonstrates strong growth every year: the town's rating has increased by 135%, from 131 points in 2018 to 177 points.

1. Methodology for calculating the urban environment quality rating (http://static.government.ru/media/files/wbRiqrDYKeKbPh9FzCHUwWoturf2Ud0G.pdf).

Constituent entity of the Russian Federation	Average score given to the constituent entity in 2023	Average score given to the constituent entity in 2024	Increase, %	Administrative centre (AC)	Score given to the AC[1] in 2023	Score given to the AC in 2024	Increase, %	City/town	Score given to the town/city in 2023	Score given to the town/city in 2024	Increase, %
Kaliningrad Region	215	237	110	Kaliningrad	239	270	100	Neman	198	229	116
Saratov Region	201	215	107	Saratov	222	245	110	Balakovo	235	248	106
Moscow Region	231	260	113	Krasnogorsk	256	294	115	Elektrostal	230	262	114
Tomsk Region	197	212	108	Tomsk	207	228	110	CATF of Seversk	224	242	108
Sverdlovsk Region	203	236	116	Yekaterinburg	213	245	115	Zarechny	222	251	113
Vladimir Region	208	224	108	Vladimir	225	250	111	Kovrov	222	235	106
Kursk Region	205	205	100	Kursk	191	201	105	Kurchatov	220	220	100
Kaluga Region	204	210	103	Kaluga	234	241	103	Obninsk	220	228	104
Tver Region	198	213	108	Tver	227	237	104	Udomlya	218	234	107
Ulyanovsk Region	198	213	108	Ulyanovsk	220	237	108	Dimitrovgrad	214	227	106
Smolensk Region	197	220	112	Smolensk	227	263	116	Desnogorsk	213	246	115
Sverdlovsk Region	203	236	116	Yekaterinburg	213	245	115	CATF of Novouralsk	212	237	112
Voronezh Region	203	214	105	Voronezh	213	225	106	Novovoronezh	211	225	107
Irkutsk Region	172	187	109	Irkutsk	212	226	107	Angarsk	208	227	109
Murmansk Region	217	233	107	Murmansk	212	239	113	Polyarnye Zori	206	221	107
Udmurt Republic	198	211	107	Izhevsk	224	236	105	Glazov	205	220	107
Rostov Region	197	211	107	Rostov-on-Don	223	238	107	Volgodonsk	203	218	107
Krasnoyarsk Territory	192	204	106	Krasnoyarsk	208	214	103	CATF of Zelenogorsk	203	214	105
Leningrad Region	216	237	110	Gatchina	243	264	109	Sosnovy Bor	200	219	110
Chukotka Autonomous District	197	206	105	Anadyr	228	231	101	Pevek	188	202	107
Chukotka Autonomous District	197	206	105	Anadyr	228	231	101	Bilibino	175	184	105
Irkutsk Region	172	187	109	Irkutsk	212	226	107	Usolye-Sibirskoye	163	177	109
Zabaykalsky Territory	160	177	111	Chita	198	206	104	Krasnokamensk	156	189	121

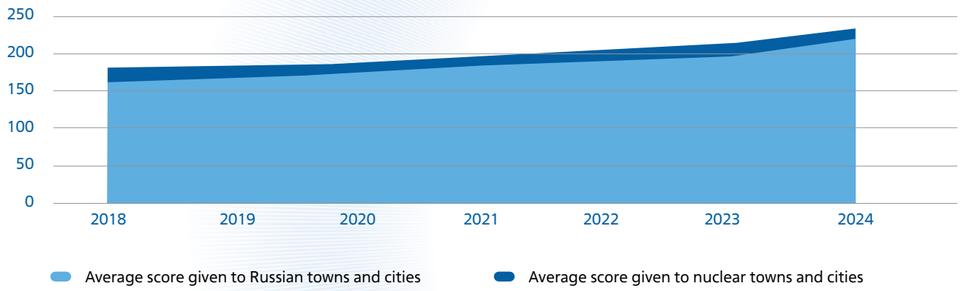
1. Administrative centre.

12 nuclear towns and cities were assigned a rating that is higher than the average for the relevant constituent entity of the Russian Federation and the administrative centre of the relevant region; these include Balakovo, Seversk, Kurchatov, Zarechny (Sverdlovsk Region) and Angarsk.

In 2024, five of the Company's host towns and cities, namely Neman, Obninsk, Novovoronezh, Pevek and Krasnokamensk, achieved an increase in the rating outpacing the average for the relevant constituent entity of the Russian Federation and its administrative centre.

In 2024, 11 of the Company's host towns and cities achieved an increase in the rating outpacing that of the administrative centre; these included Neman, Obninsk, Udomlya, Novovoronezh, Angarsk, Glazov, Sosnovy Bor, Pevek, Bilibino, Usolye-Sibirskoye and Krasnokamensk.

Growth rate of the urban environment quality ratings



Between 2018 and 2024, the gap between the average scores given to nuclear towns and cities and the national average narrowed. As nuclear towns and cities had already started with a high base, it is more difficult for them to achieve an increase in the rating; nevertheless, they demonstrate a strong performance and achieve high scores.

Overall, 87% of nuclear towns and cities have a favourable urban environment. In 2024, the average urban environment quality rating of nuclear towns and cities increased by 20 points year on year to 230 points, which is 10 points higher than the national average. In 2024, the average rating assigned to open towns and cities increased by 49.2 points compared to 2018, when the rating averaged 173.9 points, which indicated an unfavourable urban environment.

In 2024, the town of Krasnokamensk achieved a 33-point year-on-year increase in the rating and was ranked among towns and cities with a favourable urban environment; previously, between 2018 and 2023, it had ranked among towns and cities with an unfavourable urban environment.

The top five towns and cities with the highest score included the following nuclear towns and cities:

- Elektrostal (262);
- Zarechny (Sverdlovsk Region) (251);
- Balakovo (248);
- The CATF of Novouralsk (237);
- Kovrov (235).

Contribution to the economy

MED 7

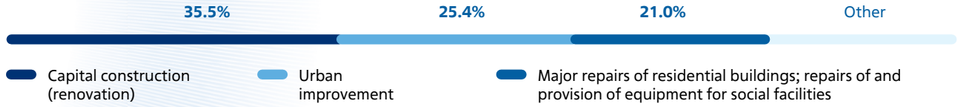
JSC Atomenergoprom's organisations make significant contributions to budget revenue in nuclear towns and cities. The Company is a major taxpayer in Russia. In 2024, JSC Atomenergoprom paid RUB 343.7 billion in tax.

Tax payments by JSC Atomenergoprom to budgets of different levels in the Russian Federation, RUB billion

Level of the budget system	For 2021	For 2022	For 2023	For 2024
Federal	132.3	166.0	224.0	223.2
Regional	72.3	72.1	140.7	120.1
Local	0.3	0.4	0.3	0.4
Total	**204.9**	**238.5**	**365.0**	**343.7**

Between 2012 and 2024, RUB 36.2 billion was allocated for various initiatives from regional budgets under agreements between ROSATOM and constituent entities of the Russian Federation (including RUB 5.5 billion in 2024).

Focus areas of initiatives funded out of regional budgets



In addition, under the agreements, funds are allocated for the repairs of housing and utilities infrastructure, support for small businesses and incorporation of comprehensive digital solutions developed by ROSATOM into the work of municipal governments in order to manage and automate service provision.

The project titled 'ROSATOM's Smart City' is ongoing in 19 nuclear towns and cities; it is focused on the digitisation of municipal services as part of the Housing and Urban Environment National Project and the Digital Economy National Programme. The project is supported by the Power Engineering Division, the Infrastructure Solutions Division and municipal administrations. More than 100,000 people use services rolled out in nuclear towns and cities.

In 2024, the towns of Kurchatov and Zarechny (Sverdlovsk Region) won the 1st Nationwide Competition for the Best Executive Authority in Terms of Management Innovations. The Competition is held by the Centre for Management Innovations of the Budget Publishing House jointly with the Financial University under the Government of the Russian Federation with support from the Public Finances Development Union.

GRI 203-2

Priority development areas (PDAs)

In 2024, there were 177 companies (including 20 companies in the nuclear industry and 12 companies of JSC Atomenergoprom) registered in 12 PDAs (eight CATFs and four single-industry towns), with investments totalling RUB 78.6 billion and plans to create 11,142 jobs.

The Seversk PDA and the Novouralsk PDA rank among leading priority development areas situated in ROSATOM's host towns and cities. There are 48 resident companies registered in the Novouralsk PDA and the Seversk PDA, with actual investments totalling RUB 14.6 billion (more than RUB 53 billion under the relevant agreements), tax payments exceeding RUB 2.5 billion, and 1,820 new jobs created by the companies.

A website (www.product-tor.ru) has been launched which contains information about the products and services offered by PDA residents.

Social development

ROSATOM's School industry-wide initiative

In 2024, a set of initiatives was implemented in 31 towns and cities as part of ROSATOM's School in order to promote the development of networked communities (public and professional, children's, parents' communities, etc.) aiming to give the younger generation an upbringing aligned with traditional Russian spiritual and moral values.

In 2024, more than 45,000 preschoolers, more than 65,000 school students and more than 12,000 teachers from 360 schools and 678 kindergartens took part in 189 events of ROSATOM's School.

Six new schools were added to the nuclear class network as part of ROSATOM's School in 2024. The network covers more than 51,000 school students, providing them with opportunities to study STEM disciplines in depth.

10 schools forming part of the nuclear class network (10%) were ranked among the top 300 schools in terms of performance (the RAEX ranking). Two final-year students from schools included in the nuclear class network scored a total of 300 points in the Unified State Exam (USE) in 2024.

The community of teachers in nuclear towns and cities expanded to more than 23,000 people; they took part in 51 events.

ROSATOM's Territory of Culture industry-wide initiative

More than 400 events across various types of art were held in 2024 as part of the programme. Over the past six years, the number of towns and cities participating in the programme increased from 22 to 30.

A performance assessment of cultural institutions was carried out in all nuclear towns and cities. Its findings informed a large-scale educational programme that helps cultural institutions independently raise funds from federal and regional budgets for the implementation of government programmes.

In the reporting year, a large number of events included in the programme were held as part of the Year of the Family in Russia. These included:

- An exhibition titled 'Family History';
- The 2nd Family of Families Festival of Creative Traditions;
- The Running Book Nationwide Intellectual Running Race.

Key events in 2024 included the following:

- The 7th Music Academy of Nuclear Towns and Cities under the direction of Yury Bashmet in Novouralsk;
- the 2nd Art Academy of Nuclear Towns and Cities in Udomlya;
- The launch of a project titled 'Culture for School Students' in nuclear towns and cities, with Zarechny (Penza Region) as the first town to host the project;
- Creative and engineering laboratories organised in five towns and cities;
- The launch of a series of creative laboratories and workshops on various arts, in which more than 1,000 children from various towns and cities took part.

ROSATOM's Territory of Culture places a special emphasis on systematic engagement with the nationwide volunteer movement, which makes it possible to involve volunteers from nuclear towns and cities in projects forming part of the programme. In 2024, ROSATOM's Territory of Culture joined the Coordination Council (the collective governing body) of the Volunteers of Culture movement.

For details on the volunteer movement in the Corporation, see section 8.1. 'Personnel Management'.

Educational projects

JSC Atomenergoprom's organisations, the Russian Znanie Society and Department No. 95 of NRNU MEPhI implemented a joint educational project for local residents in 22 nuclear towns and cities. Activities as part of the project were organised by municipal administrations and the Corporation's enterprises playing a central role in the local economy. More than 1,500 people participated in the project. Lectures covered topics such as Russia of the future, modern approaches to public administration, and national development goals, which were updated during the year pursuant to a decree of the President of the Russian Federation. A separate topic was focused on the nuclear industry, its values and strategy.

Projects and competitions of the Nuclear Towns and Cities Union

Throughout 2024, the Nuclear Towns and Cities Union was implementing an integrated social planning programme aimed at improving the standard of living in nuclear towns and cities. As part of long-term projects, steps are taken every year to promote the professional growth of local residents in ROSATOM's regions of operation and help them unlock their creative potential. More than 300,000 people in 30 of the Company's host towns and cities took part in 11 projects of the Nuclear Towns and Cities Union during the year.

The Atomic Quiz was one of the Union's key projects in 2024. Its participants included hundreds of thousands of people of various ages and professions. The project has helped create a community passionate about knowledge and scientific progress and recognising the importance of nuclear technologies for a sustainable future. In 2024, the main focus was on expanding the reach of the Atomic Quiz as much as possible. The Union engaged major partners and media outlets, such as the Znanie Society, the All-Russia People's Front, the Federal Agency for Youth Affairs, Tavrida.ART, the Russian Association for Local Self-Government Development (RALSGD), Digoria, Mashuk and NRNU MEPhI, to participate in the project. The Quiz questions were read out by prominent figures in the sphere of education and science and representatives of civic associations. This cooperation has enabled the project to expand beyond nuclear towns and cities and evolve into a nationwide and even international initiative. Between 1 and 14 September 2024, more than 57,000 people successfully completed the quiz online on the website of the project in Russian and in English. In addition, offline venues were provided for the Atomic Quiz in Zelenogorsk, Novouralsk, Obninsk and other towns and cities.

Educational initiatives are an important focus area for the Nuclear Towns and Cities Union.

In addition to the Atomic Quiz, a project titled **'Creators. People Transforming the World'** has also become an important educational initiative targeted at young people in ROSATOM's host towns and cities. The project is targeted at school and university students and young specialists in the nuclear industry who want to learn more about modern professions that are in demand, such as SMM management and blogging. In 2024, the project enabled the 300 most active young creators from nuclear towns and cities to acquire practical skills needed for a successful career. The young people learned to create high-quality content, maintain a presence on social media and promote their ideas in the digital space. Many of the participants put their ideas into practice, with topics related to nuclear power as the focus of their blogs. Plans include large-scale career guidance ambitions, new initiatives, scaling up best practices, and continued engagement with young people.

The **Digital Technology** project is yet another major educational initiative run in the Company's host towns and cities. During the history of these towns and cities, their residents have become accustomed to using state-of-the-art technology. In 2024, the project was targeted at local residents aged 14 to 55, who were offered an opportunity to acquire up-to-date knowledge and practical skills in the sphere of digital technology, artificial intelligence (AI) and data analysis. The project gives special focus to the application of AI for work and study and in day-to-day life. The project is aimed at nurturing a new generation of IT specialists in nuclear towns and cities who are capable of developing and improving the digital space.

In 2024, the Nuclear Towns and Cities Union made significant progress in supporting businesses and promoting social entrepreneurship in nuclear towns and cities. A project titled **'The ABC of SMEs'**, which is implemented in partnership with the administrations of the Company's host towns and cities, is aimed at providing support to entrepreneurs at multiple levels, including access to educational programmes, expert support for the development of business strategies, and financing for the purchase of equipment following a successful presentation of projects. Associate professors from the Ural Institute of Management (a branch of RANEPA), a lecturer from the Department of Strategic and International Management of the HSE Graduate School of Business, the Research Director of the Youth Institute and a Deputy Director of the Centre 'School of Andragogy and Educational Design' of the RANEPA Graduate School of Public Administration acted as business coaches; they are acknowledged experts with 20 years of experience in economics and innovation. Their proprietary methodologies combining theory and practice help entrepreneurs transform ideas into working business models even amid market turbulence.

As part of the ABC of SMEs, the Union provided support for 19 business projects in a number of the Company's host towns and cities. At least three social business initiatives are launched every year in each town and city participating in the project; this makes it possible to use a systematic approach and achieve scalable results. In recognition of the efficiency of this model, in 2024, the Nuclear Towns and Cities Union was presented with the Force for Good Award from the Foundation of Regional Social Programmes 'Our Future' in the Top Company category.

In 2024, the **Atomic Longevity** project demonstrated its importance as one of the key social projects of the Nuclear Towns and Cities Union focused on promoting an active lifestyle among senior citizens in the Company's host towns and cities. In the reporting year, the project covered more than 1,000 senior citizens in 15 nuclear towns and cities, which proves that it has become a truly large-scale and popular project. The Union organised more than 400 events in various formats ranging from educational lectures and practical legal advice to creative workshops, health and fitness activities, and exciting guided tours. Integration with the Union's other projects has produced a special synergy. For instance, both experienced and budding entrepreneurs participating in the ABC of SMEs project held a series of specialised events for senior citizens participating in the Atomic Longevity project. This experience has demonstrated how corporate social responsibility can contribute to shaping a sustainable community in nuclear towns and cities. As a result, the participants of both projects have found new opportunities for unlocking their potential. In addition to promoting the social well-being of senior citizens, this comprehensive approach has also provided a solid foundation for further development of human capital in the Company's regions of operation.

A project titled **'ROSATOM's Family'** has successfully accomplished its mission of strengthening the institution of the family and intergenerational ties in the Company's host towns and cities. ROSATOM's Family is an integral part of the Union's project framework and perfectly complements such projects as the Atomic Longevity and 'Creators. People Transforming the World', helping create a single space for family creativity and development. The project has provided more than 700 proactive families with unique opportunities for unlocking their potential and showcasing family traditions. Special focus was given to providing the younger generation with spiritual, moral and patriotic education. The project culminated with the official award ceremony held in Moscow, where the winning family from Krasnokamensk was offered an opportunity to meet ROSATOM's Director General Alexey Likhachev in person. All participants of the project and runners-up were awarded valuable prizes, which highlighted the importance of their contribution to preserving and promoting family values.

In 2024, the **Best Municipal Practices** project was an important focus of the efforts of the Nuclear Towns and Cities Union to promote the development of ROSATOM's regions of operation. Run as a competition of municipal practices, the project has become an effective platform enabling municipalities to share their experience. The

project has covered more than 200 successful practices applied in the Company's host towns and cities across key areas of social and economic development ranging from environmental protection and education to culture and urban improvement. Representatives of local governments, municipal institutions and non-profit organisations, as well as social activists were actively involved in the project, which proved that it is a popular tool for professional engagement.

Strategic partnership with the Russian Association for Local Self-Government Development (RALSGD) has helped to take the project to a fundamentally new level. Prioritised areas for development were defined jointly with experts from the Association, and mechanisms were established for an effective roll-out. Major outcomes of the project included a Collection of the Best Municipal Practices and an Interactive Project Map, which are available on the Union's website. Active participation of representatives of municipalities in the competition reflects its importance as a platform for sharing practices at the local level, making it possible to scale and further develop the best practices.

In the reporting year, a new project titled **'Green Atom'** was added to the framework of the Union's educational projects. It is aimed at developing an integrated environmental education system in ROSATOM's regions of operation by supporting local environmental projects and initiatives. During the year, the Nuclear Towns and Cities Union provided comprehensive support for more than 50 environmental campaigns and initiatives, whose participants included public figures, environmental activists and local associations. The implementation of the project has confirmed its importance as an effective tool for shaping the environmental culture. Integration with the Union's other projects, such as the Best Municipal Practices, has made it possible to apply a systematic approach to addressing environmental issues and has provided a solid foundation for further developing environmental initiatives in the Company's regions of operation.

A project titled **'The Atom Explained in Simple Terms'** has successfully accomplished its mission of raising public awareness of the latest achievements of the Russian nuclear industry. In the context of efforts to ensure the country's technological sovereignty, the project has become an important tool for communication between the nuclear industry and the general public. The main channels of communication included the project's website and community pages on all available social media platforms. The project has proved to be effective as a platform for shaping an objective view of the role of the Russian nuclear industry and its capabilities.

The **Citizen of ROSATOM's Country** project has demonstrated its importance as an effective platform for dialogue between local residents in nuclear towns and cities, government representatives and businesses. During 2024, the discussion platform at atomnews.ru was visited by more than 3.5 million people, which reflects a high level of local residents' trust in the project as an effective tool enabling them to express their opinions. The established feedback mechanism makes it possible to promptly respond to people's requests and take their opinions into account when implementing social and economic programmes. Along with the Union's other projects, the Citizen of ROSATOM's Country has contributed to developing a culture of responsible civic participation. The project has provided a solid foundation for further development of a system of civic participation. Plans for 2025 include expanding the functionality of the platform in order to ensure the highest level of responsiveness to the opinions of all categories of residents of nuclear towns and cities.

GRI 2-29

8.3. Stakeholder Engagement

Key results in 2024

- 78.3% of the population support the nuclear industry.
- Representatives of ROSATOM and the Company took part in more than 150 Russian and international exhibitions.

Approaches to stakeholder engagement

Due to its scale and special characteristics of its business (simultaneous performance of state and business tasks, operation across a large number of markets), the Company has a wide range of stakeholders both in Russia and globally.

Targeted stakeholder engagement is aimed at achieving strategic goals and gaining public acceptance for nuclear power development.

The Company promotes systematic and constructive stakeholder engagement across all areas of its business and conducts communication and information campaigns for the general public. The list of stakeholders is compiled based on the scale of the Company's impact on stakeholders.

Fundamental principles underlying stakeholder engagement in the Corporation are as follows:

- Respect for and accommodation of the interests of all participants;
- Open and productive cooperation;
- Timely provision of complete information on the Company's activities;
- Striving to provide specific benefits to all participants;
- Fulfilment of obligations.

Industry media

To inform employees and other stakeholders about news and key events in the Russian nuclear industry, a range of corporate media outlets operates under the common brand name *Strana ROSATOM* ('The Country of ROSATOM'):

- The *Strana ROSATOM* newspaper (published weekly and distributed in all organisations in the Russian nuclear industry, in core universities in the industry and nuclear towns and cities, with a circulation of 72,000 copies and a readership (including the online version, social media and video advertising) exceeding 500,000 people);
- A TV news programme (aired weekly in nuclear towns and cities).

Communication projects

Icebreaker of Knowledge

The Icebreaker of Knowledge is a science communication project launched by the network of Nuclear Energy Information Centres (NEICs) with support from ROSATOM. It is aimed at promoting STEM disciplines and nuclear technologies, searching for and supporting talented and gifted children, developing their talents and providing career guidance. School students from across Russia participate in the project, with about 15,000 people applying to participate during the year. ROSATOM's anniversary Icebreaker of Knowledge Arctic expedition was timed to coincide with the 65th anniversary of establishment of the nuclear-powered icebreaker fleet.

On 13 August 2024, the 5th Icebreaker of Knowledge Arctic expedition set out from Murmansk for the North Pole; it was organised with support from ROSATOM and the Russian Znanie Society. An international team of talented schoolchildren and experts from 15 countries worldwide went on board the *50 Let Pobedy* nuclear icebreaker. A series of lectures titled 'The Northernmost Lecture Hall' and a documentary reality show were filmed during the expedition.

400 children

have visited the North Pole since 2019 as part of the Icebreaker of Knowledge project

Nuclear Kids (NucKids)

This is an annual international art project for children (http://www.nuckids.ru/). Its participants include children of employees of Russian nuclear enterprises and ROSATOM's foreign partners. The main goals of the project are to promote friendship between children of employees of nuclear enterprises, provide an environment enabling talented children to unlock their creative potential, and establish new traditions of cultural engagement. The Nuclear Kids project has been implemented on an annual basis since 2009. Over the 16 years since the launch of the project, more than 1,000 children of employees of ROSATOM's enterprises and its foreign partners in 25 countries have taken part in it.

Rehearsals for the 2024 summer project were held at facilities situated in the Republic in Belarus. The musical was premiered in Minsk (Republic of Belarus). This was followed by a tour that ran in Nizhny Novgorod, Obninsk (Kaluga Region) and Udomlya (Tver Region) and traditionally concluded in Moscow. Students of music schools from nuclear towns and cities joined the project for a second year in a row.

Opinion polls

The Company analyses the public perception of the development of nuclear power in Russia on an annual basis and adjusts its communication with stakeholders accordingly.

According to a nationwide opinion poll carried out by ZIRCON Research Group, in 2024, 78.3% of the Russian population supported the use of nuclear power (2023: 77.2%). Over the past few years, the figure has remained consistently high.

Trends in the positive public perception of the nuclear power industry, %

Question: 'On the whole, do you approve or disapprove of the use of nuclear (atomic) energy as a way to provide power supply for the country?' (Combined number of answers: 'I definitely approve' and 'I somewhat approve')

Exhibitions

In 2024, the Company as part of ROSATOM took part in more than 120 international congresses and exhibitions in the Russian Federation and abroad (including 15 events in Russia). These included major events, such as the Future Technologies Forum, the World Youth Festival, the Open Innovations Forum, the Conference on Digitalisation of Industrial Russia, the St. Petersburg International Economic Forum (SPIEF), the Eastern Economic Forum, the Russian Energy Week, the 68th Regular Session of the IAEA General Conference, the 29th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP29), African Energy Week 2024 (South Africa), the INNOPROM. Central Asia International Industrial Trade Fair, etc.

9

SAFE OPERATIONS

80 YEARS OF RUSSIAN NUCLEAR INDUSTRY

Yuliy Khariton (1904–1996)

Yuliy Khariton was the chief design engineer at the country's first nuclear centre established in Sarov in 1946. He assumed full responsibility not only for all aspects of the development and continuous improvement of nuclear weapons, but also for the safety of the production, testing and use of these weapons, whose destructive power is unparalleled. Yuliy Khariton was the first to formulate safety requirements for nuclear weapons and repeatedly emphasised that it is vital to eliminate the possibility of a nuclear explosion in any accidental situation that might involve nuclear weapons. His exacting attitude and thoughtfulness helped the nuclear industry to avoid accidents involving nuclear weapons.

CHAPTER 9. SAFE OPERATIONS

9.1. Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health

MED 27

Key results in 2024

- There were no events rated above level 1 on the INES scale.
- The injury frequency rate and the lost time injury frequency rate (LTIFR) stood at 0.27 and 0.07 respectively.
- Individual radiation risk was calculated for 44,687 people using the IRAW system.
- There were no events classified as an ‘accident’[1] at the Company’s facilities.
- The statutory limit on radiation exposure of employees was not exceeded.
- Occupational safety and health costs totalled RUB 12.6 billion.

GRI 3-3

Nuclear and radiation safety management system

Ensuring safety and protecting the environment when using nuclear energy is a top priority for the Company.

The Company prioritises measures aimed at ensuring nuclear and radiation safety. All of the Company’s organisations whose operations involve the use of nuclear energy are involved in the process of ensuring and monitoring nuclear and radiation safety.

GRI 3-3

Nuclear and radiation safety at nuclear facilities

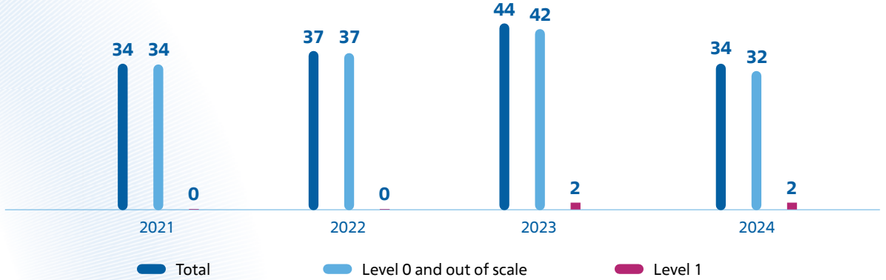
In 2024, JSC Atomenergoprom ensured safe and reliable operation of nuclear organisations. There were no events involving radiation leaks. Limits on employee radiation exposure were not exceeded.

1. An accident means the destruction of structures and/or technical equipment used at a hazardous industrial facility, an uncontrolled explosion and/or release of hazardous substances. An incident means a failure of or damage to technical equipment used at a hazardous industrial facility, a deviation from established process parameters.

Nuclear power plants

In 2024, there were no events rated above level 1 on the international INES scale at Russian nuclear power plants.

Changes in the number of deviations in NPP operation according to the INES scale



In 2024, all deviations in NPP operation were investigated in accordance with the established procedure. Key causes of deviations included individual equipment components going out of service (failing) before the end of the operating time specified by manufacturers, and inadequate techniques for diagnostic assessment and monitoring of the technical condition of individual components of equipment in operation.

The Company rated each event that had occurred in accordance with the INES Scale User’s Manual and developed corrective measures to prevent similar failures in the future.

Nuclear research facilities

In 2024, there were no events (deviations) rated above level 0 on the INES scale at JSC Atomenergoprom’s nuclear research facilities.

Changes in the number of deviations in the operation of nuclear research facilities

In 2024, deviations in the operation of nuclear research facilities were caused by faults (failures) in power supply to the facilities.

There were no violations of safe operating limits or conditions for nuclear research facilities, no radioactive emissions or discharges; the statutory limit on radiation exposure of personnel operating nuclear research facilities was not exceeded.

All events were investigated by commissions established by the operators of the facilities; their causes were determined, and the relevant measures were developed to prevent such deviations.

GRI 3-3

Physical protection of nuclear facilities

The security and physical protection of the Company's facilities posing nuclear and radiation hazards, as well as of nuclear materials and radioactive substances, including during their transportation, complies with Russian legislation and the Convention on the Physical Protection of Nuclear Material and is aligned with the recommendations of the International Atomic Energy Agency.

In 2024, the Company continued to improve the regulatory and methodological framework in the sphere of physical protection and security (including anti-terrorism security) of nuclear facilities (premises).

Efforts to improve the regulatory framework included drafting and issuing two decrees of the Government of the Russian Federation, as well as eight documents governing relations in the sphere of physical protection and security (including anti-terrorism security) of facilities in the industry; the documents were approved by orders of the Corporation. These documents are aimed at developing uniform industry-wide approaches to physical protection of nuclear facilities and security (including anti-terrorism security) of the Corporation's facilities (premises).

The main mechanisms for ensuring physical protection and anti-terrorism security include the following:

- Monitoring of the physical protection and anti-terrorism security of the Company's facilities (premises) by the relevant departments;
- Reliable operation of existing physical protection and security equipment at facilities, as well as its scheduled modernisation and improvement;
- Strict compliance with the requirements of federal and industry-wide regulations.

As part of departmental monitoring in accordance with ROSATOM's Consolidated Plan of Inspections, 12 inspections of the physical protection of nuclear materials, nuclear facilities and nuclear material storage sites were conducted in 2024 in nuclear organisations (including the Company's organisations), including the inspection of their anti-terrorism security status.

In 2021, 2022 and 2023, 11, 13 and 12 inspections respectively were conducted as part of departmental monitoring. The findings of all inspections were documented in reports; plans of corrective measures were developed. Progress in eliminating the deficiencies identified in the course of inspections and implementing recommendations from the commissions is being monitored.

Proposals were prepared to conduct inspections of physical protection as part of departmental monitoring at 10 nuclear facilities in 2025. The proposals were incorporated in the consolidated plan for 2025.

ROSATOM continued to improve the integrated information system for monitoring the status of the physical protection system at its facilities posing nuclear and radiation hazards.

As part of the import substitution policy, cross-platform software designed to collect and analyse data from the Company's nuclear facilities in real time through secure communication channels was improved; this software can be run on various operating systems. In the reporting period, the software was rolled out in three nuclear organisations. The cross-platform software forming part of the integrated information system for monitoring the status of the physical protection system will continue to be rolled out at the Company's facilities in 2025.

Based on the findings of analysis and a summary of data provided by the Company's organisations, in 2024:

- In accordance with the approved programmes, the organisations continued to take steps to improve physical protection and security equipment at facilities posing nuclear and radiation hazards. All physical protection and security equipment is fully operational; its maintenance is carried out as scheduled;
- Scheduled work was carried out to maintain automated security systems for transportation installed in control centres and special vehicles (railway cars, special motor vehicles and vessels) and replace equipment that had reached the end of its specified service life;
- Further steps were taken to improve the protection of the Company's protected facilities against the illegal use of unmanned aerial vehicles.

Measures taken in cooperation with the Federal Security Service of Russia, the Federal National Guard Service and the Ministry of Internal Affairs of Russia made it possible to prevent unlawful acts against nuclear facilities.

In 2024, as in previous years, there were no violations of access control or internal security regulations at the Company's facilities which could have resulted in the theft of nuclear materials, terrorist acts or sabotage at nuclear facilities.

GRI 3-3

Industry-Wide Radiation Monitoring System

Radiation monitoring in the Russian Federation is carried out as part of the operation of the Integrated State Automated Radiation Monitoring System (ISARMS). The Industry-Wide Radiation Monitoring System (IRMS)[1] is in operation in the nuclear industry as a functional subsystem of the ISARMS.

The main objective of the IRMS is to perform regular radiation monitoring in designated areas, namely in buffer areas and radiation control areas at the locations of nuclear facilities, detect changes in radiation levels in a timely manner, forecast and minimise the potential negative impacts of radiation on people and the environment.

Local radiation monitoring in buffer areas and radiation control areas is performed using portable, mobile and fixed equipment for monitoring radionuclide content in the lowest layer of the atmosphere, atmospheric precipitation, soil, surface water bodies, bottom sediments, aquatic organisms, groundwater, vegetation, as well as in locally produced food products and fodder.

In 2024, local radiation monitoring systems performed more than 185,000 measurements (in addition to IARMS data received automatically). The results of processing and analysis of radiation monitoring findings suggest that normal operation of nuclear facilities has no significant impact on radiation levels.

To assess the long-term impact of nuclear organisations on the environment, subsoil condition monitoring is performed at the locations of nuclear facilities. It provides information on the status of the geological environment and makes it possible to assess and forecast its changes taking into account protective properties of geological and man-made barriers.

In order to promptly respond to any changes in radiation levels in buffer areas and radiation control areas at the locations of nuclear facilities, automated radiation monitoring systems (ARMSs) integrated into the IARMS are in operation. Real-time data from ARMS stations are available on the website at https://egasmro.ru.

In 2024, radiation levels in the areas where nuclear facilities of ROSATOM's organisations are located were within the range of natural background radiation and remained unchanged compared to previous years.

Radiation monitoring is one of the key tasks in the sphere of environmental protection. To further develop the IRMS, the Company has adopted and is implementing the IRMS Development Programme for the period from 2021 through 2030 (the Programme).

In 2024, work was underway in the following focus areas of the Programme:

- Improving the existing components and developing new components of the IRMS;
- Providing research and methodological support for the operation of the IRMS;
- Equipping and upgrading environmental radiation monitoring laboratories;
- Establishing the main laboratory in order to develop equipment and methodological guidelines for the IRMS;
- Developing digital information infrastructure for the IRMS;
- Ensuring the uniformity of measurements and verifying data collected by local monitoring systems;
- Personnel training.

The implementation of the Programme will enable ROSATOM to obtain, analyse and report the findings of radiation monitoring and data on radionuclide content in various components of the environment using a modern research and methodological framework, domestically developed software and hardware in order to take necessary measures to prevent or reduce the radiation impact on local residents and the environment.

The comprehensive approach to radiation monitoring used by the Company helps provide full and objective information on the safe operation of nuclear facilities in the Russian Federation.

1. Pursuant to Article 20 of Federal Law No. 170-FZ of 21 November 1995 on the Use of Nuclear Energy, ROSATOM performs state radiation monitoring in the Russian Federation at the locations of nuclear facilities owned by operators with regard to which ROSATOM exercises government control over the use of nuclear energy.

GRI 3-3

Emergency preparedness and special transportation

In order to ensure the safe operation of the nuclear industry and protect employees, the local population and regions against the possible impacts of accidents (emergencies), the Company operates and improves a functional subsystem for emergency prevention and response that covers the organisations (facilities) controlled by JSC Atomenergoprom and falling within the scope of its operations. This subsystem forms part of the integrated state system for emergency prevention and response.

In 2024, the Company continued to implement the Action Plan for the Implementation of the Programme for the Development of ROSATOM's Emergency Preparedness and Response System until 2035 and Beyond approved by order of ROSATOM.

As at 31 December 2024, 19 professional and 65 volunteer emergency response teams had undergone certification and were in a state of readiness for emergency response in the industry (including in JSC Atomenergoprom). A total of 2,850 emergency response workers have undergone certification in the industry.

In the reporting year, the needs of organisations in the industry for special cargo transportation were fully met. All shipments of nuclear materials, radioactive substances and products made from them fully complied with established requirements. Steps are being taken to improve the industry-wide automated system for safe transportation of radioactive substances. Work was continued to produce and upgrade special vehicles and equip them with modern automated security systems.

GRI 3-3
GRI 403-1

Occupational safety and health

Occupational health and safety management system

One of the fundamental priorities for JSC Atomenergoprom is to protect the life and health of employees in the industry. Internal regulations adopted in the Company and its organisations (primarily the Uniform Industry-Wide Policy on Occupational Safety and Health) are aimed at preventing workplace accidents and occupational diseases, systematically monitoring working conditions and occupational safety performance, ensuring the safety and protecting the health not only of the Company's employees, but also of employees of contractors and subcontractors involved in the operation of nuclear facilities.

The Company and its organisations recognise their responsibility for the safety of production processes, occupational safety and health, given that the rapid development of the nuclear power industry makes it crucially important to guarantee compliance with fundamental principles whereby priority is given to protecting employees' life and health and enhancing the protection of people and the environment against radiation exposure.

GRI 403-3
GRI 403-8

ROSATOM has adopted the Uniform Industry-Wide Policy on Occupational Safety and Health,[1] which applies to JSC Atomenergoprom and its organisations and stipulates the goals, key principles and obligations in the field of occupational safety and health. Its principles underpin the occupational safety and health management systems used by JSC Atomenergoprom's organisations.

The policy applies to all of the Company's employees; in addition, the Company requires its contractors and subcontractors to comply with occupational safety and health standards adopted in JSC Atomenergoprom.

Responsibility for ensuring safety[2] of the use of nuclear energy for civilian and defence purposes by organisations of JSC Atomenergoprom in the course of their operations has been assigned to the Inspector General of ROSATOM.

The key principles underlying occupational safety initiatives of JSC Atomenergoprom and its organisations include the following:

- Minimising risks and preventing the threat of workplace injuries and occupational diseases;
- Improving systems for monitoring and managing the occupational safety and health performance and working conditions;
- Ensuring that every employee assumes personal responsibility for complying with occupational safety rules, and encouraging employees to contribute to ensuring compliance of workplaces with occupational safety rules adopted in the organisation;
- Ensuring that employees in nuclear organisations are committed to achieving the zero injury rate, in line with the Vision Zero framework of the International Social Security Association (ISSA), and to the principles of the culture of safe behaviour;
- Creating the prerequisites for decision-making aligned with national occupational health and safety regulations at all levels of operations management;
- Promoting comprehensive communication and cooperation with employees and their representatives on occupational health and safety matters taking into account voluntary occupational health and safety commitments, including the provisions of the Industry-Wide Agreement on Nuclear Power, Industry and Science for the period from 2023 through 2025 and beyond.

GRI 403-2

Managing occupational safety and health risks

JSC Atomenergoprom and its organisations operate and continuously improve an industry-wide system for identifying, assessing and managing occupational risks. The procedure for identifying and assessing workplace hazards is described in the Uniform Industry-Wide Guidelines on Occupational Risk Management in ROSATOM's Organisations.

The occupational risk management commission annually reviews the findings of the monitoring of occupational risk assessment and management activities in order to ensure that all measures at the planning and implementation stages have been implemented in full and on time. Based on the results of the annual review, a plan of corrective actions (measures) is developed, which is aimed at improving the effectiveness of occupational risk management.

Accidents are investigated by commissions set up in the Company's organisations in accordance with the Labour Code and Order No. 223n of the Ministry of Labour and Social Protection dated 20 April 2022. Following the investigation, the organisation issues an order stipulating measures to prevent similar accidents.

The Company has set up and operates a hotline to receive employees' enquiries and reports concerning working conditions and occupational safety and health. To enhance the safety culture and encourage employees to assume greater personal responsibility for ensuring safe working conditions, the Corporation is introducing a practice whereby employees may suspend or refuse to perform any work that poses a threat to their life and health. The Corporation's top management guarantees that no sanctions will be applied against employees if they refuse to perform any work in conditions which they consider unsafe.

The Seventh Industry-Wide Dialogue Forum titled 'Nuclear Power and Industry Safety Day' was held in October 2024. At the Forum, ROSATOM's strategic goals in the sphere of safety until 2030 and measures to achieve them were defined. The current safety status and key mechanisms for preventing injuries were reviewed; best practices and the outcomes of initiatives focused on occupational safety and health, industrial, nuclear and radiation safety, environmental protection and the culture of safe behaviour were presented.

A project is underway to introduce the Integrated Industry-Wide Occupational Safety System, a digital tool designed to automate and digitise occupational health and safety and occupational risk assessment processes.

1. https://rosatom.ru/upload/iblock/74a/74a0da78404893d842f5cc1136de08c7.pdf
2. Safety means nuclear, radiation, industrial and fire safety, the safety of hydraulic structures, occupational safety and health, and environmental protection.

GRI 2-25
GRI 403-3

Prevention of occupational injuries

To prevent and minimise occupational injuries, the Company's organisations implement a number of measures on an ongoing basis, the list of which is approved by ROSATOM's Director General:

1. The List of Instructions of ROSATOM's Director General on Preventing Injuries when Working with Electrical Equipment.
2. The List of Instructions of ROSATOM's Director General on Improving Process Discipline in ROSATOM's Organisations during Construction, Renovation, Upgrade and Repairs of Facilities.
3. The Order of ROSATOM on Approval of an Action Plan for the Prevention of Occupational Injuries at the Facilities of ROSATOM's Organisations When Working at Heights.
4. The Order of ROSATOM on Approval of an Industry-Wide Plan of Urgent Measures to Ensure Safety and Reduce Occupational Injuries.
5. The Order of ROSATOM on Approval of a Comprehensive Programme for Preventing Occupational Injuries in the Nuclear Industry.

Safety culture in JSC Atomenergoprom

In order to prevent accidents, JSC Atomenergoprom's organisations work continuously to enhance the workplace safety culture. Key objectives of the process include providing employees with an insight into their role in the safety management system, ensuring that they are committed to achieving the zero injury rate, and creating an atmosphere of openness and trust based on the Seven Golden Rules for Vision Zero.

These initiatives are aligned with ROSATOM's Safety Culture Policy Statement. Methodological support for the initiatives is provided by the Rosatom Technical Academy and the Rosatom Corporate Academy, which act as a competence centre focused on the safety culture and mental and physiological robustness of employees.

47 of the Corporation's organisations (legal entities and branches) had a GOST R ISO 45001 or ISO 45001-certified occupational health and safety management system in 2024. GRI 403-8

The requirements of the occupational health and safety management system (OHSMS) are binding on suppliers and contractors operating at JSC Atomenergoprom's facilities. In addition, contractors undertake to comply with occupational safety and health legislation and to ensure compliance by their subcontractors. The Company does not impose any other occupational safety and health requirements on suppliers and contractors. GRI 403-1 GRI 403-7

GRI 403-4

Worker participation, consultation, and communication on occupational health and safety

Employee communication process

Communication within the OHSMS provides a basis for coordinated efforts of executives and specialists at all management levels.

In 2024, the Uniform Industry-Wide Guidelines for Developing and Improving an Occupational Health and Safety Management System in ROSATOM's Organisations were approved pursuant to an order of ROSATOM dated 18 July 2024.

Information support within the OHSMS of an organisation is designed to:

- Promptly notify employees of the organisation and its contractors;
- Present the findings of investigation of accidents, incidents and workplace injuries and preventive action plans to employees of the organisation;
- Visualise safe working practices and the consequences of non-compliance with occupational safety rules on the part of employees of the organisation;
- Enable executives and specialists to review federal and industry-wide occupational health and safety standards and rules, and inform them in a timely manner about changes in legislation.

Provision of information to employees of an organisation includes the mandatory communication of the following information, to be acknowledged by an employee's signature:

- The organisation's occupational health and safety policy and goals;
- Risks of damage to health;
- Findings of special assessment of working conditions in the workplace;
- Personal protective equipment required to be provided to employees;
- The occupational health and safety status and requirements in the workplace;
- Guarantees and compensations to be provided to employees;
- Local regulations on occupational safety and health adopted in the organisation.

GRI 403-4

Joint occupational health and safety committees

To enable cooperation between the management, employees and the trade union, the organisation has established an Occupational Health and Safety Committee. The Committee helps ensure compliance with occupational health and safety requirements, prevent workplace injuries and occupational diseases, and protect employees' health. It forms part of the organisation's OHSMS and facilitates employee participation in occupational health and safety management. The establishment and functioning of occupational health and safety committees (commissions) in the Company's organisations is governed by Order No. 650n of the Russian Ministry of Health and Social Development dated 22 September 2021 on Approval of Provisional Regulations on the Occupational Health and Safety Committee (Commission).

GRI 403-9

Occupational safety and health performance

Due to objective and subjective factors, the number of occupational injuries in the industry increased by 37% compared to 2023.

Injuries caused by a fall on the premises as a result of personal negligence on the part of the injured persons and deteriorating health accounted for more than 32% of the total number.

The number of fatalities decreased significantly. In 2024, there was one fatal accident (as against eight in 2023).

The total number of serious and fatal accidents remained unchanged compared to 2023, accounting for 25% of the total number of accidents.

The injury rate decreased compared to 2023 in the Mining, Mechanical Engineering, Fuel, Research and Innovations, and Wind Power Divisions; however, the injury rate increased in the Environmental Solutions, Power Engineering, and Infrastructure Solutions Divisions.

Occupational safety and health performance of JSC Atomenergoprom's organisations in 2024

Number of man-hours worked[1]	353,424,922
Number of serious injuries	9
Number of people newly diagnosed with an occupational disease	25
Fatality rate (per 1 million man-hours)	0.003
Fatality rate (per 200,000 hours)	0.0006
Serious injury rate (per 1 million hours)	0.025
Serious injury rate (per 200,000 hours)	0.005
Recordable occupational injury rate (per 1 million hours) (including/excluding fatalities)	0.108/0.105
Recordable occupational injury rate (per 200,000 hours) (including/excluding fatalities)	0.022/0.021
Occupational disease rate (per 1 million hours)	0.071
Occupational disease rate (per 200,000 hours)	0.014
Lost day and absenteeism rate	1.00004
Number of people injured in accidents in contractor organisations[2] (including severe injuries/fatalities)	11 (3/1)

MED 29

Occupational injury rates in the Company's organisations in 2024

Indicator	2021	2022	2023	2024
Number of people injured in accidents	16	35	29	38
Number of fatalities	2	6	4	1
Injury frequency rate (FR)	0.17	0.24	0.2	0.22
LTIFR[3]	0.06	0.07	0.11	0.06
Number of people newly diagnosed with an occupational disease	10	6	8	25

GRI 403-9

A total of 38 people were injured in 2024, including 31 men and seven women. This included nine people who suffered serious injuries and one fatality.

In 2024, there was a decrease in the number of accidents involving falling on the premises, falling from a height, and burns. At the same time, the number of people injured as a result of impact of moving or scattering objects or parts and electric shock increased.

Between 2021 and 2023, one fatality was a woman, while the remaining fatalities were men.

In 2024, there was one fatality (a man).

GRI 403-10

There has been an increase in the incidence of occupational diseases among employees of an enterprise in the Mining Division. In 2024, 25 employees who had worked in the enterprise for more than 20 years received 48 diagnoses of occupational diseases, with two employees diagnosed with five specific diseases each. The most common occupational diseases include disorders of the peripheral nervous system and musculoskeletal disorders. Measures taken by the Company to prevent occupational diseases included the following: operating personnel more closely monitoring the condition of ventilating equipment supplying clean air to workspaces; installation of additional DV-1000 doors to prevent contaminated air from entering mine workings; and timely personnel rotation.

1. Not including 157 organisations.
2. No data are available on man-hours worked or newly diagnosed occupational diseases in contractor organisations.
3. Lost Time Injury Frequency Rate (LTIFR) = number of lost time injuries / man-hours worked × 1 million man-hours.

In 2024, the injury frequency rate (FR) stood at 0.22, as against 1.0 across Russia.

In addition to the injury frequency rate (FR), JSC Atomenergoprom also uses the lost time injury frequency rate (LTIFR), which enables it to benchmark the injury rate in the Company against that of other companies and countries. The LTIFR has been included in the KPI maps of all Division executives.

The LTIFR reference value for the Divisions, units, holding companies and JSC Atomenergoprom as a whole has been set at 0.5, which is a good result for any company in any country in the world.

Average LTIFR values achieved in Divisions, units and holding companies within JSC Atomenergoprom over the previous three years have been accepted as baseline (initial, to be improved) values for those Divisions, units and holding companies.

The LTIFR targets are set individually for the Divisions, units and holding companies within JSC Atomenergoprom but do not exceed the baseline values.

LTIFR between 2021 and 2024

Division/complex/unit	2021	2022	2023	2024
Mining Division	0.22	0.2	0.24	0.16
Fuel Division	0.05	0.09	0.04	0.02
Mechanical Engineering Division	0.07	0.19	0.1	0.09
Power Engineering Division	0.04	0.12	0.05	0.05
Environmental Solutions	0.18	0.12	0.12	0.06
Innovation Management Unit	0.06	0.06	0.13	0.07
Total across the Company	**0.07**	**0.11**	**0.08**	**0.06***

*The LTIFR calculation does not include 18 people injured in accidents caused by third parties (including road accidents) and those whose health suddenly deteriorated due to an illness. One injured person was included in the calculation for 2025 as the investigation of the accident is ongoing. One person injured in 2023 was included in the calculation following the conclusion of accident investigations in 2024.

In order to reduce the number of injuries, JSC Atomenergoprom's organisations will implement measures focused on improving production processes, upgrading machining equipment, enhancing control on the part of line managers, and encouraging employees to assume greater individual responsibility for compliance with safety rules.

Occupational health and safety plans for 2025

In 2025, JSC Atomenergoprom will continue to work systematically to improve the occupational health and safety management system and promote the culture of safe behaviour.

Radiation exposure of employees

Ionising radiation is an occupational hazard specific to JSC Atomenergoprom's organisations. Radiation safety criteria for personnel are laid down in the Radiation Safety Standards (NRB-99/2009), the Basic Sanitary Rules of Radiation Safety (OSPORB-99/2010) and other regulations. Most nuclear organisations provide workplace conditions that fully meet the requirements set out in these documents.

Average annual effective radiation dose for employees

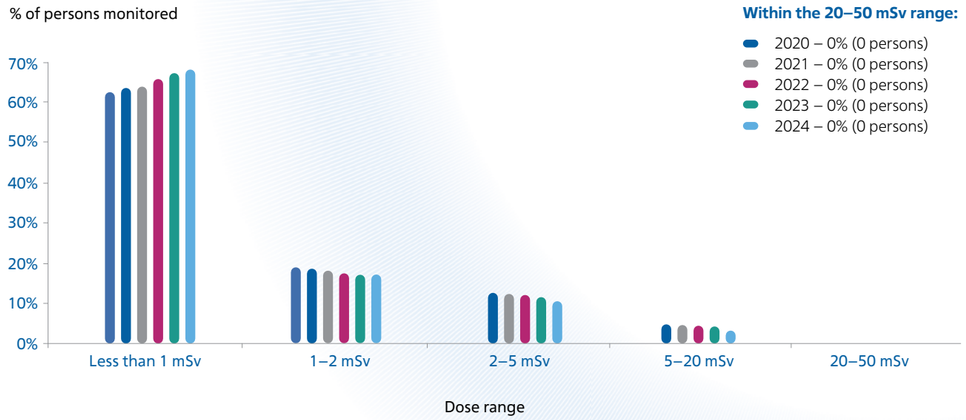
As at 31 December 2024, 44,687 people (group A personnel) at JSC Atomenergoprom's facilities were under individual radiation exposure monitoring. This number decreased by ~3.9% compared to 2023 but increased by ~6.6% over the last five years.

In 2024, the average annual effective radiation dose for employees of JSC Atomenergoprom's organisations totalled 1.20 mSv. The average annual effective radiation dose for employees has been declining over the past five years (down by 21.6% compared to 2020).

The statutory limit on radiation exposure of employees was not exceeded in 2024. There were no persons with a total effective dose of more than 100 mSv over five consecutive years (from 2020 through 2024). The annual exposure limit of 50 mSv was not exceeded.

In the structure of radiation exposure of employees, the share of employees with doses ranging between 2 and 20 mSv tends to decrease (from ~20.3% in 2020 to ~15.8% in 2024).

Distribution of group A personnel by dose range, %



Individual radiation risks

GRI 403-2
GRI 3-3

In 2024, the Company continued to monitor radiation risks for group A personnel using the IRAW (individual risk assessment workstation) occupational radiation risk assessment system. Individual risk was calculated for 44,687 people. The vast majority of group A employees work in the conditions of acceptable occupational risk. For 545 people (1.22% of the total number of employees included in the IRAW system), individual risk exceeded the standard value of 10^{-3}. The high-risk group comprises mainly industry veterans, whose average age exceeds 60 years.

Changes in the key indicators of the IRAW system in JSC Atomenergoprom, %

Indicator	2020	2021	2022	2023	2024
Share of employees exposed to negligible and acceptable occupational risk	98.36	98.46	98.59	98.80	98.78
Share of employees in the high-risk group	1.64	1.54	1.41	1.20	1.22
Share of employees in the industry undergoing individual radiation exposure monitoring and included in the IRAW system	100.0	100.0	100.0	100.0	100.0

In 2024, the average individual radiation risk across the Company stood at $6.2 \cdot 10^{-5}$. In recent years, the average individual radiation risk across JSC Atomenergoprom does not exceed 8% of the standard value, and the maximum individual risk has been decreasing steadily.

Fire safety

In 2024, the fire situation at JSC Atomenergoprom's facilities was stable; there were no fires at the Company's facilities under construction.

Four fires occurred at facilities operated by JSC Atomenergoprom. No harm to the life or health of personnel was caused, and there were no violations of the limits or conditions of safe operation of the facilities. The cost of damage from fires in the Company's enterprises totalled RUB 35,500 (a decrease by a factor of 1.3 compared to 2023).

Incidents of fires at the Company's facilities are listed below:

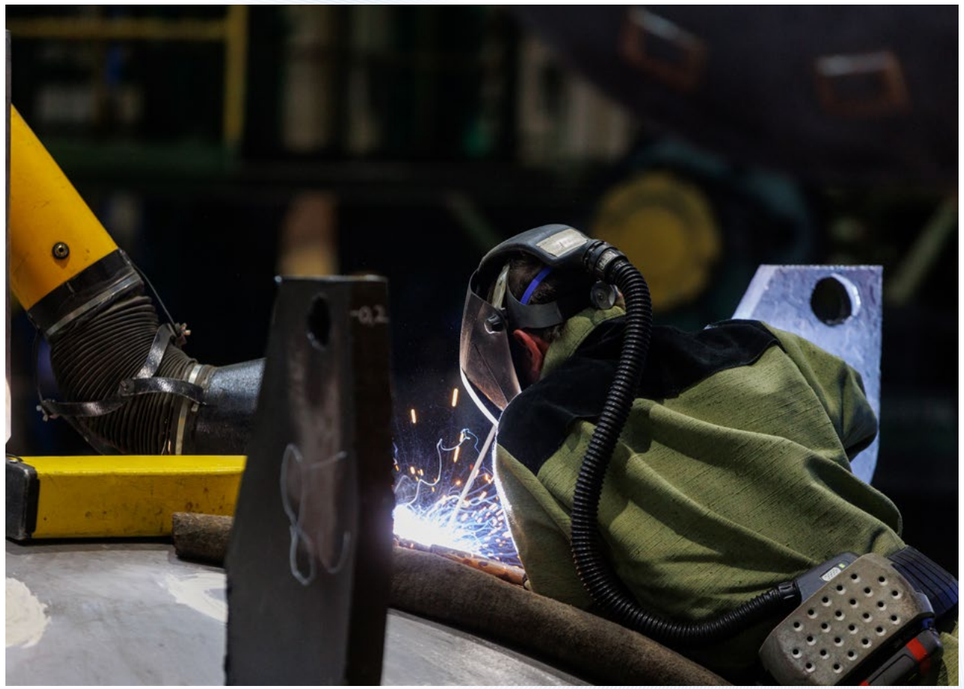
- Power Engineering Division, Kursk NPP: on 26 March 2024, a fire occurred in an office and amenity building. The fire was caused by faulty electrical equipment. There were no injured persons or damage to property.
- Mining Division, Zabaykalsky Territory: on 13 August 2024, the motor of a water drainage pump in workshop No. 2 caught fire due to faulty electrical equipment. There were no injured persons. The cost of damage totalled RUB 35,500.
- Research Division, Dubna: on 30 September 2024, a fire occurred in the polymerisation laboratory as a result of process flow disruption. There were no injured persons or damage to property.
- Mining Division, Sakha Republic (Yakutia): on 6 October 2024, a foreign-made drilling rig caught fire in the course of drilling operations in open-pit mine No. 2 at the Severnoye deposit. There were no injured persons. Steps are being taken to identify the cause of the fire and estimate the cost of damage.

Industrial safety

GRI 3-3 As at 31 December 2024, there were no events classified as accidents at hazardous industrial facilities operated by JSC Atomenergoprom's organisations.

Calculations of metrics used to assess the probability of potential negative consequences of non-compliance with industrial safety requirements at hazardous industrial facilities show that the level of risk of accidents is acceptable.

In 2025, the Company plans to continue to improve the industrial safety management system and hold meetings on industrial safety matters with representatives of JSC Atomenergoprom's organisations (to discuss current matters related to industrial safety), and to hold an annual R&D workshop on industrial safety (to provide training and inform about the latest developments in the sphere of legal regulation). It has been decided that in the course of industrial safety inspections, special focus should be given to compliance with the procedure established by legislation for extending the life cycle of technical equipment operated at hazardous industrial facilities that has reached the end of its statutory service life.



9.2. Environmental Safety

Key results in 2024

- Expenditure on environmental protection totalled RUB 25.47 billion (2023: RUB 20.42 billion).
- Nuclear organisations accounted for 0.2% of the total pollutant emissions in the Russian Federation.

GRI 3-3 Environmental safety and environmental protection management

The environmental footprint of the nuclear power industry is smaller than that of carbon-based power generation using fossil fuels. Emissions of hazardous chemicals, including those that destroy the ozone layer or contribute to the greenhouse effect, from nuclear power plants are close to zero.

JSC Atomenergoprom's organisations attach great importance to environmental safety and environmental protection and operate responsibly in accordance with the following principles:

- Giving priority to preserving natural ecosystems;
- Making use of the latest scientific achievements and ensuring environmental safety as a mandatory requirement;
- Transparency and making information on environmental aspects of operations of organisations in the industry publicly available.

The goals and initiatives of ROSATOM and JSC Atomenergoprom in the field of environmental safety and environmental protection are stipulated in the Uniform Industry-Wide Environmental Policy of the Corporation.

GRI 2-25 Inspection visits are carried out as part of the internal safety control system to prevent non-compliance with legislative and regulatory requirements for environmental protection, including inspections of environmental protection at production facilities in the industry; the findings of these inspections provide a basis for managerial decisions aimed at improving environmental safety performance. JSC Atomenergoprom's organisations continue to develop and implement environmental, energy and quality management systems, as well as occupational health and safety management systems. To support the implementation of the Environmental Policy of ROSATOM and its organisations and ensure compliance with environmental legislation, a three-year Comprehensive Plan for the Implementation of the Environmental Policy of ROSATOM and its Organisations has been developed and approved; it includes operational and technical measures to be implemented by the organisations in order to reduce the negative impact of their operations on the environment, among other things.

A five-year industry-wide action plan until 2025 has been developed to minimise the negative impact of ROSATOM on the environment; it is aimed at reducing the negative impact on the atmosphere and the climate impact, reducing emissions and the use of ozone-depleting substances, reducing the negative impact of waste on the environment and the impact on water bodies, preserving biodiversity, and reducing the negative impact on soil, land resources and subsoil; it also includes measures aimed at improving energy efficiency, controlling and monitoring the impact on various components of the environment and indicates expected environmental benefits from these measures.

In order to meet statutory requirements, a greenhouse gas emissions accounting system has been established in the nuclear industry, and steps are being taken for its further improvement. As part of Russia's commitment to comply with the requirements of the Stockholm Convention on Persistent Organic Pollutants, an inventory of equipment and waste containing polychlorinated biphenyls (PCBs) has been compiled in the Company's organisations, and plans have been developed for the decommissioning of such equipment and the transfer of PCB-containing waste for decontamination/disposal. Commissions under ROSATOM's General Inspectorate communicate with representatives of regional departments of federal executive authorities as part of inspections and preventive visits to the organisations. ROSATOM's Public Council as a collective expert body facilitates communication and cooperation between the Company's organisations and the public, non-profit organisations, regional and local governments in Russia and abroad.

In order to minimise environmental risks, in the reporting period, the Company consistently implemented comprehensive preventive measures to prevent potential environmental damage from its operations.

In 2024, enterprises within the scope of consolidation of JSC Atomenergoprom operated steadily; there were no accidents or incidents that could have had a negative impact on the environment.

Financing of environmental measures

MED 10 In 2024, expenditure on environmental protection in JSC Atomenergoprom's organisations totalled RUB 25.47 billion, including expenditure on environmental measures totalling RUB 19.66 billion and fixed asset investment for environmental purposes totalling RUB 5.81 billion.

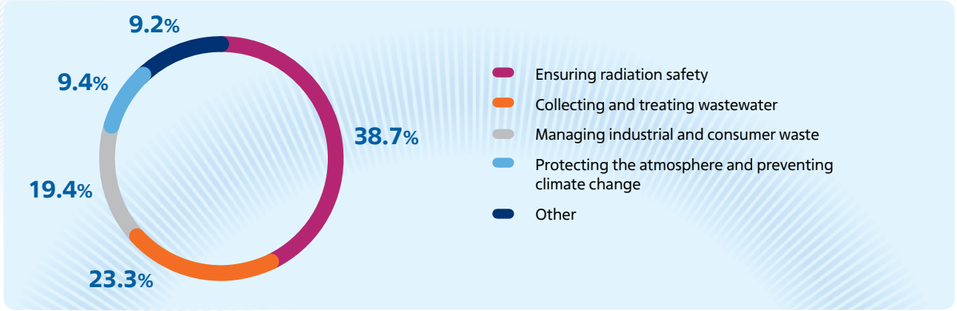
Environmental costs increased by RUB 5.06 billion year on year. The increase in environmental costs was due to the expansion of environmental protection facilities at Novovoronezh NPP, which resulted in a three-fold increase in the share of the average annual cost of environmental protection facilities in the average annual cost of all fixed assets compared to 2023 and, accordingly, a significant increase in costs across all environmental initiatives.

MED 21 **Allocation of JSC Atomenergoprom's environmental costs,** RUB billion

Indicator	2021	2022	2023	2024
Expenditure on environmental measures	11.72	12.69	14.55	19.66
Fixed asset investment for environmental purposes	1.05	4.70	5.87	5.81
Total	**12.77**	**17.39**	**20.42**	**25.47**

The largest portion of expenditure on environmental measures was allocated for ensuring radiation safety (38.7%).

Environmental cost structure



A major part of fixed asset investment was allocated for the protection and sustainable use of water resources (62.7%) and the protection of the atmosphere (32.3%).

JSC Atomenergoprom's organisations account for 1.6%[1] of the total amount of environmental investment in the Russian Federation.

Environmental charges and fines

In 2024, charges for the negative environmental impact totalled RUB 69.5 million, including charges for allowable emissions and discharges of pollutants, disposal of industrial and consumer waste totalling RUB 47.2 million (67.9%), and charges for excess emissions and discharges totalling RUB 22.3 million (32.1%).

Charges for the negative environmental impact, RUB million

Indicator	2021	2022	2023	2024
Charges for allowable emissions (discharges) of pollutants (disposal of industrial and consumer waste), total, including:	**28.9**	**25.3**	**37.1**	**47.2**
– into water bodies	3.8	2.3	3.3	8.2
– into the atmosphere	2.4	3.5	4.9	5.7
– for the disposal of industrial and consumer waste	22.7	19.5	28.9	33.3
Charges for excess emissions (discharges) of pollutants (disposal of industrial and consumer waste), total, including:	**60.3**	**69.6**	**26.7**	**22.3**
– into water bodies	7.8	23.9	12.2	10.8
– into the atmosphere	8.6	0.8	6.6	6.9
– for the disposal of industrial and consumer waste	43.9	44.9	7.8	4.6
Charges for allowable and excess emissions (discharges) of pollutants (disposal of industrial and consumer waste), total	**89.2**	**94.9**	**63.8**	**69.5**

1. Based on data provided in the Government Report on the Status and Protection of the Environment of the Russian Federation in 2023.

GRI 2-27 In 2024, government supervision agencies in the field of environmental protection detected 16 violations in organisations within the scope of consolidation of JSC Atomenergoprom, for which they imposed administrative penalties in the form of fines. Fines levied on JSC Atomenergoprom's organisations for environmental non-compliance totalled RUB 2.5 million.

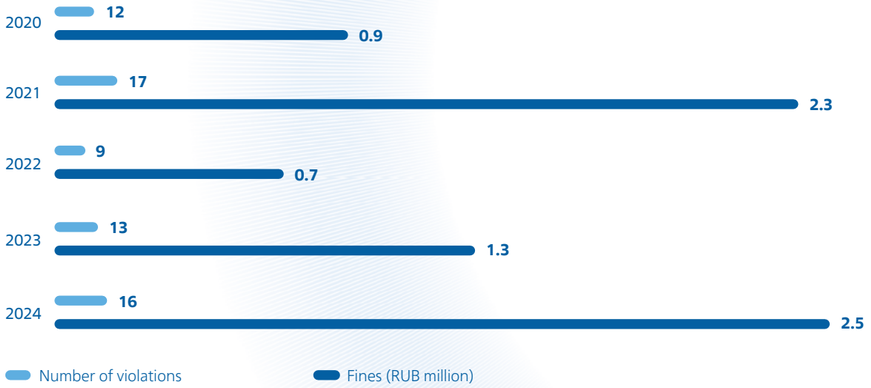
The number of administrative violations detected during the reporting period was 1.23 times (23.1%) higher than in 2023, while the total amount of fines increased by a factor of 1.92 (92.3%).

No administrative penalties in the form of administrative suspension of operations were imposed on JSC Atomenergoprom's organisations in 2024; government supervision agencies did not put forward any claims for environmental damage during the reporting period; violations were local in scale and did not pose a major threat to public health.

An increase in the total amount of fines in 2024 was due to stricter requirements of environmental legislation and an increase in the number of environmentally relevant organisations managed by JSC Atomenergoprom.

Changes in the number of violations of environmental legislation by the Company's organisations and the amount of fines between 2020 and 2024 are shown in the figure below.

Number of violations of environmental legislation by the Company's organisations and the amount of fines between 2020 and 2024



Pollutant emissions into the atmosphere

GRI 305-7
MED 19 In 2024, pollutant emissions into the atmosphere totalled 45,000 tonnes; the pollutant capture rate reached 72.2%. In 2024, JSC Atomenergoprom's organisations accounted for 0.2% of the total pollutant emissions in the Russian Federation.[1]

1. Based on data provided in the Government Report on the Status and Protection of the Environment of the Russian Federation in 2023.

Pollutant emissions into the atmosphere, '000 tonnes[1]

Emissions	2021	2022	2023	2024
Total, including:	**30.9**	**33.0**	**45.2**	**45.0**
Particulate emissions	11.8	10.1	9.7	8.7
NO_x emissions	6.2	8.8	19.1	24.7
SO_2 emissions	9.0	9.8	9.8	4.6
CO emissions	2.4	2.8	5.1	5.5
Hydrocarbon emissions, including:	1.2	1.2	1.1	1.2
Methane emissions	*0.1*	*0.1*	*0.2*	*0.2*
Volatile organic compounds	*0.9*	*0.8*	*0.7*	*0.8*
Other hydrocarbons	*0.2*	*0.3*	*0.2*	*0.2*
Other gases and liquids	0.3	0.3	0.4	0.2

Pollutant emissions into the atmosphere decreased slightly compared to 2023.

Pollutant emissions from individual groups of pollution sources, '000 tonnes

Substance	From fuel combustion for electricity and heat generation	From production and other processes
Particulate matter	7.9	0.87
NO_x	23.6	1.15
SO_2	4.1	0.50
CO	4.5	1.04
Hydrocarbons, including volatile organic compounds (excluding methane)	0.013	0.97

GRI 305-6 ### Emissions of major ozone-depleting substances, tonnes of chlorofluorocarbon-11 equivalent[2]

Substance	2021	2022	2023	2024
Dichlorodifluoromethane (Freon 12)	72.24	14.05	16.58	3.812
Chlorodifluoromethane (Freon 22)	0.05	0.13	0.09	0.09
Chlorotrifluoromethane (Freon 13)	164.21	123.75	0.11	0.00
Tetrafluoromethane (Freon 14)	6.24	0.24	0.22	0.17
Total	**242.74**	**138.17**	**17.00**	**4.072**

1. Data on pollutant emissions provided by the Company's organisations are based on calculations or instrumental assessment techniques
2. The data are presented taking into account the ozone depletion potential of substances under the Montreal Protocol on Substances that Deplete the Ozone Layer. The calculations have been made for those ozone-depleting substances that are reported in Form 2-TP (Air) as specific pollutants.

Ozone-depleting substances (ODS) are used as a chemical agent for chemical tests in laboratories, for the filling and refilling of compressors, air conditioning units and industrial air conditioners, and in refrigeration equipment in enterprises.

In 2024, emissions of ozone-depleting substances decreased as a result of direct improvements and a reduction in the duration of a production process contributing to ODS emissions in an enterprise in the Fuel Division.

Initiatives to reduce harmful emissions into the air

Key measures implemented by JSC Atomenergoprom's organisations in 2024 included the following:

- In the Infrastructure Solutions Division (Seversk), a technical upgrade of the ash collector of boiler unit No. 13 at the CHPP was carried out, which will help improve the performance of gas scrubbers to 99%;
- In the Power Engineering Division (the Pilot and Demonstration Engineering Centre), the power supply system was upgraded; this involved replacing diesel generators, which has helped reduce the number of stationary sources of emissions and cut annual pollutant emissions by 25%;
- In the Power Engineering Division (Balakovo NPP), ventilation systems were upgraded, which involved replacing iodine filters with charcoal adsorbers; this has made it possible to remove up to 99% of molecular iodine from ventilation air;
- In the Power Engineering Division (Kola NPP), oil cleaning equipment was upgraded at diesel oil and fuel oil storage facilities, which will help reduce emissions of petroleum products by 5%;
- In the Mechanical Engineering Division (Moscow), two gas scrubbers were upgraded at a pilot plant, which has helped reduce abrasive dust emissions by 20%.

GRI 304-2
GRI 304-3

Impact on local flora and fauna

All organisations in the nuclear industry take measures to prevent the degradation of natural ecosystems as a result of their operation.

In 2024, JSC Atomenergoprom's organisations took steps to replenish aquatic wildlife.

In the Power Engineering Division:

- Novovoronezh NPP: juvenile herbivorous fish (silver carp) were released into the cooling pond at power unit No. 5 in order to maintain the ecosystem of the cooling pond, maintain a balance of fish species and curb the growth of phytoplankton;
- Rostov NPP: compensatory measures were taken to replenish wildlife; this involved releasing grass carp and common carp into the Tsimlyansk Reservoir, which will help prevent the Tsimlyansk Reservoir from becoming overgrown with aquatic macrophytes;
- Beloyarsk NPP: the Beloyarsk Reservoir was stocked with bighead carp, grass carp and black carp, which will help preserve the diversity of fish species in the water body and support the safe operation of heat exchangers;
- Smolensk NPP: silver carp were released into the Desnogorsk Reservoir in order to maintain and preserve the diversity of fish species and prevent the cooling pond from becoming overgrown;
- Kalinin NPP: the Udomlya Reservoir was stocked with juvenile black carp, bighead carp and common carp;
- Kursk NPP: the cooling pond of stages 1 and 2 of Kursk NPP was stocked with bighead carp and grass carp, which will help prevent the shoreline around the cooling pond from becoming overgrown and will curb the development of phytoplankton.

In the Mining Division (Republic of Buryatia), juvenile Siberian sturgeon were released into the Selenga River.

In the Fuel Division (Seversk), juvenile nelma were released into the Tom River in order to restore the fish population.

Rehabilitation of disturbed areas

GRI 3-3

At the end of the reporting year, the area of disturbed land in JSC Atomenergoprom's organisations totalled 7,600 hectares.

Breakdown by type of operations that caused land disturbance in 2024, '000 hectares

Type of operations	Area of disturbed land
Mining	0.069
Waste disposal	0.007
Construction	0.080
Other operations	0.013
Total	**0.169**

In 2024, JSC Atomenergoprom's organisations implemented a set of measures to restore the productivity and economic value of disturbed lands and improve the environment. In the reporting year, the area of rehabilitated (restored) land totalled 0.083 hectares.

GRI 304-3

Land rehabilitation in JSC Atomenergoprom's organisations, hectares

Region	2021	2022	2023	2024
Moscow Region	0.10	0.05	0.042	0.034
Novosibirsk Region	0.00	2.45	0.00	0.00
Rostov Region	0.00	0.00	0.045	0.00
Udmurt Republic	0.00	0.00	0.00	0.049
Total	**0.10**	**2.50**	**0.087**	**0.083**

Land rehabilitation was carried out in accordance with approved designs; following its completion, the relevant work completion certificates were prepared.

In 2024, JSC Atomenergoprom's organisations carried out reforestation activities, with the area of restored forests totalling 1,196.95 hectares.

Reforestation activities in JSC Atomenergoprom's organisations, hectares

Region	2022	2023	2024
Kurgan Region	0.00	43.40	100
Republic of Buryatia	166.90	32.10	1,093.78
Leningrad Region	19.67	25.74	0.00
Voronezh Region	15.80	10.75	0.00
Kursk Region	0.00	0.00	3.2
Ulyanovsk Region	0.075	0.015	0.015
Total	**202.3775**	**112.005**	**1,196.995**

GRI 306-1

Industrial and consumer waste management

In 2024, nuclear organisations generated 31.8 million tonnes of industrial and consumer waste. Hazard class 4 and 5 waste (low-hazard and virtually non-hazardous waste) produced during mining accounted for 99.99% of the generated waste. A reduction in waste generation in 2024 was caused by the suspension of operations of JSC Lunnoye due to a change of operating contractor. Industrial and consumer waste generated in JSC Atomenergoprom's organisations accounted for 0.3% of the total volume of waste generation in Russia in 2024.[1]

GRI 306-2

97.5% of the total amount of waste generated and received by JSC Atomenergoprom's organisations was recycled; 0.002% was treated. The weight of transferred waste totalled 366,374 tonnes, including 17,228 tonnes of municipal solid waste (MSW) transferred to regional operators.

1. Based on data provided in the Government Report on the Status and Protection of the Environment of the Russian Federation in 2023.

Industrial and consumer waste management, '000 tonnes

Year	Amount at the beginning of the year	Waste generated and received during the year	Recycling and treatment of generated and received waste		Transferred to third-party organisations	Storage in enterprises	Amount at the end of the year
			Amount	%			
2021	442,195.114	23,503.583	22,966.723	97.7	123.734	430.672	442,841.679
2022	442,538.899	27,795.482	27,351.997	98.4	123.322	303.838	442,835.849
2023	456,880.272	30,779.876	30,225.905	98.2	193.410	359.874	457,144.732
2024	457,245.833	31,780.939	30,992.461	97.5	366.374	415.236	457,446.886

In 2024, JSC Atomenergoprom's organisations did not transport, import, export or process waste classified as 'hazardous' according to Annexes I, II, III, and VIII of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

GRI 306-3
GRI 306-4
GRI 306-5
MED 17
MED 18

Industrial and consumer waste management by hazard class in 2024, '000 tonnes

Waste hazard class	Amount at the beginning of the year	Waste generated and received in the reporting year	Recycling of generated and received waste		Treatment of generated and received waste		Waste transfer to third-party organisations	Waste storage at the sites operated by the Company in the reporting year, '000 tonnes		Amount at the end of the year
			'000 tonnes	%	'000 tonnes	%		Total	Including burial	
Class 1	0.029	0.535	0.000	0.0	0.0	0.0	0.076	0.000	0.000	0.487
Class 2	0.072	0.847	0.000	0.0	0.622	73.4	0.202	0.000	0.000	0.095
Class 3	0.351	5.323	0.044	0.8	0.0	0.0	5.349	0.011	0.000	0.281
Class 4	4,449.823	111.775	5.652	5.1	0.0	0.0	101.063	3.363	2.507	4,452.377
Class 5	452,795.558	31,662.460	30,986.144	97.9	0.0	0.0	259.685	411.862	218.544	452,993.646
Total	**457,245.833**	**31,780.940**	**30,991.84**	**97.5**	**0.622**	**0.002**	**366.375**	**415.236**	**221.051**	**457,446.886**

Emissions and discharges of radionuclides

Emissions of radionuclides

In 2024, the total activity of radionuclides released into the atmosphere by enterprises within the scope of consolidation of JSC Atomenergoprom amounted to $5.25 \cdot 10^{15}$ Bq. Beta-emitting radionuclides accounted for 82.12% of the total activity ($4.31 \cdot 10^{15}$ Bq).

Actual and permitted emissions of radionuclides by enterprises within the scope of consolidation of JSC Atomenergoprom in 2024

Type of radionuclides	Permitted emission, Bq	Actual emission, Bq	Percentage of the permitted level
Alpha-emitting	$5.39 \cdot 10^{15}$	$9.38 \cdot 10^{14}$	17.34
Beta-emitting	$2.46 \cdot 10^{18}$	$4.31 \cdot 10^{15}$	0.18

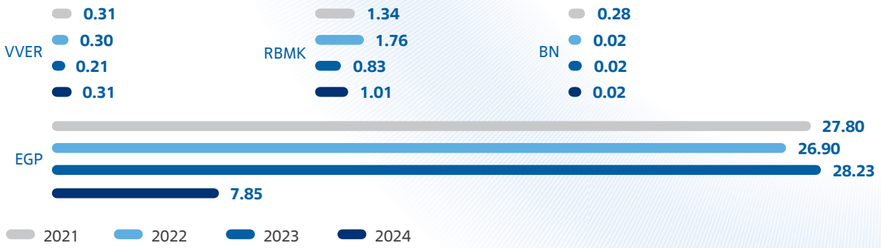
Gas and aerosol emissions from NPPs

Factors behind the exposure of local residents and the environment to radiation from nuclear power plants include emissions of radioactive substances from NPPs into the atmosphere. The radiation impact of emissions of radioactive substances on local residents and the environment is regulated by statutory limits for NPPs established by the Federal Environmental, Industrial and Nuclear Supervision Service (Rostekhnadzor). Emissions of all radionuclides subject to the limits are continuously monitored at all nuclear power plants to make sure that they are within the limits.

In 2024, as in previous years, gas and aerosol emissions from NPPs were significantly lower than the allowable limits set by Rostekhnadzor for emissions of radioactive substances into the atmosphere. Actual emissions of radioactive substances calculated under a conservative accounting procedure did not exceed:

- 7.85% of the permitted amount for inert radioactive gases;
- 31.7% of the permitted amount for tritium;
- 16.4% of the permitted amount for carbon.

Emissions of inert radioactive gases from NPPs by type of reactors, % of the permitted amount



Discharges of radionuclides

In 2024, enterprises within the scope of consolidation of JSC Atomenergoprom discharged 109.00 million m^3 of wastewater with a total activity of $8.04 \cdot 10^{13}$ Bq into surface water bodies.

Discharge of radionuclide-containing wastewater into the basins of seas and oceans in 2024, million m^3

Contaminated sites and their remediation

At year-end 2024, the area of contaminated sites in enterprises within the scope of consolidation of JSC Atomenergoprom totalled 24.88 sq. km, including:

- 24.03 sq. km at industrial sites;
- 0.75 sq. km in buffer areas;
- 0.1 sq. km in radiation control areas.

Radioactive contamination is caused mainly by caesium-137 and strontium-90 nuclides, as well as natural uranium and its decay products.

In 2024, enterprises within the scope of consolidation of JSC Atomenergoprom did not rehabilitate contaminated sites.

Radiation impact on the population and the environment

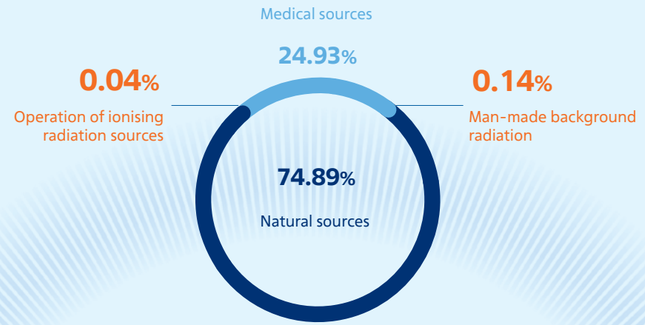
According to the findings of radiation and hygienic certification in the Russian Federation for 2023,[1] average additional radiation exposure per person of the population at the locations of nuclear enterprises associated with their day-to-day operation did not exceed 1.0% of the basic dose limit for the population set in the NRB-99/2009 Standard (1 mSv on average for any consecutive five years).

According to the Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor),[2] the key factors behind radiation exposure of the population are natural and medical sources of ionising radiation. In 2023, the average contribution of natural sources of ionising radiation to the total radiation exposure of local residents across Russia stood at 74.9%, while medical sources accounted for 24.9%. The contribution of enterprises using nuclear technology is estimated at a fraction of a percent (0.04%). The average contribution of medical sources to radiation exposure of local residents across the Russian Federation increased by approximately 2.7% year on year.

In 2023, average total radiation exposure of local residents from all radiation sources across the Russian Federation stood at 4.45 mSv per resident.

1. Findings of radiation and hygienic certification of organisations and areas presented by the State Research Centre Burnasyan Federal Medical Biophysical Centre of the FMBA of Russia.
2. Data book: Radiation Levels in the Russian Federation in 2023, Ramzayev Saint Petersburg Research Institute of Radiation Hygiene, Saint Petersburg, 2024.

Breakdown of radiation exposure of the population, %



Contribution of NPPs to measurable background radiation

The gamma radiation ambient dose equivalent rate (ADER) is monitored continuously at the locations of NPPs, and radiation levels are monitored on a regular basis in designated areas, namely in buffer areas and radiation control areas.

The analysis of findings of ADER monitoring and the monitoring of radiation levels in various components of the environment in buffer areas and radiation control areas shows that radiation levels at the locations of NPPs were within the range of natural background radiation and remained unchanged compared to previous years. This confirms that in the course of normal operation, NPPs make no significant impact on local residents or the environment.

GRI 3-3
GRI 303-1
GRI 303-4

Water use

The nuclear industry is a major water user. The systematic approach to water use management is underpinned by water accounting data covering all water resources used in the industry (surface water, groundwater, reused and recycled water). Furthermore, industrial facilities are designed and their locations are selected with due regard for uneven geographical distribution of natural water resources. Wastewater quality assurance approaches and methods used by the Company are based on scientific research and are aimed at preserving the natural water quality and minimising pollutant discharges into water bodies, thus ensuring the sustainability of water resources in the regions of operation.

Water withdrawal and discharge for the needs of the Company's organisations is regulated by water use agreements and fully complies with prescribed limits.

Sustainable use of water resources is achieved through:

- The use of water recycling and reuse systems;
- Wastewater treatment using mechanical, biological, and physical and chemical methods;
- Minimising freshwater consumption in regions with access to seawater;
- Continuous monitoring of wastewater quality and compliance with statutory limits;
- The implementation of investment projects focused on the construction and renovation of wastewater treatment facilities and water supply networks.

In 2023, water withdrawal from natural sources by JSC Atomenergoprom's organisations made up 8.6% of the total water withdrawal in the Russian Federation.[1] The main water consumers among the Company's organisations are Leningrad NPP and Kola NPP (73.6% of the total water withdrawal).

In the reporting year, water withdrawal by JSC Atomenergoprom's organisations totalled 5,960.7 million m³, which is 421.3 million m³ more than in 2023. This was caused by an increase in seawater consumption at Leningrad NPP due to increased electricity output at power units No. 3 and 4 (equipped with RBMK-1000 reactors), which have a once-through cooling system, rather than power units equipped with VVER-1200 reactors, which have a closed-circuit cooling system with evaporative cooling towers.

GRI 303-3

Total water withdrawal, million m³

Source	2021	2022	2023	2024
Seawater	2,665.7	2,926.3	2,767.6	3,086.7
Fresh surface water, including rivers, marshes and lakes	2,140.1	2,441.6	2,633.8	2,723.7
Including in regions with the scarcest water resources	–	–	*83.5*	*82.5*
Groundwater	65.8	69.3	113.6	116.3
Including in regions with the scarcest water resources	–	–	*13.0*	*12.6*
Rainwater	2.1	2.0	1.9	4.7
Third-party water	9.4	8.7	22.5	29.3
Total	**4,883.1**	**5,447.9**	**5,539.4**	**5,960.7**
Including in regions with the scarcest water resources	–	–	*96.6*	*95.1*

MED 14

Volume of recycled and reused water, million m³

Indicator	2021	2022	2023	2024
Total volume of recycled and reused water, million m³	37,781.0	37,572.7	37,696.7	37,374.3
Water withdrawal, million m³ (% of the volume of recycled and reused water)	4,883.1 (12.9%)	5,447.9 (14.5%)	5,539.4 (14.7%)	5,960.7 (15.8%)
Total, million m³	**42,664.1**	**43,020.6**	**43,236.1**	**43,335.0**
Volume of recycled and reused water as a percentage of water withdrawal volume, %	773.7	689.7	680.5	627.0

The Company's regions of operation include regions with the smallest total amount of water resources, namely the Kursk and Kurgan Regions (according to the Government Report on the Status and Use of Water Resources of the Russian Federation in 2020).

The volume of water used by JSC Atomenergoprom's organisations for their own needs in 2024 totalled 5,862.9 million m³, which is 430.6 million m³ more than in 2023. This was due to an increase in seawater consumption at Leningrad NPP as a result of increased electricity output.

1. Based on data provided in the Government Report on the Status and Protection of the Environment of the Russian Federation in 2023.

MED 13 **Water consumption for own needs,** million m³

Type of consumption	2021	2022	2023	2024
Drinking and sanitary purposes	25.8	27.1	37.2	38.2
– *Including in regions with the scarcest water resources*	–	–	1.3	1.3
Operational needs	4,759.7	5,323.8	5,363.9	5,783.4
– *Including in regions with the scarcest water resources*	–	–	30.9	90.4
Other types	33.2	30.9	31.2	41.3
– *Including in regions with the scarcest water resources*	–	–	1.2	1.2
Total	**4,818.7**	**5,381.8**	**5,432.3**	**5,862.9**

GRI 303-2

Water discharge

All of ROSATOM's organisations discharge wastewater within the established limits and have the relevant permits. Wastewater discharge by all of the Company's organisations is regulated by the relevant permits and is within the established limits taking into account the profile of the receiving water body and its physical and chemical properties. Pollutant content in wastewater is monitored by in-house laboratories as part of industrial environmental control; compliance with statutory limits is confirmed as part of monitoring and supervision by the Federal Service for Supervision of Natural Resources. In some cases, water from natural water sources does not meet quality standards, and an organisation withdraws water for its own needs that has already been contaminated. In these cases, water is also treated before discharge to ensure compliance with statutory limits, where possible.

GRI 303-4
MED 15

In 2024, wastewater discharge by JSC Atomenergoprom's organisations totalled 4,969.0 million m³ (including 34.0 million m³ in regions with the scarcest water resources), with clean water compliant with regulatory requirements accounting for 96.2% of the total volume, while the share of treated wastewater compliant with regulatory requirements and contaminated wastewater was 0.5% and 3.3% respectively.

In the structure of wastewater discharge, the main destinations include seas (3,027.8 million m³, or 60.9%), lakes (1,381.9 million m³, or 27.8%) and rivers (467.6 million m³, or 9.4%).

Wastewater discharge increased by 414.5 million m³ compared to 2023 due to an increase in seawater consumption at Leningrad NPP.

In the reporting year, discharge of treated wastewater compliant with regulatory requirements totalled 23.8 million m³, of which 46.4% was treated using the biological method, 0.4% was treated using the physical and chemical method, and 53.2% was treated using the mechanical method.

Contaminated wastewater discharge by JSC Atomenergoprom's organisations accounted for 1.5% of the total volume of discharges in Russia in 2024.[1]

Total wastewater discharge, million m³

MED 15

Water category	2021	2022	2023	2024
Clean water compliant with regulatory requirements	4,052.7	4,619.8	4,368.5	4,778.6
Treated wastewater compliant with regulatory requirements	22.6	17.3	23.2	23.8
Contaminated wastewater	135.2	170.3	162.8	166.6
Total	**4,210.5**	**4,807.4**	**4,554.5**	**4,969.0**

1. Based on data provided in the Government Report on the Status and Protection of the Environment of the Russian Federation in 2023.

Pollutant content in wastewater, kg

Pollutant	2021	2022	2023	2024
Chemical oxygen demand	13,615,208.852	5,560,506.694	242,822.899	24,540,248.716
Suspended matter	1,670,753.000	2,455,203.000	809,254.000	2,758,897.000
Phosphates (phosphorus contained)	26,401.000	29,919.000	30,217.000	49,004.000
Hexavalent chromium	24.898	54.599	248.882	247.506
Trivalent chromium	42.754	112.906	426.153	581.752
Manganese	605.761	616.855	342.004	475.050
Iron	21,164.468	32,691.304	13,208.045	198,452.554
Nickel	52.203	61.860	143.713	199.672
Copper	365.581	525.250	196.332	454.998
Zinc	493.985	640.017	708.589	826.227
Molybdenum	457.754	622.000	467.168	191.610
Lead	3.074	4.460	0.001	14.707

Initiatives to reduce discharges of harmful substances into water bodies

In 2024, an enterprise in the Mechanical Engineering Division (Moscow Region) upgraded wastewater treatment facilities No. 1, 2 and 3, which will enable a 35% increase in the efficiency of removal of suspended solids and petroleum products from industrial wastewater and storm water runoff.

GRI 3-3

Improving energy efficiency

Energy conservation is an important prerequisite for the efficient use of JSC Atomenergoprom's energy resources, making it more competitive and reducing the negative impact on the environment.

An energy conservation and energy efficiency improvement programme for the period from 2023 to 2027 is being implemented in the Russian nuclear industry.

Results in 2024[1]

In 2024, energy costs incurred by the Company's organisations (under comparable conditions, in 2020 prices) totalled RUB 26.19 billion, including:

- Mining Division: RUB 3.10 billion;
- Mechanical Engineering Division: RUB 1.03 billion;
- Power Engineering Division: RUB 2.30 billion.

1. According to the reports of nuclear organisations in the Corporation's information system (the Automated Energy Efficiency Management System, hereinafter referred to as the AEEMS).

MED 22

Energy consumption by JSC Atomenergoprom in physical terms (reduction against 2020 as the base year)

Division/complex	Heat		Water		Electricity		Other (gas, fuel oil, etc.)	
	Actual consumption during the period under comparable conditions, '000 Gcal	%	Actual consumption during the period under comparable conditions, '000 m³	%	Actual consumption during the period under comparable conditions, '000 kWh	%	Actual consumption during the period under comparable conditions, tonnes of fuel equivalent	%
Mining Division	606.68	-1.34	9,352.10	2.74	461,700.59	4.46	680,805.34	3.76
Mechanical Engineering Division	48.90	3.18	1,366.87	38.61	159,117.56	2.40	59,376.34	12.60
Power Engineering Division	387.81	7.61	1,184,184.10	0.59	963,585.47	3.11	-	-
Other	2,332.38	3.65	571,919.45	0.09	3,192,752.38	2.55	1,847,301.48	2.72
Total across JSC Atomenergoprom	**3,375.77**	**3.27**	**1,766,822.52**	**0.49**	**4,777,156.00**	**2.84**	**2,587,483.16**	**3.24**

Energy cost savings in JSC Atomenergoprom between 2021 and 2024 (against 2020 as the base year, excluding VAT)

2020		2021		2022		2023	
RUB million	%	RUB million	%	RUB million	%	RUB million	%
231.98	0.96	336.67	1.25	558.53	2.08	690.19	2.57

In 2024,[1] specific fuel and energy consumption in relation to revenue in the Company's organisations totalled 3.69 tonnes of fuel equivalent per RUB 1 million excluding VAT, including:

Specific fuel and energy consumption in relation to revenue in 2023 and 2024, tonnes of fuel equivalent per RUB 1 million excluding VAT

Division/complex	2023	2024
Mining Division	27.91	26.64
Mechanical Engineering Division	1.00	0.65
Power Engineering Division	0.34	0.31
Other	0.09	0.08
Total across JSC Atomenergoprom	**4.20**	**3.69**

1. The indicator 'Specific fuel and energy consumption in relation to revenue, tonnes of fuel equivalent per RUB 1 million excluding VAT' is calculated starting from the data for 2023 in accordance with Order No. 1/933-P of ROSATOM dated 23 May 2023.

In 2024,[1] specific fuel and energy consumption per unit of output in JSC Atomenergoprom's organisations in individual areas of business totalled:

- Electricity generation (in the non-nuclear segment of the industry): 0.28 tonnes of fuel equivalent per 1,000 kWh (Mining Division: 0.32 tonnes of fuel equivalent per 1,000 kWh; JSC RIR: 0.27 tonnes of fuel equivalent per 1,000 kWh);
- Heat generation: 164.2 tonnes of fuel equivalent per 1,000 Gcal (Mining Division: 183.28 tonnes of fuel equivalent per 1,000 Gcal; Infrastructure Solutions Division: 162.79 tonnes of fuel equivalent per 1,000 Gcal);
- Uranium mining:[2] 13.9 tonnes of fuel equivalent per tonne;
- Coal mining: 2.66 tonnes of fuel equivalent per 1,000 tonnes.

JSC Atomenergoprom's organisations have implemented most elements of an energy management system compliant with the ISO 50001 international standard (organisations in the Power Engineering and Fuel Divisions have obtained international certificates; other organisations have implemented individual elements of the system).

1. The indicator 'Specific fuel and energy consumption per unit of output, tonnes of fuel equivalent per unit of output' is calculated starting from the data for 2024.
2. Using the in-situ leaching technique.

Contribution of the nuclear industry to ensuring safety, reliability and self-reliant technological development

JSC Atomenergoprom makes an important contribution to enhancing Russia's technological sovereignty by ensuring safety and reliability and supporting innovative development in key industries. The Company is actively introducing state-of-the-art digital and energy-efficient solutions, helping to make Russian industry more competitive globally.

The Infrastructure Solutions Division is implementing the Smart City technological solutions; this involves introducing digital services for managing the operation of civilian facilities based on the Infrastructure IoT Platform software.

The platform has been rolled out in the following constituent entities of the Russian Federation:

- Moscow: the Integrated Office Building Control Centre;
- Obninsk, Belgorod and the Belgorod Region, Smolensk, Balakovo: the Integrated Utility Control Centre, a system for collecting readings from meters installed in apartment blocks and controlling their heating systems.

The use of the platform helps conserve energy resources by controlling temperature based on automated modelling taking into account weather forecasts.

The accident response time has been shortened. In Belgorod, the Alerts function has been incorporated in the IoT platform and is used to predict failures, which helps respond to pre-accident situations, reduce the loss of energy resources and achieve savings of up to 20% on repairs of faulty equipment.

The Mining Division continues to implement the project to produce functional LED lamps[1] and introduce them in the industry. The lamps combine lighting control, fault diagnostic and energy consumption metering features with additional capabilities for information collection and exchange tailored to the purposes and tasks of a specific industrial enterprise, including receiving and transmitting data from external sources, equipment and personnel (monitoring of production processes through connected sensors (including standalone sensors) monitoring the temperature of the surrounding equipment or indoor temperature, sensors monitoring the presence of personnel and connected to smartphones; connection with devices or equipment that are within the range for data exchange).

These lighting control systems are used in the industry and are suggested for use in organisations of the Mining Division between 2025 and 2030.

Number of ROSATOM's organisations covered by the AEEMS

1. Based on the basic LED lamp designed by an enterprise in the Mining Division and introduced in the industry.

Plans for 2025 and for the medium term

In 2024, the energy conservation target was 0.8% higher that the target set as part of the Government Programme 'Development of the Nuclear Power and Industry Complex' (DNPIC); accordingly, the following differentiated energy conservation targets were set for 2025 and included in the KPI maps of executives of the Company's Divisions/complexes (against 2020 as the baseline), providing for outperformance against the targets set in the DNPIC Programme for 2025:

Division/complex	Energy conservation targets for 2025 (%)
Mining Division	2.30
Mechanical Engineering Division	3.00
Power Engineering Division	0.55
Other	from 1.1 to 6.30

In the medium term, the Company will also continue to take steps to meet the requirements of the DNPIC programme until 2030.[1]

In addition, between 2025 and 2030, the Company plans to:

- Monitor progress on scheduled energy audits in organisations in the industry;
- Monitor updates to energy conservation programmes approved by organisations with energy costs exceeding RUB 50 million per year for the next five years following the completion of the current programmes;
- Assess the outcomes of energy conservation measures implemented by the organisations (assign industry ratings) on an annual basis;
- Maintain the energy efficiency management and energy management system implemented in the industry and continuously improve its performance;
- Achieve additional synergy between energy conservation initiatives and the Company's efforts to improve sustainability maturity in the industry;
- Update the Company's scope of reporting;
- Continuously improve the functionality of the AEEMS.

1. A new version of the DNPIC Programme with the planning horizon until 2030 was approved in 2024; it involves annually increasing energy savings to 1% compared to 2025 between 2026 and 2028.

APPENDICES

APPENDIX 1. REPORT PROFILE

The Public Annual Report (hereinafter referred to as the Report) of Joint-Stock Company Atomic Energy Power Corporation (hereinafter referred to as JSC Atomenergoprom or the Company) for 2024 provides an integrated account of the Company's strategy and key financial, economic and operating results of JSC Atomenergoprom for 2024. The Report also outlines the Company's health, safety and environmental performance, its contribution to the development of the towns and cities where nuclear facilities are located, implementation of the social policy and other aspects of sustainable development.

This Report covers the performance of the Company and its organisations within the scope of consolidation in accordance with IFRS (hereinafter referred to as the organisations of JSC Atomenergoprom) for the period from 1 January through 31 December 2024. It also discloses some information on and the performance of the Russian nuclear industry as a whole. GRI disclosures that belong to the Environmental category are reported for all significant organisations within the scope of JSC Atomenergoprom which provide information on their environmental performance using corporate reporting forms (154 organisations, including legal entities and branches).

GRI 2-3

JSC Atomenergoprom publishes its reports on a yearly basis. The previous annual report was published on 27 May 2024. The publication date of the Annual Report for 2024 is no later than 31 May 2025.

The reporting period for financial reporting coincides with the reporting period for the annual report.

GRI 2-14

The annual report of JSC Atomenergoprom is approved by the Board of Directors of JSC Atomenergoprom.

Standards and regulatory requirements

The Report has been prepared in accordance with the following documents:

- The Uniform Industry-Wide Policy of State Atomic Energy Corporation Rosatom on Public Reporting and the Uniform Industry-Wide Methodological Guidelines (Standard) on Public Reporting of State Atomic Energy Corporation Rosatom and Its Organisations;
- The Global Reporting Initiative Sustainability Reporting Standards: this Report has been prepared in accordance with the GRI Standards;
- Federal Law No. 208-FZ on Joint-Stock Companies dated 26 December 1995;
- Regulations of the Bank of Russia No. 714-P on Disclosure of Information by Issuers of Issue-Grade Securities dated 27 March 2020.

GRI 3-1

Process for determining the materiality of disclosures

Material topics to be disclosed in the Report were identified in several stages as part of the process of determining material topics to be disclosed in ROSATOM's public report for 2024 and their decomposition in the Company's public reports. Following an analysis of the business context, ROSATOM's Communications Department identified the impacts (economic, environmental and social) made by ROSATOM and JSC Atomenergoprom. Stakeholders and experts assessed these impacts, which were then prioritised by experts and users of information. Based on this, the Company formulated the following material topics to be disclosed in the Report:

GRI 3-2

1. Contribution to financial stability and the achievement of Russia's national goals.
2. Contribution to ensuring reliable energy supply.
3. Contribution to ensuring the safety of nuclear facilities and preparedness for emergencies caused by natural disasters/external impacts.
4. Environmental impacts, including the impact on water resources.
5. Promoting the well-being of our employees.
6. Developing the regions and countries of operation and improving the standard of living.

GRI 2-5

Verification of reporting information

Reporting information was certified as accurate and reliable by an independent auditor which certifies the annual financial statements. Non-financial reporting information was certified as accurate and reliable by an independent auditor which assured compliance of the Report with the GRI Standards.

Disclaimer

The Report contains information about the Company's medium- and long-term objectives and initiatives. The objectives are forward-looking, and their actual achievement will depend, among other things, on a number of economic, political and legal factors beyond the Company's control (the global financial, economic and political environment; situation on the key markets; amendments to the tax, customs and environmental legislation, etc.). Therefore, actual performance in the future years may differ from the forward-looking statements contained herein.

APPENDIX 2. GRI CONTENT INDEX

Statement of use	JSC Atomenergoprom has reported in accordance with the GRI Standards for the period from 1 January through 31 December 2024.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	Not applicable

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
General disclosures					
GRI 2: General Disclosures 2021	2-1 Organisational details	Section 'Company Profile', p. 6 Section 3.1. 'International Business', p. 52 Section 'Contact Details' p. 240 Nature of ownership: publicly owned.[1]			
	2-2 Entities included in the organisation's sustainability reporting	JSC Atomenergoprom's Report covers all organisations included in its financial statements under IFRS. Material subsidiaries included in the IFRS financial statements are listed in note 39 to the financial statements, which are available on the Company's website.			
	2-3 Reporting period, frequency and contact point	Appendix 1, p. 215 Section 'Contact Details', p. 240			
	2-4 Restatements of information	Financial and economic indicators of Atomenergoprom and its Divisions for 2023 have been recalculated.			

1. With regard to 100% of ordinary shares that are voting shares.

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 2: General Disclosures 2021	2-5 External assurance	Appendix 1, p. 216 The Company's policy with regard to seeking external assurance is set out in the Uniform Industry-Wide Methodological Guidelines on Public Reporting of ROSATOM and Its Organisations. The external assurance report is available on the website at https://report.rosatom.ru/en/aep			
	2-6 Activities, value chain and other business relationships	Section 'JSC Atomenergoprom Today', p. 10 Section 2.3. 'Markets Served by Atomenergoprom', p. 37 Section 5.2. 'Business Diversification', p. 90 Section 7.1. 'Corporate Governance', p. 114			
	2-7 Employees	Section 8.1. 'Personnel Management', p. 144 Appendix 4, p. 235			
	2-8 Workers who are not employees	Section 8.1. 'Personnel Management', p. 145	Types of work performed by workers who are not employees	Lack of data on the types of work	The Company does not plan to obtain this information.
	2-9 Governance structure and composition	Section 7.1. 'Corporate Governance', pp. 111, 112 There are no representatives of under-represented social groups or stakeholders among members of JSC Atomenergoprom's Board of Directors.			
	2-10 Nomination and selection of the highest governance body	Section 7.1. 'Corporate Governance', p. 111			
	2-11 Chair of the highest governance body	The Chair of the Board of Directors is not a senior executive of the Company (as at 31 December 2024).			
GRI 2: General Disclosures 2021	2-12 Role of the highest governance body in overseeing the management of impacts	Section 7.1. 'Corporate Governance', p. 112			
	2-13 Delegation of responsibility for managing impacts	Section 7.1. 'Corporate Governance', p. 113 For information on the allocation of responsibility for impact management in JSC Atomenergoprom, see the Annual Report for 2023, section 2.2. 'Sustainable Development Management'.			
	2-14 Role of the highest governance body in sustainability reporting	Appendix 1, p. 215			
	2-15 Conflicts of interest	Competences of the Board of Directors related to preventing conflicts of interest are set out in paragraph 85 of JSC Atomenergoprom's Charter. None of the Board members own the Company's shares. Information on related-party transactions is provided in paragraph 36 of IFRS consolidated financial statements for 2024, p. 116.			
	2-16 Communication of critical concerns	Section 7.1. 'Corporate Governance', p. 113			
	2-17 Collective knowledge of the highest governance body	Members of the Board of Directors did not undergo sustainable management training in the reporting year.			
	2-18 Evaluation of the performance of the highest governance body	Section 7.1. 'Corporate Governance', p. 111			
	2-19 Remuneration policies	Section 7.1. 'Corporate Governance', p. 115			

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 2: General Disclosures 2021	2-20 Process to determine remuneration	Section 7.1. 'Corporate Governance', p. 115 Consultants are not involved in determining remuneration.			
	2-21 Annual total compensation ratio	The indicator has not been disclosed.	Ratio of the annual total compensation for the organisation's highest-paid individual to the median annual total compensation for all employees	The information is not available	Detailed data on employees of the Corporation's subsidiaries are not available. No methodology for calculating the indicator has been approved. In 2025, the Company plans to examine the possibility of data consolidation for the calculation of the indicator.
	2-22 Statement on sustainable development strategy	Section 'Message from the Management', p. 8			
	2-23 Policy commitments	Section 2.1. 'Business Strategy until 2030', p. 25 Section 2.2. 'Sustainable Development Management', pp. 28, 34 Section 8.1. 'Personnel Management', p. 159 For information on the levels at which the policy commitments were approved within the organisation, see the Annual Report for 2023, section 2.2. 'Sustainable Development Management'.			
	2-24 Embedding policy commitments	Section 2.2. 'Sustainable Development Management', p. 34			
	2-25 Processes to remediate negative impacts	Section 7.5. 'Internal Control System', p. 140 Section 8.1. 'Personnel Management', p. 160 Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', p. 188 Section 9.2. 'Environmental Safety', p. 195			
	2-26 Mechanisms for seeking advice and raising concerns	Section 8.1. 'Personnel Management', p. 160 Section 'Contact Details', p. 240			
	2-27 Compliance with laws and regulations	Section 9.2. 'Environmental Safety', p. 198 There were no significant instances of non-compliance with laws and regulations, i.e. instances that resulted in administrative suspension of JSC Atomenergoprom's operations, in 2024.	Information on fines (other than fines for environmental non-compliance)	The information is not available	Government and corporate statistical reports prepared by ROSATOM provide no statistics on this topic. The Company does not plan to obtain this information.
	2-28 Membership of associations	Section 3.1. 'Promoting Technologies on Foreign Markets', p. 53 Membership in associations is maintained through the participation of organisations managed by JSC Atomenergoprom. For example, the holding company of the Mechanical Engineering Division is a member of the Russian Union of Employers in the Nuclear Industry, Power and Science; the All-Russian Public Organisation 'The Union of Machine Engineers of Russia'; the Self-Regulating Organisation Association of Building Organisations in the Nuclear Branch 'SOJUZATOMSTROJ', etc.			
	2-29 Approach to stakeholder engagement	Section 8.3. 'Stakeholder Engagement', p. 175 See also the Annual Report of JSC Atomenergoprom for 2023, p. 123			
	2-30 Collective bargaining agreements	Section 8.1. 'Personnel Management', p. 158			
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Appendix 1, p. 216			
	3-2 List of material topics	Appendix 1, p. 216			

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
Contribution to financial stability and the achievement of Russia's national goals					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 2.2. 'Sustainable Development Management', p. 28 Section 5.2. 'Business Diversification', p. 90 Section 6.1. 'Uniform Digital Strategy', p. 98 Section 6.2. 'Participation in Digitisation in Russia', p. 100 Section 8.2. 'Developing the Regions Where Nuclear Facilities Are Located', p. 162			
GRI 203: Indirect Economic Impacts 2016	203-2 Significant indirect economic impacts	Section 8.2. 'Developing the Regions Where Nuclear Facilities Are Located', p. 170			
Contribution to ensuring reliable energy supply					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 3.1. 'International Business', p. 52 Section 9.2. 'Environmental Safety', p. 209			
Environmental impacts, including the impact on water resources					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 9.2. 'Environmental Safety', pp. 195, 201, 206			
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	Section 9.2. 'Environmental Safety', p. 206			
	303-2 Management of water discharge-related impacts	Section 9.2. 'Environmental Safety', p. 208			
	303-3 Water withdrawal	Section 9.2. 'Environmental Safety', p. 207	In terms of breakdown into freshwater and other water	The information is not available	Lack of information in government statistical reporting forms
GRI 303: Water and Effluents 2018	303-4 Water discharge	Section 9.2. 'Environmental Safety', pp. 206, 208	In terms of breakdown into freshwater and other water	The information is not available	Lack of information in government statistical reporting forms
	303-5 Water consumption	Water consumption calculated in accordance with the methodology described in the GRI Standards (total water withdrawal minus water discharge) totals 991.7 million m^3, including 61.1 million m^3 in areas with water stress.			
GRI 304: Biodiversity 2016	304-2 Significant impacts of activities, products and services on biodiversity	Section 9.2. 'Environmental Safety', p. 200 For details, see the Annual Report of JSC Atomenergoprom for 2023, pp. 180–182.			
	304-3 Habitats protected or restored	Section 9.2. 'Environmental Safety', pp. 200, 202 Information disclosure is aligned with the land rehabilitation (remediation) practices established by Russian legislation. There are no partnerships with third parties to protect or restore habitat areas distinct from where the organisation has overseen and implemented restoration or protection measures.			
GRI 305: Emissions 2016	305-6 Emissions of ozone-depleting substances (ODS)	Section 9.2. 'Environmental Safety', p. 199			
	305-7 Nitrogen oxides (NO_x), sulphur oxides (SO_x), and other significant air emissions	Section 9.2. 'Environmental Safety', p. 198 The Company does not emit persistent organic pollutants.	Emissions of hazardous air pollutants (HAP)	The information is not available	Data on HAP emissions cannot be obtained from government statistical reporting forms.

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	Section 9.2. 'Environmental Safety', p. 202			
	306-2 Management of significant waste-related impacts	Section 9.2. 'Environmental Safety', p. 202			
	306-3 Waste generated	Section 9.2. 'Environmental Safety', p. 203			
	306-4 Waste diverted from disposal	Section 9.2. 'Environmental Safety', p. 203 Disclosures 306-4 and 306-5 are provided in part, with no breakdown by waste management methods stipulated in the GRI Standards. Data on waste management are disclosed with a breakdown by waste management method as listed in the statistical reporting form 2-TP (Waste), due to a lack of waste management accounting practices aligned with the GRI 306 Standard (2020) in Russia.			
	306-5 Waste directed to disposal	Section 9.2. 'Environmental Safety', p. 203 Disclosures 306-4 and 306-5 are provided in part, with no breakdown by waste management methods stipulated in the GRI Standards. Data on waste management are disclosed with a breakdown by waste management method as listed in the statistical reporting form 2-TP (Waste), due to a lack of waste management accounting practices aligned with the GRI 306 Standard (2020) in Russia.			
Contribution to ensuring the safety of nuclear facilities and preparedness for emergencies caused by natural disasters/ external impacts					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 180–182, 184–186			
Promoting the well-being of our employees					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 8.1. 'Personnel Management', p. 146			
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Section 8.1. 'Personnel Management', p. 145 With regard to turnover, the 'adjusted turnover' rate has been disclosed, which includes the termination of an employment contract on certain grounds.	In terms of breakdown by age group, gender and region. Total number of employees dismissed on all grounds for the termination of an employment contract, except for reassignment to a different position within the nuclear industry, in accordance with the methodology described in the GRI Standards, and the relevant turnover rate	The information is not available	The indicator has been disclosed in part, with no breakdown by age group, gender and region, due to the lack of the relevant records. The Company plans to develop a system of indicators in future reporting periods.
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 186, 188	The number and percentage of workers and other employees covered by a certified occupational health and safety management system	The information is not available	

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 403: Occupational Health and Safety 2018	403-2 Hazard identification, risk assessment, and incident investigation	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 186, 193 In accordance with the Labour Code of the Russian Federation (Articles 216 and 379), the Corporation's employees have the right to refuse to perform work if there is a hazard to their life and health due to non-compliance with occupational safety requirements until the hazard has been eliminated, except as otherwise provided in federal laws.			
	403-3 Occupational health services	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 186, 188			
	403-4 Worker participation, consultation, and communication on occupational health and safety	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 188, 189			
	403-5 Worker training on occupational health and safety	Section 8.1. 'Personnel Management', p. 150			
	403-6 Promotion of worker health	Section 8.1. 'Personnel Management', p. 157			
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', p. 188			
GRI 403: Occupational Health and Safety 2018	403-8 Workers covered by an occupational health and safety management system	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 186, 188	The number and percentage of employees covered by a certified occupational health and safety management system. The percentage of employees covered by an OHSMS that has been internally audited as part of internal safety and quality control	The information is not available	No occupational safety and health records are kept for this type of workers.
	403-9 Work-related injuries	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', pp. 189, 190 The number of persons injured in accidents includes employees at the sites of ROSATOM's organisations, including abroad, provided that the employee works for an organisation within the Company's scope of consolidation, is employed under Russian law, and the accident has been investigated under Russian law.	Injury rates for workers who are not employees but whose work and/or workplace is controlled by the organisation; micro-injuries (microtrauma) suffered by employees and requiring medical assistance beyond first aid	The information is not available	No records of hours worked by contractors are kept. No records of micro-injuries (microtrauma) with a break-down by type of required medical assistance are kept.

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 403: Occupational Health and Safety 2018	403-10 Work-related ill health	Section 9.1. 'Nuclear, Radiation, Industrial and Fire Safety; Occupational Safety and Health', p. 190	Information on work-related ill health for workers who are not employees but whose work and/or workplace is controlled by the organisation; information on fatalities as a result of work-related ill health	The information is not available	No occupational safety and health records are kept for these groups of employees.
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	Section 8.1. 'Personnel Management', p. 149			
	404-2 Programmes for upgrading employee skills and transition assistance programmes	Section 8.1. 'Personnel Management', pp. 150, 151			
Developing the regions and countries of operation and improving the standard of living					
GRI 3: Material Topics 2021	3-3 Management of material topics	Section 2.3. 'Markets Served by Atomenergoprom', p. 48 Section 3.2. 'New Products for International Markets', p. 56 Section 5.2. 'Business Diversification', pp. 90, 94 Section 8.2. 'Developing the Regions Where Nuclear Facilities Are Located', p. 162			
GRI 203: Indirect Economic Impacts 2016	203-2 Significant indirect economic impacts	Section 5.2. 'Business Diversification', p. 94			

GRI Standard	Disclosure	Location	Omission		
			Requirement(s) omitted	Reason	Explanation
GRI 408: Child Labour 2016	408-1 Operations and suppliers at significant risk for incidents of child labour	The Company's organisations and suppliers have no risk of incidents of child labour.			
GRI 409: Forced or Compulsory Labour 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labour	The Company's organisations and suppliers have no risk of incidents of forced labour.			
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programmes	JSC Atomenergoprom and its organisations have no separate arrangements with their regions of operation. Local community engagement forms part of ROSATOM's stakeholder engagement.			

APPENDIX 3. ALIGNMENT WITH THE METHODOLOGICAL RECOMMENDATIONS ON SUSTAINABILITY REPORTING OF THE MINISTRY OF ECONOMIC DEVELOPMENT OF THE RUSSIAN FEDERATION

No.	Indicator	Value	Comments
Economic indicators			
1	Revenue (or a similar indicator)	RUB 2,501.7 million	
2	Value added	Not disclosed	
3	Net value added	Not disclosed	
4	Total R&D costs	Not disclosed	
5	Labour productivity	Not disclosed	
6	Amount of accrued mandatory payments (excluding fines and penalties), total, including: – Taxes and duties – Insurance premiums – Other mandatory payments	Not disclosed	
7	Amount of mandatory payments made by the Company (excluding fines and penalties), total, including: – Taxes and duties – Insurance premiums – Other mandatory payments	Total amount of taxes and duties: RUB 343.7 billion. Data on the total amount of mandatory payments made by the Company and on the amount of insurance premiums and other mandatory payments are not available.	
8	Share of purchases of Russian goods, work and services in the total volume of purchases of goods, work and services	88%	
9	Share of goods, work and services purchased from small and medium-sized enterprises in the total volume of purchases from Russian organisations	7.3%	
10	Sustainable investments, including green investments	Investments in wind power: RUB 9.5 billion (including VAT). Fixed asset investment for environmental purposes: RUB 5.81 billion. The total amount of sustainable and green investments has not been disclosed.	
11	Investments in projects related to the achievement of technological sovereignty and structural adaptation of the economy of the Russian Federation	Not disclosed	
12	Economic vulnerability of business and other activities to climate risks	Not disclosed	
Environmental indicators			
13	Volume of water used from all water sources	5,862.9 million m³	
14	Volume of recycled and reused water	37,374.3 million m³	
15	Volume of contaminated wastewater discharge, total, including untreated wastewater	Total wastewater discharge: 4,969.0 million m³ Contaminated wastewater discharge: 166.6 million m³	
16	Water use efficiency (‘specific water use’)	Not disclosed	
17	Hazard class 1–5 waste generation, total, including: Class 1 Class 2 Class 3 Class 4 Class 5	Waste generated and received during the reporting year: 31,780,940 tonnes including: Hazard class 1: 535 tonnes Hazard class 2: 847 tonnes Hazard class 3: 5,323 tonnes Hazard class 4: 111,775 tonnes Hazard class 5: 31,662,460 tonnes	For details on industrial and consumer waste management by waste hazard class in 2024, see section 9.2. ‘Environmental Safety’.
18	Hazard class 1–5 waste management, total, including, by category: – Recycling – Treatment – Burial – Reuse – Processing – Reduction of waste generation	Waste recycled during the year: 30,991,840 tonnes Waste treated during the year: 622 tonnes Waste burial during the year: 221,051 tonnes Data on the amount of processed and reused waste and reduction in waste generation have not been disclosed.	For details on industrial and consumer waste management by waste hazard class in 2024, see section 9.2. ‘Environmental Safety’.
19	Weight of air pollutant emissions from stationary sources	Total weight of pollutant emissions: 45,000 tonnes	For details on pollutant emissions into the atmosphere, see section 9.2. ‘Environmental Safety’.

No.	Indicator	Value	Comments
20	Greenhouse gas emissions	Assessment of GHG emissions in accordance with international standards: Total: 18.711 million tonnes of CO_2e, including: – Direct (Scope 1) emissions: 16.447 million tonnes of CO_2e; – Indirect (Scope 2) emissions: 2.264 million tonnes of CO_2e.	
21	Expenditure on the implementation of environmental protection measures, total, including: – Protecting the atmosphere – Preventing climate change – Wastewater collection and treatment – Waste management – Biodiversity conservation – Protection of natural sites	Expenditure on environmental measures: RUB 19.66 billion, including: – Protecting the atmosphere and preventing climate change: RUB 1.85 billion; – Wastewater collection and treatment: RUB 4.58 billion; – Waste management: RUB 3.82 billion. Information on expenditure on biodiversity conservation and protection of natural sites has not been disclosed.	The Company plans to disclose information on expenditure on biodiversity conservation and protection of natural sites in the report for 2025.
22	Renewable and low-carbon energy consumption	Water consumption: 1,766,822,520 m^3 Information on other energy sources is not available.	In 2025, ROSATOM will consider amending its internal regulations in order to monitor this indicator.
23	Energy efficiency: energy consumption per unit of net value added	Not disclosed	
Social indicators			
24	Payroll costs, total	RUB 524.0 billion	This amount includes payroll costs, social expenses, expenditure on personnel training, development and evaluation, and other personnel costs.
25	Average headcount, total, including the number of people with disabilities	Average headcount: 215,200 people Data on the number of employees with disabilities have not been disclosed.	
26	Average salary, total, including: – By job group – By gender – By age group	RUB 150,000 per month Data on the average salary with a breakdown by age group, job group and gender have not been disclosed.	
27	Occupational health and safety costs, total, including average per employee	RUB 12.6 billion. Average costs per employee have not been disclosed.	
28	Expenditure on organising and hosting social, sporting and recreational, and healthcare events for employees and members of their families	4.2%	This share includes social expenses and other expenses (including training).
29	Number of people injured in workplace accidents resulting in time lost from work of one working day or more, including fatalities	Number of people injured in accidents: 38 people, including 1 fatality	
30	Employee training costs, total, including average per employee	Not disclosed	
31	Average hours of training per year per employee by job group	Average training hours per employee: 57.1	For details on average hours of training per employee in the nuclear industry by job group (category), see section 8.1. ‘Personnel Management’.
32	Share of employees covered by a collective bargaining agreement as a percentage of the average headcount	67.2%	
33	Personnel turnover rate	16.0%	
34	Expenditure on supporting social programmes not targeted at employees and their families, total, including: – Charity – In the housing sector – In healthcare – In education – Support for people in need of social assistance	Not disclosed	
Governance indicators			
35	Existence of a sustainable development policy and/or other strategic documents in this field	JSC Atomenergoprom, along with other organisations of ROSATOM, has adopted the Unified Industry Policy on Sustainable Development (https://rosatom.ru/upload/iblock/a42/a42fc60d74177edf55f9e4ec64618da3.pdf). The sustainable development agenda is incorporated into ROSATOM’s Business Strategy until 2030.	
36	Number of meetings of the Board of Directors and attendance rate	89 meetings; attendance rate: 92.5%	
37	Number of members of the Board of Directors, total, including by age group	The Board of Directors consists of seven members. Number of members of the Board of Directors by age group: – Aged 30 to 50: 4 people; – Aged 50+: 3 people;	

No.	Indicator	Value	Comments
38	Number of meetings of the Audit Committee and attendance rate	9 meetings of the Audit Committee; attendance rate: 89%	
39	Inclusion in sustainability (ESG) indices and rankings	7 ratings and rankings (ACRA, ESP, NCR, Forbes, Arctic & CSR, RAEX, RSPP)	For details on the inclusion of JSC Atomenergoprom in rankings, on scores and changes in scores over the past few years, see section 2.2.2. ‘ESG Ratings’.
40	Number of recorded violations of the rights of indigenous minorities in the Russian Federation	No violations of the rights of indigenous minorities have been recorded.	
41	Share of employees holding positions with a high corruption risk	Not disclosed	
42	Average hours of anti-corruption training per employee	Not disclosed	
43	Number of cases of administrative sanctions imposed on the organisation, its subsidiaries and affiliates for corruption offences	Not disclosed	
44	Share of female executives in the total number of executives, total, including on the Board of Directors	Share of women on the Board of Directors: 57% The share of female executives in the total number of executives has not been disclosed.	

GRI 2-7

APPENDIX 4. NUMBER OF EMPLOYEES OF JSC ATOMENERGOPROM WITH A BREAKDOWN BY TYPE OF EMPLOYMENT AND REGION

Number of employees of JSC Atomenergoprom with a breakdown by type of employment and region (as at 31 December 2024)[1]

Region	Number of employees	Number of permanent employees	Number of temporary employees	Number of full-time employees	Number of part-time employees
Moscow	39,300	36,837	2,463	36,659	2,641
Saint Petersburg	11,644	11,146	498	11,323	321
Kursk Region	11,529	9,751	1,778	11,433	96
Moscow Region	10,913	10,429	484	10,651	262
Sverdlovsk Region	10,402	10,092	310	10,251	151
Rostov Region	9,628	9,220	408	9,455	173
Voronezh Region	9,467	8,874	594	9,404	64
Leningrad Region	9,450	8,892	558	9,161	289
Nizhny Novgorod Region	8,296	7,638	658	8,030	266
Zabaykalsky Territory	6,927	6,589	338	6,879	48
Smolensk Region	6,096	5,966	130	6,043	53
Tomsk Region	6,031	5,643	388	5,961	70
Saratov Region	5,931	5,612	319	5,875	56
Udmurt Republic	5,534	5,388	146	5,453	81
Chelyabinsk Region	4,754	4,614	140	4,719	35
Ulyanovsk Region	4,347	4,059	288	4,181	166
Vladimir Region	4,102	4,027	75	4,009	93
Murmansk Region	3,856	3,693	163	3,845	11
Krasnoyarsk Territory	3,753	3,616	137	3,686	67
Novosibirsk Region	2,975	2,615	360	2,888	87
Krasnodar Territory	2,323	1,688	635	2,289	34
Tver Region	2,209	2,141	68	2,201	8
Irkutsk Region	1,830	1,335	495	1,793	37
Belgorod Region	1,820	1,752	68	1,789	31
Lipetsk Region	1,500	1,480	20	1,497	3
Republic of Karelia	1,446	1,335	111	1,414	32
Primorsky Territory	1,326	1,283	43	1,326	0
Chukotka Autonomous District	1,173	1,104	69	1,170	3
Perm Territory	872	871	1	780	92
Kurgan Region	806	566	240	802	4

1. There are no non-guaranteed hours employees.

Region	Number of employees	Number of permanent employees	Number of temporary employees	Number of full-time employees	Number of part-time employees
Republic of Buryatia	748	529	219	747	1
Republic of Tatarstan	699	680	19	687	12
Oryol Region	687	687	0	687	0
Tambov Region	603	591	12	601	2
Tula Region	577	575	2	574	3
Kaluga Region	575	571	4	572	3
Sakhalin Region	540	539	1	540	0
Sakha Republic	431	377	54	431	0
Republic of Mordovia	327	322	5	322	5
Yaroslavl Region	298	296	2	272	26
Stavropol Territory	276	274	2	276	0
Republic of Bashkortostan	274	257	17	272	2
Republic of Khakassia	270	266	4	270	0
Penza Region	269	262	7	264	5
Omsk Region	244	214	30	243	1
Ryazan Region	215	211	4	214	1
Samara Region	194	183	11	189	5
Khabarovsk Territory	180	173	7	171	9
Astrakhan Region	151	151	0	148	3
Kaliningrad Region	151	132	19	146	5
Tyumen Region	147	143	4	145	2
Kemerovo Region	119	119	0	119	0
Vologda Region	102	101	1	102	0
Ivanovo Region	91	91	0	90	1
Orenburg Region	83	58	25	83	0
Volgograd Region	78	77	1	73	5
Altai Territory	73	73	0	73	0
Kirov Region	71	44	27	71	0
Amur Region	57	57	0	57	0
Republic of Adygea	57	57	0	57	0
Republic of Dagestan	45	33	12	43	2
Arkhangelsk Region	29	26	3	29	0
Khanty-Mansi Autonomous District – Yugra	19	19	0	19	0
Other regions	9,383	9,343	40	9,355	28
Total	**208,303**	**195,786**	**12,517**	**202,909**	**5,394**

Number of employees in JSC Atomenergoprom's overseas branches and organisations with a breakdown by type of employment (as at 31 December 2024)

Country	Number of employees	Number of permanent employees	Number of temporary employees	Number of full-time employees	Number of part-time employees
Turkey	14,879	14,764	115	14,875	4
Kazakhstan	2,139	1,897	242	2,087	52
Bangladesh	870	713	157	864	6
Egypt	573	563	10	570	3
Hungary	291	248	43	284	7
South Korea	291	291	0	291	0
Czech Republic	205	173	32	202	3
Belarus	129	70	59	126	3
Bolivia	55	24	31	51	4
Finland	43	40	3	39	4
Tanzania	18	17	1	18	0
Namibia	11	11	0	11	0
Other regions	45	33	12	39	6
Total	**19,549**	**18,844**	**705**	**19,457**	**92**

Number of employees with a breakdown by gender and type of employment (as at 31 December 2024), '000 people

Indicator	Women	Men	Total
Number of employees	77.4	150.5	227.9
Number of permanent employees	72.2	142.4	214.6
Number of temporary employees	5.1	8.1	13.2
Number of full-time employees	74.2	148.1	222.4
Number of part-time employees	3.1	2.4	5.5
Number of non-guaranteed hours employees	0	0	0.0

APPENDIX 5.

SUMMARY CONSOLIDATED FINANCIAL STATEMENTS BASED ON CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2024 AND THE INDEPENDENT AUDITORS' REPORT

https://atomenergoprom.ru/#investors

Abbreviations and Acronyms

ARMS	Automated radiation monitoring system
CATF	Closed administrative and territorial formation
CHPP	Combined heat and power plant
ESG	Environmental, social and corporate governance
ESP	Executive succession pool
FMBA	Federal Medical and Biological Agency of Russia
FS	Feasibility study
GRI	Global Reporting Initiative (an organisation developing sustainability reporting standards)
IAEA	International Atomic Energy Agency
IARMS	Industry-Wide Automated Radiation Monitoring System
IRAW	Individual risk assessment workstation
KPI	Key performance indicator
LTIFR	Lost Time Injury Frequency Rate
MIC	Military–industrial complex
NCPM	National Centre for Physics and Mathematics
NEIC	Nuclear Energy Information Centre
NFA	Nuclear fuel assembly
NFC	Nuclear fuel cycle
NFE	Nuclear fuel element
NPP	Nuclear power plant
NRTC	Nuclear Research and Technology Centre
NWD	Nuclear Weapons Division
PDEF	Pilot and Demonstration Energy Facility
R&D	Research and development
RAW	Radioactive waste
RBMK	High-power channel-type reactor
RCP	Reactor coolant pump
RMS	Risk management system
RPS	ROSATOM Production System
SFA	Spent (irradiated) fuel assembly
SNF	Spent nuclear fuel
tHM	Tonne of heavy metal
TPP	Thermal power plant
VVER	Water-cooled water-moderated power reactor
WPP	Wind power plant

GRI 2-1
GRI 2-3
GRI 2-26

CONTACT DETAILS

Joint-Stock Company Atomic Energy Power Corporation

24 Bolshaya Ordynka Street, Moscow, 119017

Tel. +7 (495) 969-29-39

Official website

https://www.atomenergoprom.ru/en/

Communications Department

Email: press@rosatom.ru

Tel.: +7 (499) 949-44-12

Feedback Form

Dear readers,

You have read the annual report of JSC Atomenergoprom, which is intended for a wide range of stakeholders. We attach great importance to the opinion of the readers of our Report. We would appreciate it if you helped improve the quality of the Company's reports by completing the questionnaire below.

Please return the completed form by mail to the Communications Department or to the Treasury Department at 24 Bolshaya Ordynka Street, Moscow, 119017 or by email (EAMamy@rosatom.ru).

1. Please assess the Report using the following criteria:

Accuracy and objectivity

☐ Excellent ☐ Good ☐ Satisfactory ☐ Poor

Completeness and relevance of information

☐ Excellent ☐ Good ☐ Satisfactory ☐ Poor

Report structure, ease of reference, wording

☐ Excellent ☐ Good ☐ Satisfactory ☐ Poor

2. Please specify which sections of the Report you have found to be relevant and useful:

3. What topics do you think should be covered in the next Report?

4. Your recommendations and additional comments:

5. Please specify which stakeholder group you represent:

- [ ] Employee of JSC Atomenergoprom / ROSATOM
- [ ] Employee of an organisation forming part of JSC Atomenergoprom or ROSATOM
- [ ] Representative of the federal government
- [ ] Representative of a regional government
- [ ] Representative of a local government
- [ ] Representative of a contractor / supplier
- [ ] Representative of a customer / consumer of goods and services
- [ ] Representative of a business partner
- [ ] Representative of a non-governmental organisation
- [ ] Representative of the media
- [ ] Representative of the expert community
- [ ] Other (please specify)

atomenergoprom.ru