



ROSATOM



PERFORMANCE
OF THE MECHANICAL
ENGINEERING
DIVISION IN 2020

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Message from the Head of the Division

Dear colleagues,

I would like to present the Public Reporting Materials of the Mechanical Engineering Division of State Atomic Energy Corporation ROSATOM for 2020.

This document covers production, financial, social and environmental issues related to activities of the Mechanical Engineering Division of State Atomic Energy Corporation ROSATOM (the Company, the Division, JSC Atomenergomash, AEM). In 2020, JSC Atomenergomash continued to actively develop and transform its operations to, above all, improve performance and develop new businesses.

In 2020, we expanded our ten-year portfolio of orders: as at December 31, 2020, it exceeded RUB 800 billion compared to RUB 756.2 billion in 2019. We also completed corporate restructuring: over the past five years, we have done a huge amount of work to sell assets totalling more than RUB 10 billion.

In 2020, the Division updated its Development Strategy 2030 and continued to work on its strategic goals – to ensure the supply of key equipment under ROSATOM's roadmaps, improve performance, and increase the share of new products and foreign operations in the revenue.

In 2020, as part of high-power NPP construction projects, we achieved record-setting performance: JSC Atomenergomash has equipment in various degrees of completion for ten power units simultaneously at its enterprises. The Division produced three reactor vessels and 18 steam generators – equipment for Kudankulam NPP (India), Rooppur NPP (Bangladesh), Akkuyu (Turkey) and Kursk NPP 2. The Company is producing equipment under Chinese projects (Tianwan and Xudabao NPPs) at an accelerating pace and turbine building equipment based on the ARABELLE low-speed steam turbine technology.

JSC Atomenergomash is still actively involved in the program aimed at developing the Northern Sea Route. In 2020, the Company signed a contract for the package supply of a nuclear propulsion unit (reactor and steam turbine plant) for the Lider nuclear icebreaker. The Division prepared technical documentation to start the production of the RITM-400 unit to be completed by 2026 under the contract.

The Division is also involved in the implementation of nuclear energy projects – floating power units and SNPPs, with a conceptual design for an optimised floating power unit (OFPU) developed and approved. As early as at this stage, it was confirmed that economic indicators of this unit made it competitive in terms of energy cost both in Russia and abroad. Now, the Division is moving into the next phase – the implementation of the engineering design of a floating power unit with the RITM-200 reactor unit – and actively interacting with potential customers to meet their needs in full.

Non-nuclear businesses of the Mechanical Engineering Division are developed as part of achieving strategic goals in the industry and top-priority national objectives.

I would like to specially recognise JSC Atomenergomash's contribution to strengthening Russia's technological independence through import-substituting products for LNG production. In 2020, the Division completed the testing of Russia's first LNG pump, which plays a key role in large-scale LNG production. The pump was put into operation at a site of Russia's largest LNG producer. Technical specifications of JSC Atomenergomash's equipment meet the highest international standards and requirements. The successful tests give the Mechanical Engineering Division an opportunity to receive references and adequately compete with traditional suppliers of such equipment in the global market.

We also continue to create Europe's first test bed for equipment made for medium- and large-scale LNG plants. The unit is being constructed at a site of JSC Institute of Electrophysical Apparatus and is expected to be completed in 2021. Such a test bed will allow Russia to reduce its dependence on import equipment and contribute to the development of a new sector in the Russian industry.

In the course of its operations, JSC Atomenergomash adheres to the global sustainable development agenda focusing on the idea that the development of the present generation must not disserve the interests of future generations and economic growth must not cause environmental degradation and must be accompanied by progress in solving social problems. Corporate social responsibility became a global and Russian trend, and the Mechanical Engineering Division of ROSATOM promotes this.

As part of the Clean Country federal programme, the Division's enterprises produce equipment for four waste-to-energy plants under construction in Moscow. In the reporting year, the Company completed the shipment of the core equipment for the first plant and started shipping to the second plant. The project aimed at constructing the fifth plant is expected to be launched soon. In 2020, ROSATOM, one of Russia's largest industrial companies and a state development corporation entered into a trilateral agreement giving JSC Atomenergomash opportunities to work on 25 similar waste-to-energy projects throughout the country. While implementing the projects, the Division's enterprises learned how to apply unique cladding technology never before used in Russia, when producing boiler equipment. With the unique technology and the production organised, we have already successfully implemented the first contract for the manufacturing and supply of equipment for the Riverside waste-to-energy plant (United Kingdom).

Marked by the COVID-19 pandemic, 2020 put our humanity and production capabilities to the test. The health of employees is the Company's absolute priority. To minimise risks, we enabled remote work for employees whose positions allowed that. As for the production facilities, despite the difficult situation, proper work schedules allowed the Division's enterprises to meet deadlines, so the pandemic did not have a significant impact on the terms of existing contracts. We have made up for lost time quickly.

Since 2021 and in the next few years, we will see a peak in production in the nuclear industry. We are prepared for this: JSC AEM-Technology managing our plants in Volgodonsk and Petrozavodsk is continuing to hire new employees, and we are continuing to implement investment programmes at our plants involved in the production of reactor unit equipment. In the long term, until 2030, we should gradually increase our 'external' – non-nuclear – revenue, including from our own products, and reach our target foreign revenue share. This is why it is extremely important for the Company to achieve its strategic objective – to expand product lines within the current scope of the Division's business.

Consistently achieving the goals set and solving large-scale and complex problems, JSC Atomenergomash remains a key element in the development of Russia's nuclear industry. In 2020, we all faced new challenges that had a huge impact on our lives. Business growth paired with pandemic restrictions became one such challenge. We had to quickly adapt to new conditions, make non-routine decisions. It was hard but we made it – the difficulties united us even more. I would like to thank all the teams of our enterprises, all employees of the Division for their good work, which allowed us to fulfill all our obligations to customers, as well as our partners, and for their trust and meaningful cooperation in difficult situations.

Andrey Nikipelov

Head of the Mechanical Engineering Division,
Chief Executive Officer of the holding company of
the Division, JSC Atomenergomash

Response to the Pandemic

The COVID-19 pandemic not only radically changed the world but also accelerated global trends. Despite the difficult epidemiological situation in Russia and worldwide, JSC Atomenergomash continued to successfully perform its production tasks. The Division managed to quickly adapt to changes, make decisions and meet challenges in real-time.

For the Company, that year was record-breaking in many ways: JSC Atomenergomash not only performed its production tasks but also protected its employees in all regions of operation as much as possible.

Like all nuclear enterprises, the Mechanical Engineering Division made comprehensive efforts in several areas to prevent the spread of coronavirus. To coordinate actions as much as possible, the Division created crisis centres at all of its enterprises under the control of JSC Atomenergomash's main centre. Thanks to the well-coordinated work of all services and organisations, the Division was able to continue to operate, perform all tasks and protect its employees. The Company strictly followed all anti-coronavirus instructions and guidelines from Russia's Federal Medical-Biological Agency, ROSATOM and authorities.

Key challenges that the Division faced during the pandemic

The Division encountered the following main challenges:

- restricted in-person communication and interaction with foreign partners when meeting equipment acceptance milestones under key projects;
- conversion of many events to an online format;
- border closures and travel restrictions;
- suspension and cancellation of investment projects in various industries;
- support and adaptation of employees who work remotely.

Self-isolation allowed us to look at our workflows from a different angle. The pandemic helped us to accelerate the transition to digital resources opened for people's development and create a full-scale digital educational environment. Mandatory courses and development programmes for employees were quickly converted to an online format. Open webinars and training through the RECORD mobile app became especially popular. For better training and experience sharing, we used various learning formats and methods such as engineering hackathons, online breakfast meetings with executives, online visits to enterprises, business games, and quizzes. During the pandemic, we introduced new relevant courses on how to avoid remote work burnout, cope with stress, and organise oneself and one's family.

In those conditions, the Division managed to create a safe English learning environment. It was converted to an online format: employees joined our 3-minute Rosatom English Telegram channel. Amid the pandemic, we started to support our employees in responding to COVID-19 and regularly informed them of webinars on coronavirus and its prevention, remote work, work-life balance and self-organisation.

Ensuring production continuity, pandemic impacts on finance and production results

The Division takes all necessary measures to ensure the fulfillment of obligations to customers in full and within time limits stipulated by contracts and to minimise negative impacts of the epidemiological crisis on supply chains. For example, in Volgodonsk, the Atommash branch of JSC AEM-Technology tested a new digital product – augmented reality glasses for remote interaction between customers and inspecting organisations. It is proposed to develop and introduce that system through the optimisation of business processes of various monitoring activities (for their potential conversion to a remote format) and the optimisation of technical, technological and software components.

The set of hardware and software for remote interaction and practice in remote acceptance control of equipment at NPPs was appreciated by employees. Remote work technologies based on video communication and augmented reality will improve enterprises' performance, make processes shorter and save money.

Employee protection

Health of employees is JSC Atomenergomash's priority. The key measures included the transition of employees to remote work, the separation of shifts for those employees who could not work remotely due to the specifics of their activities, the use of personal protective equipment (masks and gloves) and sanitisers. We regularly disinfected facilities and vehicles, communicated with employees and explained to them what to do if they felt sick or got infected with coronavirus, conducted pulse surveys, and launched a counseling hotline. We restricted in-person interaction between employees and business trips and converted mass gatherings and meetings to an online format.

Helping local communities in the regions of operation

Employees of the Mechanical Engineering Division's enterprises were actively involved in volunteering. Volunteers provided assistance in ten cities and towns, mainly to veterans, employees close to retirement and those who were not able to leave home to obtain basic necessities. Some volunteers joined the We Are Together Russia-wide project and, jointly with social welfare services, helped residents of their cities and supported healthcare and educational institutions.

In 2020, the Mechanical Engineering Division's enterprises also took part in the We Are Responsible project – a visiting care service. It was created for elderly employees (65+) and nuclear industry retirees to provide them with regular and comprehensive humanitarian assistance (groceries, necessities, medications), help them with activities of daily living and digital services, organise their leisure time and engage them in social activities as the epidemiological situation improves.

As part of this project, we closely cooperated with regional communities:

- Association of Volunteer Centres (regional resource centres, the We Are Together campaign);
- social welfare services and non-profit organisations in cities and towns of operation;
- authorities of cities and towns of operation.

Approach to recording pandemic-related factors in the risk management system

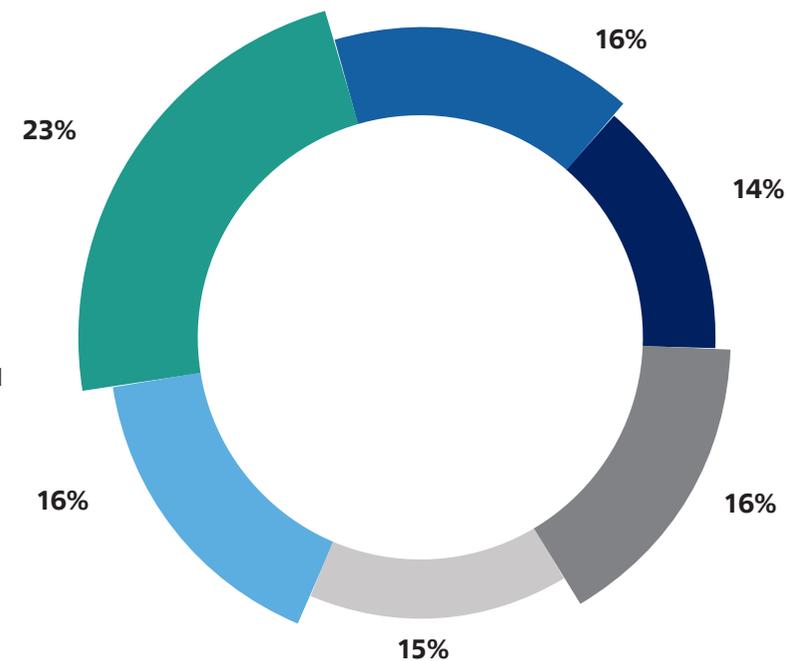
Within two months (February, March) of 2020, we promptly assessed the Division's key coronavirus-related risks and planned how to manage them.

Key pandemic-related risks

- The economic slowdown that started in 2019 and was driven by the pandemic could spur unemployment, inflation, geopolitical instability.
- Risks of reinfection with COVID-19.

February-March 2020: assessment of financial stability and business continuity risks due to coronavirus-related threats

- Payment risks related to customer insolvency
- Occupational safety risks due to the epidemiological situation, business interruption risk
- Liquidity risks for controlled enterprises, increase in interest for loan-based funding, increase in debt load
- Supplier contract risks – increase in advance payments, changes in terms and conditions
- Payment risks related to failure in acceptance/shipment of products produced
- Business interruption risks related to failure in acceptance/shipment of products procured



- Failures of business models (delays in delivery, supplier bankruptcy, delays caused by subsuppliers, delays in payment).
- For the nuclear energy sector: project postponement and cost risks.

In 2020, risk mitigation measures included disinfection, the provision of protective equipment to employees, separated personnel flows, reimbursement for tests and other health services, remote work, the cancellation of in-person meetings, restrictions on international and regional business trips, and financial aid.

To promptly monitor the effectiveness of the risk mitigation measures, in 2020, JSC Atomenergomash introduced daily monitoring of project and budget risks in its risk management system.

The positive impact from the pandemic-related risk mitigation measures on the Mechanical Engineering Division's AFCF¹ equalled RUB 353 million.

Plans for 2021

In 2021, we plan to develop and use special technical means based on augmented reality technologies in the following areas:

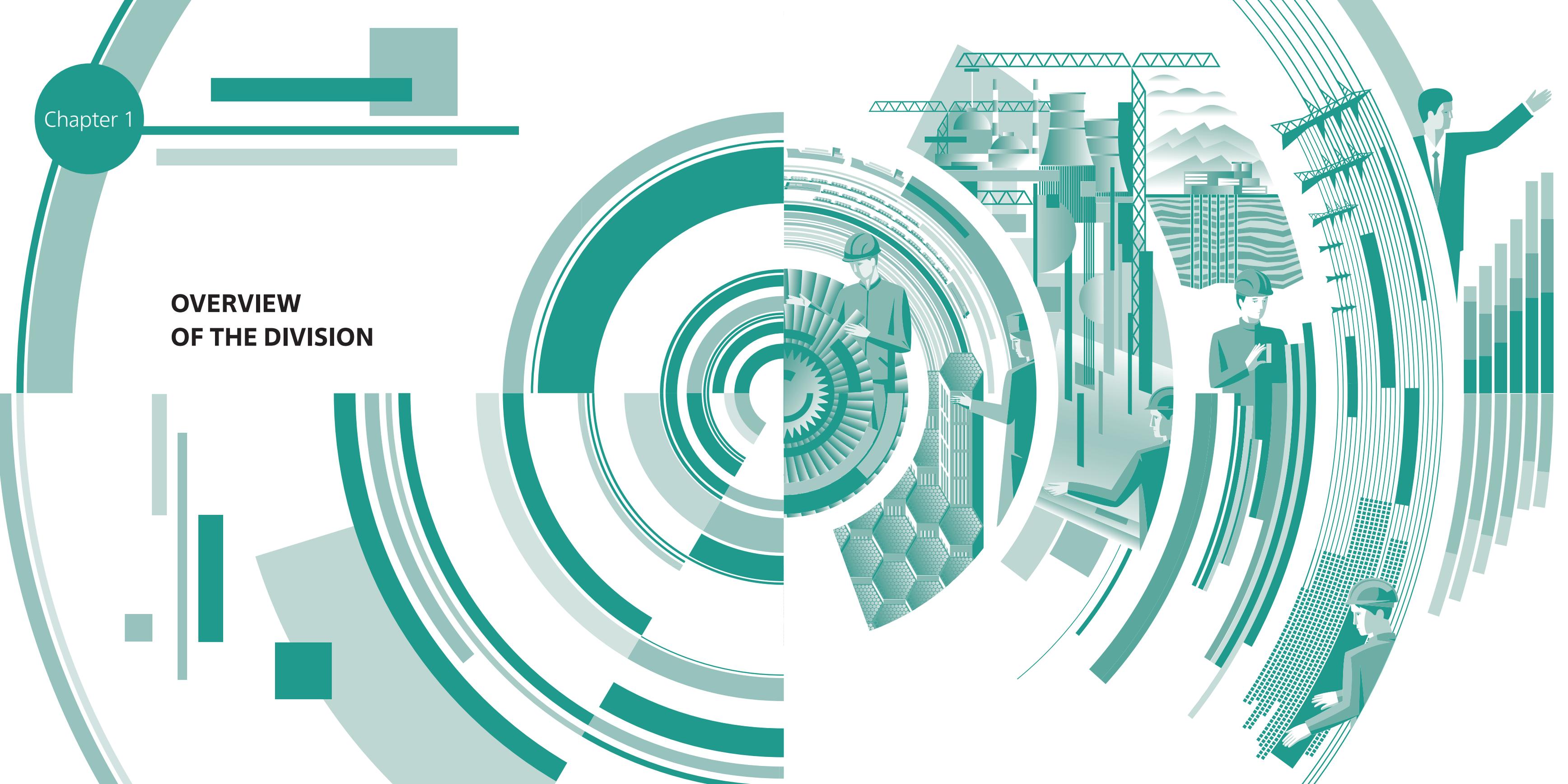
- remote expert support for complex devices and processes;
- support for in-person inventory procedures (fixed assets, warehouses);
- visual support for assembly operations.

In 2021, in the regions of operation, we plan to add more types of assistance to residents after the restrictions are lifted:

- daily assistance (cleaning, minor repair, help with maintaining yards and gardens, equipment setting, etc.);
- financial literacy lessons;
- communication with retirees;
- organisation of parties and events;
- engagement of retirees in social activities and work with young people, including as 'silver volunteers';
- invitations to take part in youth conferences as experts or speakers.

¹ Adjusted free cash flow.

**OVERVIEW
OF THE DIVISION**





1.1 Role of the Division in the structure of ROSATOM

The Mechanical Engineering Division of State Atomic Energy Corporation ROSATOM is one of the leading groups of mechanical engineering holdings in Russia and the key supplier of main and auxiliary equipment for Russian-design NPPs under construction.

The Mechanical Engineering Division is part of ROSATOM and includes engineering, design centres, major power engineering and metallurgical plants, as well as research and material science organisations in Russia, the CIS and EU countries. JSC Atomenergomash's enterprises are located in six Russian regions, with three more companies based in other countries.

Using competencies gained during multiple years of improving and producing nuclear energy equipment, the Company is successfully developing adjacent business areas at an accelerating pace. JSC Atomenergomash offers a range of solutions for the manufacture and supply of equipment for the nuclear and thermal power industry, shipbuilding, the oil and gas industry, and the special steel market. Extensive production and technological capabilities of the Division's organisations and control over the entire production chain enable the Division to supply its customers with high-quality reliable equipment. Thanks to well-coordinated production, JSC Atomenergomash can efficiently implement NPP construction, service and enterprise modernisation projects. Equipment produced by JSC Atomenergomash ensures operations of 20% of NPPs worldwide, in almost 20 countries.

All NPPs of Russian design² are equipped with JSC Atomenergomash's products. The Division is the main designer and single-source supplier of all marine reactor units for the multipurpose nuclear icebreakers Arktika, Sibir, Ural, Yakutiya, and Chukotka (RITM-200 reactor unit (RU), widely regarded as the largest and most powerful icebreakers, as well as for the new-generation Lider nuclear icebreaker being designed (RITM-400 RU) and able to ensure year-round navigation along the Northern Sea Route.

JSC Atomenergomash manufactures high-capacity equipment for Russian oil and gas companies. And the Division's enterprises have been designing and producing heat energy equipment for many years: the Company supplied its products to 40% of TPPs in Russia and CIS countries. As part of the Clean Country federal project, the Division is the main manufacturer of key process equipment for waste-to-energy plants.

² VVER reactors.



1.2 Corporate governance system

The corporate governance system at JSC Atomenergomash is based on the requirements of Russian legislation in the field of corporate law.

The Company applies some provisions of the Corporate Governance Code recommended in Letter No. 06-52/2463 of the Bank of Russia dated April 10, 2014, with due regard to the special characteristics of ROSATOM's legal status stipulated in laws and regulations of the Russian Federation that ensure consistent management of organisations in the nuclear industry. These provisions are incorporated in a number of local regulations of the Company.

Key governing bodies

In accordance with the Articles of Association, the Company has the following governing bodies:³

- The General Meeting of Shareholders (Sole Shareholder);
- The Board of Directors;
- The Chief Executive Officer (Sole Executive Body).

Authorised capital structure

As at January 1, 2020, the Company's authorised capital totalled RUB 2,566,657 (two million five hundred and sixty-six thousand six hundred and fifty-seven roubles).

In 2020, JSC Atomenergomash completed its share issuance. On July 3, 2020, the Bank of Russia registered a report on the additional share issuance.

As at December 31, 2020, the Company's registered authorised capital totalled RUB 3,410,656 (three million four hundred and ten thousand six hundred and fifty-six roubles).

³ The Company has no Audit Committee as the internal audit of its operations is conducted in accordance with the Company's internal documents and local regulations.

The nominal value of ordinary shares is RUB 1 (one) per share.

The number of ordinary shares: 3,410,656 (three million four hundred and ten thousand six hundred and fifty-six).

The state registration number of the ordinary share issuance and the date of state registration: 1-01-11322-A dated June 28, 2006.

The number of preferred shares: JSC Atomenergomash's preferred shares were not placed or offered.

The nominal value of preferred shares (roubles): JSC Atomenergomash's preferred shares were not placed or offered.

The state registration number of the preferred share issuance and the date of state registration: preferred share issuances were not registered.

The number of shares held by the Russian Federation: 0.

General Meeting of Shareholders

GRI 102-33

The powers and the procedure for convening and holding the General Meeting are stipulated in the Company's Articles of Association and the Federal Law on Joint-Stock Companies. In 2020, three resolutions were passed, and four issues were considered.

No.	Resolution date	Matters discussed
1	June 1, 2020	Approval of a new version of JSC Atomenergomash's Articles of Association.
2	June 30, 2020	Payment (declaration) of dividends for Q1 of the reporting year.
3	July 13, 2020	1) Distribution of profit (losses) of JSC Atomenergomash (including payment (declaration) of dividends), excluding (declaration of) dividends for Q1, H1, nine months of the reporting year for 2019. 2) Election of members of the Board of Directors of JSC Atomenergomash.

The Company adopted no local regulations governing its dividend policy.

Board of Directors

The powers of the Board of Directors are stipulated in the Company's Articles of Association. The meetings of the Board of Directors are convened when necessary, initiated by the Chairman or members of the Board of Directors, the Chief Executive Officer or the Company's Auditor.

The Board of Directors is responsible for the strategic management of the Company's operations and supervises the activities of the executive body.

No special committees were established under the Board of Directors of JSC Atomenergomash.

In 2020, the Board of Directors held 16 meetings and discussed 22 matters.

The Company has no independent members of the Board of Directors, as defined in the Corporate Governance Code.

Throughout 2020, no resolutions were adopted on paying remuneration and/or compensation to the members of the Board of Directors; no remuneration was paid, and no expenses were reimbursed. No committees were established under the Board of Directors. Apart from the Chief Executive Officer, the Board of Director includes no members that were the Company's full-time or part-time employees during the reporting period.

None of the members of the Board of Directors hold the Company's shares. In 2020, there were no changes in the number of members (five people) or the composition of the Board of Directors of JSC Atomenergomash.

GRI 102-22

GRI 102-36

Members of the Board of Directors⁴

GRI 102-23

Chairman of the board of directors

Vladislav Korogodin

Director for NFC and NPP Life Cycle Management at ROSATOM.

Ilya Nikolsky

Head of the Business Analytics Department at ROSATOM.

⁴ <https://aem-group.ru/about/leadership/directors/sig.html>.

Boris Silin

Advisor to the First Deputy Director General for Operations Management at ROSATOM.

Andrey Nikipelov

Head of the Mechanical Engineering Division of ROSATOM, Chief Executive Officer of JSC Atomenergomash.

Boris Arseev

Deputy Head of the Corporate Development and International Business Unit, Head of the International Business Department at ROSATOM.

Chief Executive Officer

The functions and powers of the Chief Executive Officer are stipulated in the Company’s Articles of Association and are exercised in compliance with the Federal Law on Joint-Stock Companies.

The Chief Executive Officer of the Company, Andrey Nikipelov, has been exercising his powers since April 17, 2012, pursuant to resolutions of the General Meeting of Shareholders (Minutes No. 04/12-BOCA dated April 16, 2016 and No. 02/17-BOCA dated April 14, 2017)⁵. Mr. Nikipelov does not hold the Company’s shares.

The Chief Executive Officer is directly involved in developing the corporate strategy for the Company’s development, as well as functional strategies⁶.

In 2020, the Company made no major transactions that are subject to approval by the authorised executive body of the Company pursuant to Chapter X of the Federal Law on Joint-Stock Companies.

The definition of a non-arm’s length transaction is given in Chapter XI of the Federal Law on Joint-Stock Companies. However, Clause 3.11 of the Company’s Articles of Association stipulates that provisions of Chapter XI of the Federal Law on Joint-Stock Companies do not apply to the Company.

The remuneration of the Chief Executive Officer is stipulated in the employment contract in accordance with Russian legislation and is based on the remuneration system adopted in ROSATOM’s organisations; it takes into account progress in achieving key performance indicator (KPI) targets set for the Chief Executive Officer every year.

Information on declared income, property and liabilities is annually published on ROSATOM’s official website, in the Anti-Corruption section, in accordance with Russian legislation.

Improvement of the corporate governance system

- The Company’s compliance with the Corporate Governance Code was approved by the Bank of Russia’s Board of Directors on March 21, 2014.
- Functions of JSC Atomenergomash’s governing bodies are optimised through redistributing powers of the Board of Directors, the General Meeting of Shareholders and the Chief Executive Officer in the Articles of Association, which allows the Company to accelerate managerial decision-making.
- Non-operating companies are excluded from the scope of consolidation (sale, liquidation).



Business areas and the regions of operation

Key markets and projects

■ Russia ■ Foreign countries

Business area	City, country	Project
Nuclear power industry	Kurchatov, Russia	Kursk NPP
	Makarovka, Russia	Kursk NPP 2
	Balakovo, Russia	Balakovo NPP
	Volgodonsk, Russia	Rostov NPP
	Sosnovy Bor, Russia	Leningrad NPP
	Novovoronezh, Russia	Novovoronezh NPP
	Polyarnye Zori, Russia	Kola NPP
	Desnogorsk, Russia	Smolensk NPP

GRI 102–26

GRI 102–6

GRI 102–36

⁵ <http://www.aem-group.ru/about/leadership/management/nav.html>

⁶ The role of the Board of Directors in defining the Company’s development strategy is stipulated in the Company’s Articles of Association.

Business area	City, country	Project
Thermal power industry	Udomlya, Russia	Kalinin NPP
	Pevek, Russia	Akademik Lomonosov FTNPP ⁷
	Ostrovets, Belarus	Belarusian (Ostrovets) NPP
	El Dabaa, Egypt	El Dabaa NPP
	Kudankulam, India	Kudankulam NPP
	Liaoning, China	Xudabao NPP
	Tianwan, China	Tianwan NPP
	Gulnar, Turkey	Akkuyu NPP
	Pyhäjoki, Finland	Hanhikivi 1 NPP
	Paks, Hungary	Paks II NPP
	Pabna, Bangladesh	Rooppur NPP
	Temelin, Czech Republic	Temelin NPP
	Dukovany, Czech Republic	Dukovany NPP
	Svistyagino, Russia	Svistyagino WEP
Mogutovo, Russia	Mogutovo WEP	
Timokhovo, Russia	Timokhovo WEP	
Khmetyevo, Russia	Khmetyevo WEP	
Kazan, Russia	Kazan WEP	
Arkhangelsk, Russia	Arkhangelsk Pulp and Paper Mill TPP	
Irkutsk, Russia	Irkutskenergo TPP 10	
London, UK	Riverside WEP	
Gas and petrochemical industry	Kaliningrad, Russia	Varnitsa, LLC
	Tobolsk, Russia	West Siberian deep hydrocarbon conversion plant
	Yamalo-Nenets Autonomous Okrug, Russia	Arctic Cascade Project
	Yamalo-Nenets Autonomous Okrug, Russia	Arctic LNG 2 Project
	Tula Region, Russia	LLC Shchekinoazot United Chemical Company
	Nizhnekamsk, Russia	TANEKO
	Sakhalin, Russia	Sakhalin 2 Project

⁷ Floating thermal nuclear power plant.

Business assets of the Company

GRI 102-4

GRI 102-7

City, country	Controlled organisation
Volgodonsk, Russia	Atomash branch of JSC AEM-Technology
Petrozavodsk, Russia	Petrozavodskmash branch of JSC AEM-Technology
Nizhny Novgorod, Russia	JSC Afrikantov OKBM ⁸
Ekaterinburg, Russia	Sverdlovsk Chemical Engineering Research Institute JSC
Podolsk, Russia	JSC Experimental and Design Organisation GIDROPRESS PJSC ZiO-Podolsk
Saint Petersburg, Russia	JSC CDBMB JSC AEM-Technology AAEM LLC
Moscow, Russia	JSC RPA CNIITMASH JSC ATM
Kramatorsk, Ukraine	PJSC EMSS
Budapest, Hungary	Ganz EEM
Opava, Czech Republic	ARAKO spol. s. r. o.

The Division's position on the market

Power machine engineering (PME) is one of the most high-technology industries in the world. Power engineering projects are capital-intensive and time-consuming. The key objectives in the power machine engineering market are to improve energy efficiency, reduce the environmental footprint and promote economic growth by commissioning new power generation capacities.

In 2020, installed capacity of power plants globally increased by 233 GW⁹. The growth was driven by solar and wind power plants, which accounted for about 75% of newly commissioned capacities; combined with hydropower plants, their total share exceeded 80%. The large size of the share of renewable energy sources is due to the environmental agenda and postponement of commissioning of large fossil fuel power plants until 2021; among the latter, natural

⁸ Experimental Design Bureau of Mechanical Engineering.

⁹ Data from IEA, Electricity Market Report – December 2020.

gas-fired thermal power plants demonstrated the largest increase in installed capacity, accounting for 15% of the total newly commissioned capacity. Over the past year, the share of coal-fired thermal power plants in the total installed capacity decreased from 31% to 30%. The share of nuclear power generation in the global installed capacity remained at around 6%¹⁰.

Long-term forecasts predict that by 2030, global electricity consumption will increase by 23%¹¹.

The post-pandemic economic recovery will be accompanied by industrial growth and a growing importance of zero-carbon energy. Carbon emissions can be reduced to zero by developing hydrogen and renewable energy and abandoning fossil fuels, but this process will be resource-intensive. In the medium term, demand for liquefied natural gas (LNG) and natural gas may increase further, and they might gradually replace coal in the energy mix. In the nuclear power industry, the development of the market segment focused on small-scale reactors is supported by the development of distributed power systems. Overall, nuclear power generation can play a greater role both in the short term, by supporting economic recovery, and in the long term, by meeting stricter environmental standards.

In 2020, the Russian power machine engineering market was affected by the pandemic, which caused a postponement in project implementation. The DPM-shtrikh modernisation programme remained a key market driver, as its active implementation led to an increase in the production of new power generation equipment in Russia in physical terms by 173%, or 3.25 GW¹². This growth was driven primarily by an increase in the production of steam turbines, which totalled 430% in 2020. The rate of production of other types of main power generation equipment decreased: the hydraulic turbine segment declined by 61%; the production of GTU¹³ fell by 21%, while the production of steam boilers and nuclear reactors plunged by 76%.

In 2020, industrial output in Russia contracted by 3%¹⁴ due to the pandemic; this trend also affected the power machine engineering market. However, the positions of key players on this market remained unchanged. The share of the Mechanical Engineering Division in terms of revenue on the Russian market increased by 4%¹⁵ to 42%.

The Division produces all of the main equipment for Russian-design VVER reactors; it also participates in designing and producing equipment for research reactors and small-scale nuclear power plants and is expanding its capabilities in order to enter the market for equipment for Western-design reactors. To enable ROSATOM to remain a leader on the Russian power machine engineering market, in addition to its core business, the Division is also expanding its non-nuclear business segments and is setting ambitious goals in terms of expanding into new markets.



Compliance and introduction of quality management systems and standards

GRI 103-2

GRI 416-1

In 2020, all organisations controlled by JSC Atomenergomash (controlled organisations) improved the Unified Industry-Wide Quality Management System of ROSATOM (UIS-Quality) on a permanent basis:

1) In accordance with ROSATOM's order No. 1/485-P dated May 15, 2020, JSC Atomenergomash and its controlled organisations introduced extended functionality of UIS-Quality with the following modules:

- Control Operations (incoming inspection and acceptance);
- Compliance Assessment (assessment of the compliance of products with NP-071 rules).

2) Projects of Hanhikivi and Akkuyu NPPs were added (foreign customers agreed to use UIS Quality).

3) To use UIS-Quality, all key users at JSC Atomenergomash and controlled organisations completed training courses on irregularity management techniques (250 people – 100% in accordance with the programme).

4) To make documented information containing business requirements available, JSC Atomenergomash created an internal documentation management system (Regulations, Procedures, Provisions, Standards) based on the Tekhexpert information system and introduced it at workplaces. 100% of JSC Atomenergomash's employees have access to the system.

Increasingly strict safety requirements for nuclear facilities under construction and in operation impose special obligations on all of the Division's enterprises in terms of product quality. Safety assessment is becoming an integral part of the manufacture of all types of products.

On December 10-11, 2020, a certification agency (AFNOR, France) conducted the first quality management system audit of JSC Atomenergomash's compliance with ISO 9001:2015 and ISO 19443:2018 'Quality Management Systems. Specific Requirements for the Application of ISO 9001:2015 by Organisations in the Supply Chain of the Nuclear Energy Sector Supplying Products and Services Important to Nuclear Safety' and found no non-conformities. All enterprises of JSC Atomenergomash have undergone certification to the ISO 9001:2015 standard.

Developing the safety culture

In the reporting year, 155 employees – 100% according to the plan – of the Mechanical Engineering Division completed the Safety Culture Training Programme.

GRI 403-5

¹⁰ Data from IEA.

¹¹ Data from IEA, World Energy Outlook 2020.

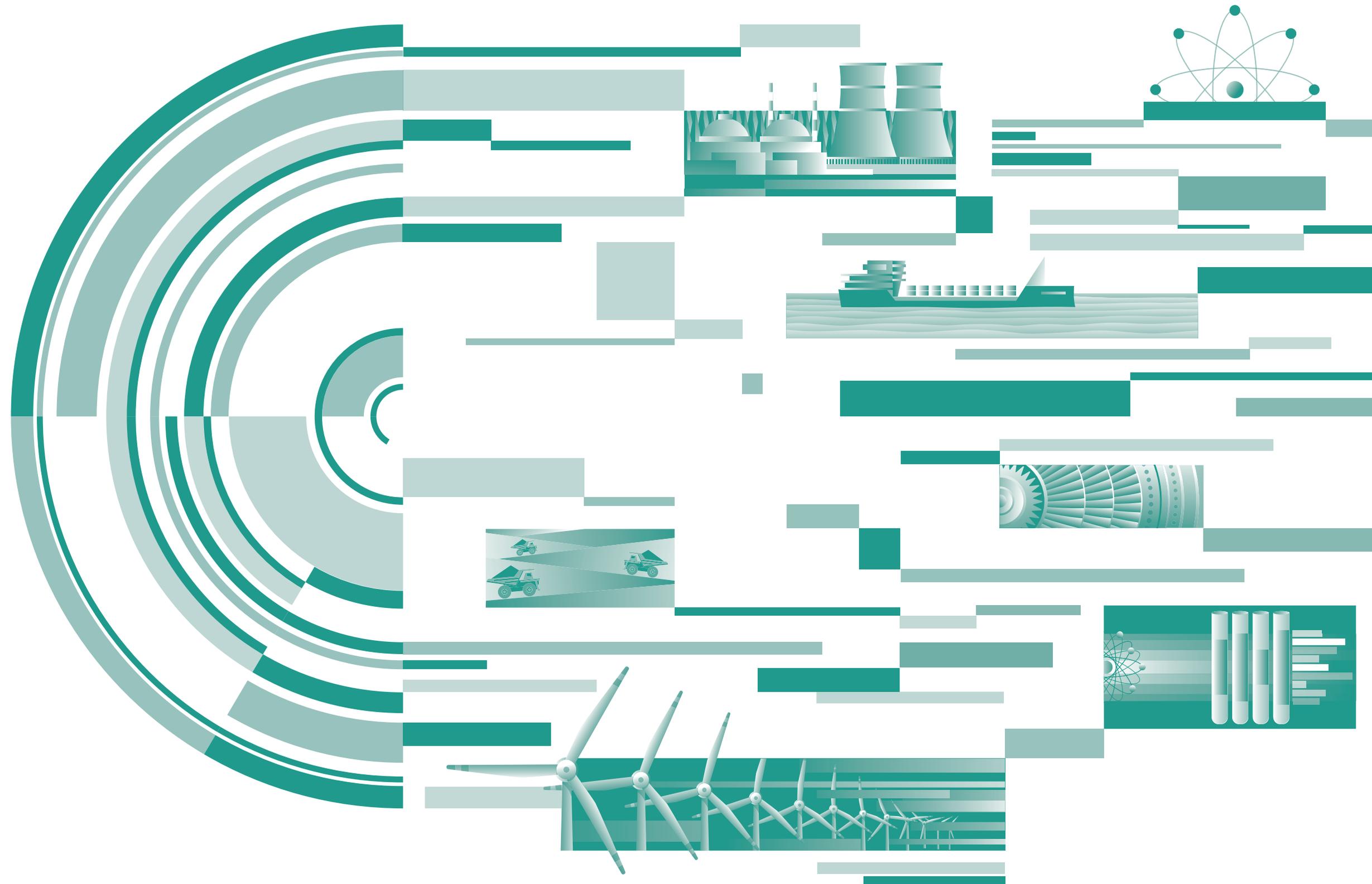
¹² Data from the Federal State Statistics Service.

¹³ Gas turbine units.

¹⁴ Data from the Federal State Statistics Service.

¹⁵ Compared to 2019.

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





Key results for 2020

Indicator	2018	2019	2020
Shipment of mechanical engineering products, number of NPPs	6	9	19
Share in the Russian power machine engineering industry, %	34	38	42
Consolidated revenue, RUB billion	71	75	83
Order portfolio, RUB billion	623.8	756	850
Average headcount, people	16,064	16,733	17,978
LTIFR ¹⁶	0.11	0.14	0.07
Taxes paid, RUB billion	6.8	8.1	7.6
Charity expenses, RUB million	28	76	85
Occupational health and safety costs, RUB million	386	333	535

The investment programme ensures the achievement of the Division's main mission: to design and develop globally competitive technological solutions for the energy sector in order to maintain a high standard of living and to improve the Company's business performance.

In 2018–2020, the Division invested RUB 15.2 billion in supporting and developing production facilities:

- RUB 4.0 billion in 2018;
- RUB 4.5 billion in 2019;
- RUB 6.7 billion in 2020.

Given a significant increase in utilisation under NPP construction projects, in 2021–2025, the Division plans to invest more than RUB 39.1 billion.

To date, the following major investment projects have been launched and are being implemented at key production sites for NSGP equipment:

- The project titled 'Creating Facilities at JSC AEM-Technology Under the Road Map for the Supply of Equipment for NPPs Under Construction.' It is intended that the site will be provided with production facilities by 2022 in order to accommodate peak utilisation by 2023–2025 and to achieve production capacity of four power units per year to ensure the fulfilment of the target for the supply of key equipment for the construction of ROSATOM's new NPP units in Russia and abroad.
- ARABELLE Project at the site of PJSC ZiO-Podolsk. The project is aimed at the acquisition of equipment necessary to perform orders for the manufacture of turbine island equipment for NPPs under construction abroad.
- The project 'Acquisition of New Production Equipment for the Production Base of JSC Experimental and Design Organisation GIDROPRESS' aimed at increasing output of SUSH SHEM-3 drives for NPPs in Russia and abroad.

In addition, a number of projects are underway to maintain and upgrade the production facilities of JSC CDBMB, JSC RPA CNIITMASH and other companies controlled by the Division.



Investment results

The Division is a single-source supplier and main manufacturer of equipment for the reactor and turbine islands of Russian-design NPPs that are currently under construction. Given the expected growth in production for NPP construction projects, the Division's management is implementing a large-scale investment programme to modernise the Division's production assets.

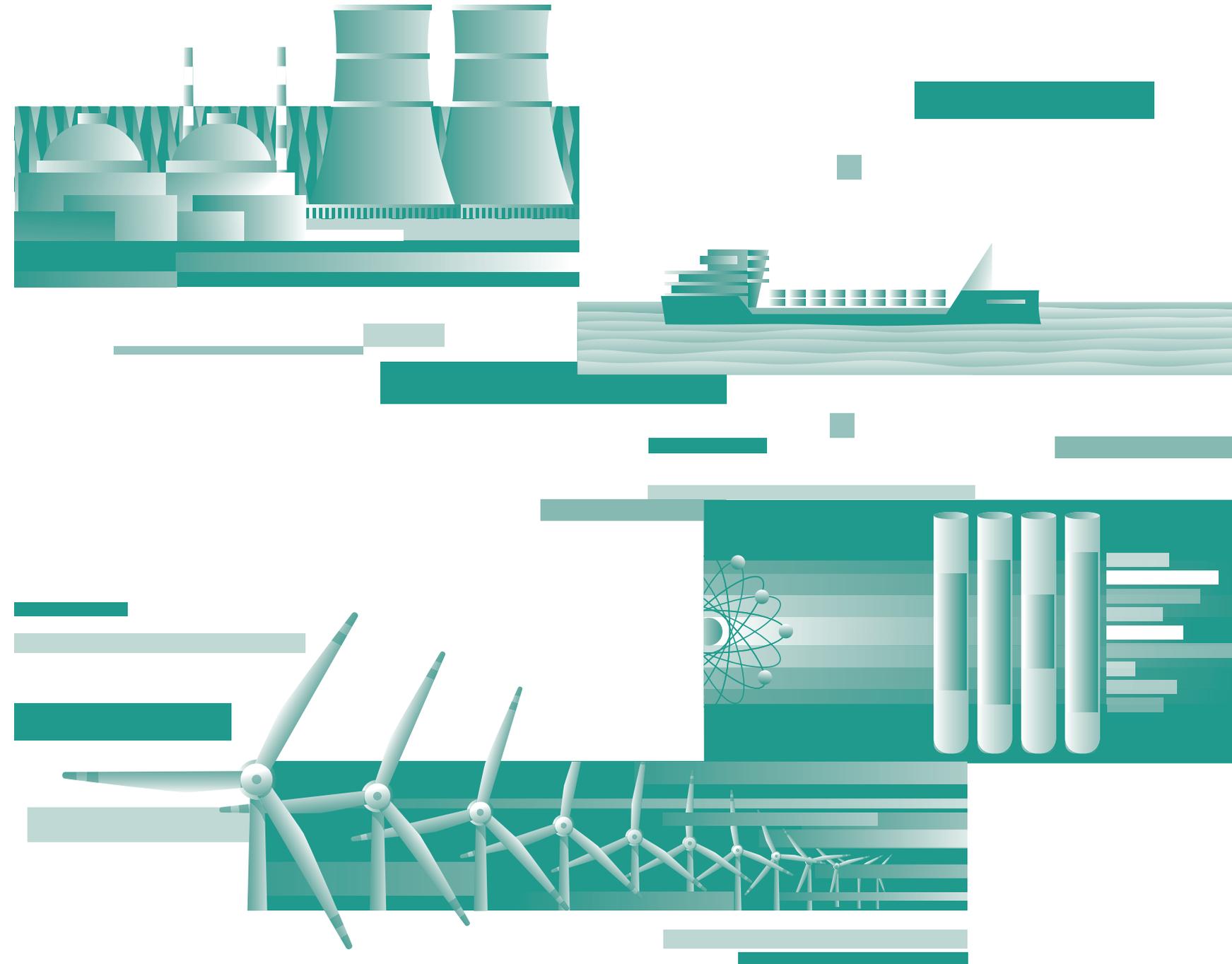
The aim of the investment programme is the unconditional execution of contracts for the supply of equipment as part of the Road Map for the Supply of Key Equipment for NPPs in Russia and Abroad, as well as the development of the research, production, and experimental base in the industry.

¹⁶ The indicator does not include foreign enterprises of the Division.

2.3

Key events in 2020

- Production and shipment of key equipment for Rooppur and Akkuyu NPPs were completed.
- Equipment for fuel collection, prototypes of control and safety system (CSS) actuators and tanks of the second main circulation pump for research and industrial reactors were supplied.
- The Division underwent product certification as a supplier and secured orders for the delivery of blanks for the rotors of low-pressure, high-pressure and intermediate-pressure cylinders (HIPC) of the steam turbine for Akkuyu NPP.
- JSC Atomenergomash signed a contract for the development of engineering designs and mock-ups for the Proryv Project.
- Deliveries of blanks for follow-on multipurpose nuclear icebreaker (MPNI) No. 3 were completed.
- The Division signed a contract for the package supply of a nuclear propulsion unit and large-size hull castings for the Lider MPNI.
- A conceptual design for an optimised floating power unit was developed, and the project reached the engineering design stage.
- The shipment of all boiler equipment for the first thermal solid-waste treatment plant was completed, and the shipment of equipment for the second waste-to-energy plant (out of four plants) was started.
- Equipment was delivered to the Riverside waste-to-energy plant in the United Kingdom. Such cooperation opens opportunities for involvement in other European projects.
- Tests of the first Russian large-capacity LNG pump for one of the leading oil and gas producers were successfully completed. The equipment was handed over to the customer.
- JSC Atomenergomash was included in the list of Russian systemically important companies.



**SUSTAINABLE
DEVELOPMENT**



GRI 102–16



Sustainable development management system

In the course of its operations, the Company adheres to the principles of the UN Global Compact, the world's largest corporate sustainability and social responsibility initiative managed by the UN, with over 13,000 corporate participants from more than 160 countries.

GRI 103–1

The UN Sustainable Development Goals are a call to action by all countries to promote prosperity while protecting the planet. They recognise that building economic growth must go hand-in-hand with strategies aimed at ending poverty and addressing a range of social needs including education, health, social protection and job opportunities.

The Division manages its production operations in such a way as to support comprehensive economic, social and environmental development of its organisations and the regions where they are located. The Company pursues a socially-oriented policy that meets the fundamental needs of the residents in its home towns and cities without compromising the interests of future generations. According to the sustainable development principles, JSC Atomenergomash manages its business based on the principles of openness and close interaction with stakeholders.

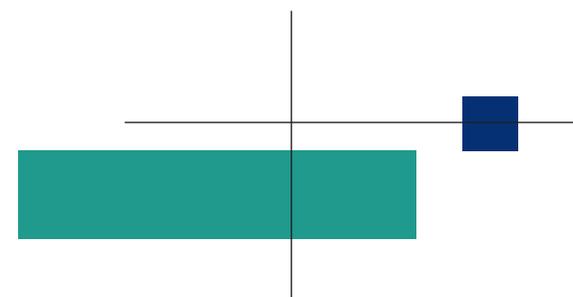
The development of new businesses is one of the Company's key strategic activities. In 2020, the Division's revenue from these business areas totaled RUB 48 billion. It is expected to gradually grow by 2030. That allows JSC Atomenergomash to create new jobs and ensure social stability in the regions of operation. The new-business development programme implies the use of the Division's technology, production and human resources, as well as the development of alliances and business partnerships with local enterprises.

GRI 103–2

Sustainable development regulations

The Division adopted a set of documents regulating some aspects of sustainable development activities. The most important documents are:

- the Uniform Industry-Wide Public Reporting Policy;
- the Uniform Industry-Wide Environmental Policy;
- the Uniform Industry-Wide Social Policy;
- the Uniform Industry-Wide Anti-Corruption Policy;
- the Uniform Industry-Wide Procurement Standard;
- methodological Charity Guidelines.



Key sustainable development projects

The Division attaches great importance to environmental safety in affected areas, sustainable use of natural resources and energy. The Company is introducing automated utility metering systems and energy efficiency methodology. In particular, JSC Atomenergomash's enterprises are taking measures to reduce hazard class I mercury-containing waste by replacing fluorescent light bulbs with energy-saving LED light bulbs. The Division is also introducing waste sorting.

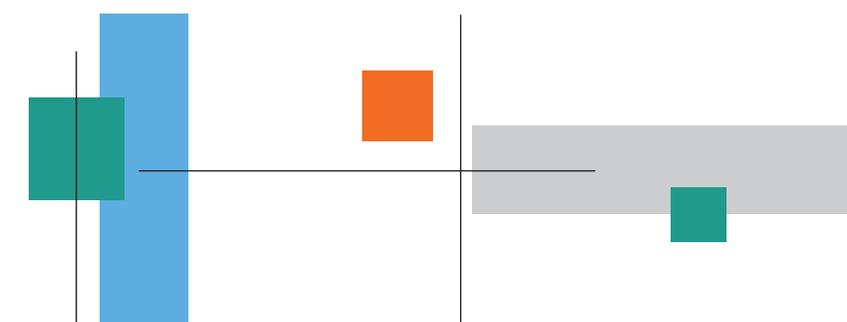
For details on environmental safety, see Chapter 9. Safety of Operations.

JSC Atomenergomash invests in the regions of operation, contributing to their sustainable development, including through volunteering activities aimed at creating a socially responsible society. The Company actively promotes a volunteering development initiative as part of forming a sustainable development management system. Corporate volunteering has a great social effect and, in addition, benefits both employees and the Division.

In the reporting year, JSC Atomenergomash continued to plant trees in its home towns and cities. For example, employees of AAEM LLC planted more than 30 larches at the Gladyshevsky nature reserve. At the Popovka River Valley Reserve, volunteers collected 12 m³ of waste. To preserve biodiversity, employees built about ten houses for endangered bats. With such events, we not only help to conserve nature by reducing the anthropogenic impact on recreation areas, but also organise outdoor activities for our employees and their families. Some enterprises launched environmental charity projects on collecting bottle caps ('Caps for Kindness') and batteries for their proper disposal at special facilities.

At the end of 2020, the Division implemented another initiative – Marvel Christmas Tree. As part of that charity event, the employees involved bought New Year gifts for children from a boarding school to support them.

As a socially responsible company, JSC Atomenergomash also helps elderly people. For example, JSC Afrikantov OKBM runs the We Are Responsible. OKBM campaign to support retirees that worked at the enterprise and create a link between different generations of nuclear industry employees.



JSC Atomenergomash also supports the Donor Day initiative engaging people in voluntary blood donation. Those events are regularly held at the Company's venues. The enterprises planned many events to be held throughout the entire calendar year.

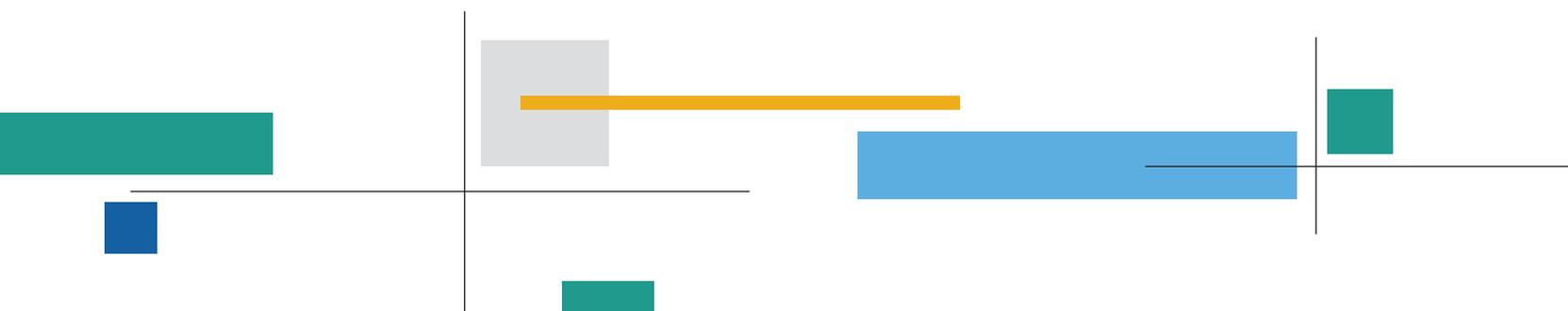
Another important part of the Company's sustainable development is occupational health and safety events, support for employees and their families, corporate social programmes, and fair wages and salaries. The Mechanical Engineering Division's enterprises are major taxpayers contributing significantly to budgets of the regions of operation. In some regions, the Division donates funds to municipalities for social and economic development and urban improvement programmes.

For example, Druzhba Square included in the Federal Programme titled 'Creating a Comfortable Urban Environment' was restored thanks to a donation from the Atommash branch. The area was redesigned, with a new irrigation system, paving blocks, terraces, green spaces, fences, additional outdoor lights, a splash fountain, parking lots, playgrounds etc. The improvement process is ongoing, with more than RUB 15 billion allocated for that purpose.

For details on volunteering and charity activities, see Chapter 8. Developing the Regions of Operation.

GRI 413-1

GRI 413-2



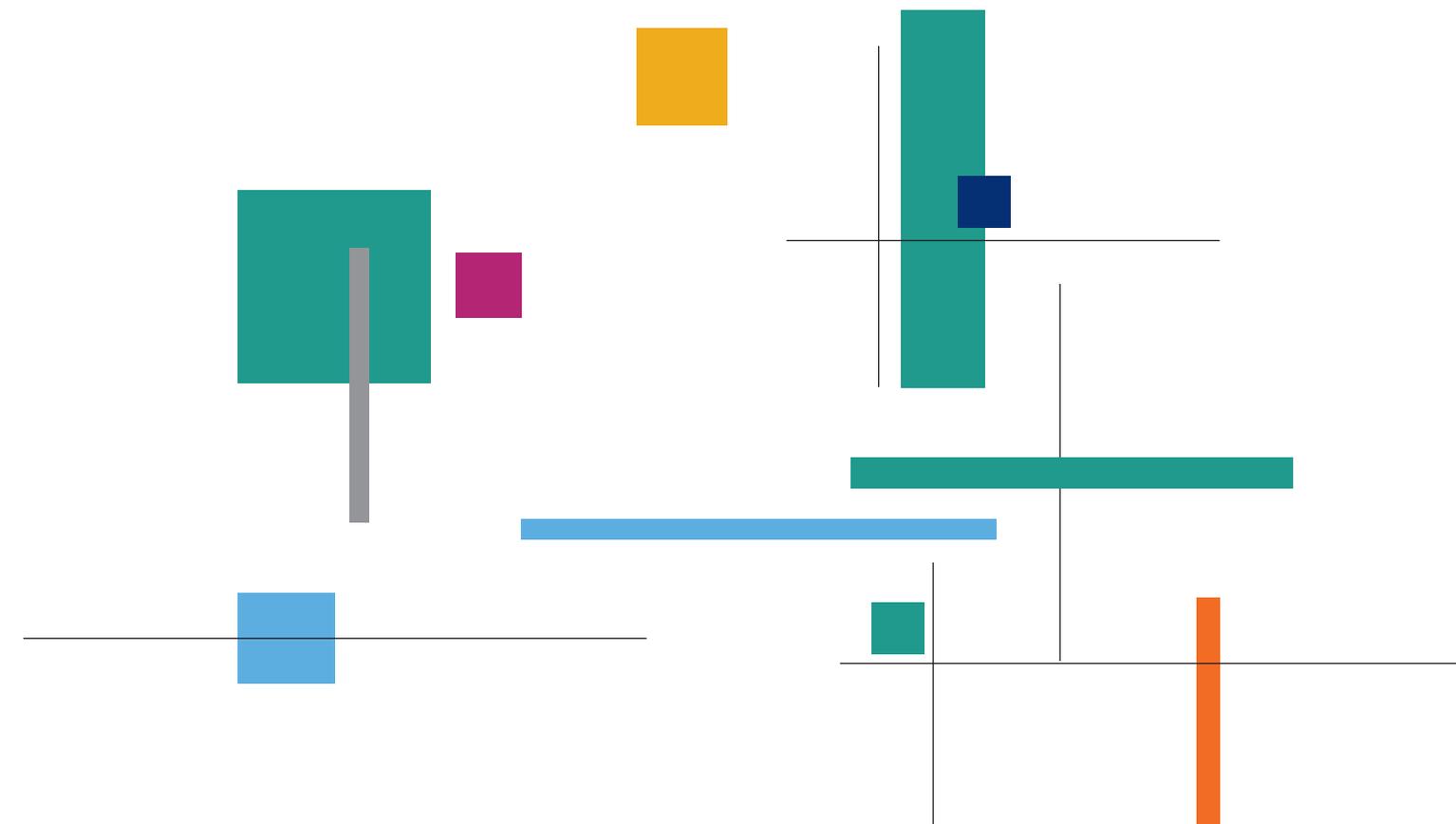
**DIGITISATION:
TECHNOLOGIES
AND PRODUCTS**



In 2020, the Division started to implement its new digitisation strategy 2030 developed in 2019. The Company plans to focus on the digitisation of its enterprises' processes, mainly in the area of production, and develop integrated solutions ensuring a transition from document exchange to exchange of data and information model components with industry enterprises and external counterparties.

Major projects	Results in 2020
Unified Digital Nuclear Industry Platform	
Introduction of a system to monitor production equipment at ROSATOM's Mechanical Engineering Division. The system will allow the Division's enterprises to become more competitive in the global market through better use of key production equipment, conduct the basic digitisation of processes at production facilities and start to accumulate equipment operation statistics: all the key equipment (machinery) of the Division will be connected to the system, with information consolidation at the level of the holding company.	Bidding procedures established, contract signed with the Contractor. Project engineering conducted. Agreement made and a grant for 50% of the project cost received.
Introduction of an automated information system for managing requirements, configuration and changes at ROSATOM's Mechanical Engineering Division. The system automates processes for managing requirements, configuration and changes when manufacturing and supplying equipment for nuclear installations and will allow the Division, among other things, to meet the requirements of NPP Customers under international projects.	Project documents and requirements, configuration and change management methodologies developed and approved, fundamental business processes of the system formalised. Preparation started to train users and conduct acceptance tests.
Digitisation of the interaction between JSC TVEL and JSC Atomenergomash in the scope of PLM consolidation (interaction between OKBM and TVEL's enterprises). The project is aimed at ensuring electronic design documentation and data exchange (including electronic (3D) models and structures of products) following the creation of the unified digital environment in PLM systems of organisations within the scope of consolidation.	Acceptance tests and preparation of the system for pilot operation. The system allows the users to share components of the NPP digital model as part of the end-to-end design process.

Major projects	Results in 2020
Key projects of controlled organisations	
JSC AEM-Technology Ensuring occupational safety, introduction of positioning and video analytics systems for PPE detection. Intellectual system for controlling movements of personnel in working areas and compliance with occupational safety requirements.	Putting the system into operation at pilot facilities.
JSC Afrikantov OKBM and JSC AEM-Technology Introduction of a mathematical and simulation modelling system based on import-independent software.	LOGOS calculation unit put into pilot operation.



**INNOVATION
AND DEVELOPMENT
OF SCIENCE**



Scientific and technological activities of ROSATOM’s Mechanical Engineering Division are aimed at searching, developing and introducing innovative solutions regarding materials, technologies and design of power equipment to ensure competitiveness of products and expansion into new markets.

In 2020, the Division’s enterprises implemented a number of innovative solutions to optimise designing, manufacturing and testing of equipment and to reduce production costs:

- JSC Experimental and Design Organisation GIDROPPRESS:
 - the introduction of CFD methods to support designing and justifying RU projects: key performance indicators (KPIs) for 2020 under the project titled ‘Conducting Experiments. Processing and Analysis of Experiment Outcomes’ were achieved, with reports issued on the basis of the results;
 - the development of the coherent system computer code to support designing modern and innovative RU projects and justifying their safety: the key event of 2020 is the achievement of KPIs ‘Adaptation of the Software Unit for Thermomechanical Fuel-Element (TFE) Calculations as Part of the Functionality of the System Computer Code’;
 - the verification of Russian thermohydraulic units based on the PKL-4 bench: KPIs for 2020 – ‘Verification of KORSAR/GP Software Based on Data of the OECD NEA’s PKL Phase 4 Project. Part 1’ – were achieved. The report prepared based on the results of works done confirms that all targets for 2020 were met;
 - a study of brittle fracture resistance characteristics of the base metal and welding joint metal of a VVER reactor under Russian and international requirements. The work was completed successfully.
- JSC RPA CNIITMASH:
 - the development of vessel high-strength and heat-resistant materials and the methodology for assessing their life cycle for VVER-S and VVER-SKD¹⁷. The enterprise developed compositions of welding materials for vessels for promising NPU projects, conducted research on stress-rupture and creep properties of the new vessel materials, and determined basic requirements for the methodology to assess the lifecycle of vessel materials used for VVER-SKD. Steel with the adjusted composition was produced. The Customer accepted the report;
 - research on potential elevated temperature strength and heat resistance of alloys based on EK64 and EK82-ID. Structure and properties formation mechanisms were studied for wrought high-temperature nickel-based alloys. Important basics of high-temperature nitriding were developed. Samples of high-temperature alloys hardened with solid solution and nitride were produced and tested. The Customer accepted the report;
 - the provision of a rationale for engineering materials for components of reactor coolant pump sets, a rationale for capacity of the 15KhM+10Kh9MFB dissimilar steel weld for the BREST-OD-300 fast reactor, receipt of fracture toughness characteristics for weld joints of a bimetal sheet of the 09G2S clad steel (stage of 2020);
 - the development and justification of applying base, welding and surfacing materials to manufacture equipment of safety class 2 and 3 and class EYT according to the classification from YVL instructions for Hanhikivi 1 NPP’s equipment.

¹⁷ Supercritical-Water-Cooled Reactor.

- Sverdlovsk Chemical Engineering Research Institute JSC:
 - R&D conducted on the topic ‘The Development of the Engineering Design of a Robotic Unit Producing Uran-Plutonium Fuel for an Industrial Power Unit. Stage of 2020’;
 - R&D conducted on the topic ‘Research on Susceptibility of Stress Corrosion Cracking Under a Strain of the Modified KhN63MB Alloy in Molten Chloride Salts.’

Number of patents and certificates for intellectual property obtained by the Division (pcs.)

2018	2019	2020
73	90	36

R&D agreements concluded with universities, pcs / RUB million

Company	2018		2019		2020	
	Number of contracts	Total value	Number of contracts	Total value	Number of contracts	Total value
JSC Experimental and Design Organisation GIDROPPRESS	2	19.0	-	-	-	-
JSC Afrikantov OKBM	5	38.4	5	41.7	-	-
JSC RPA CNIITMASH	1	0.99	3	39.6	-	-
JSC CDBMB	-	-	1	2.25	-	-
PJSC ZiO-Podolsk	-	-	-	-	-	-
JSC AEM-Technology	-	-	-	-	-	-
Sverdlovsk Chemical Engineering Research Institute JSC	1	7.75	2	1.77	1	0.24
Total:	9	66.14	11	85.32	1	0.24

Investment in innovation and R&D is one of the main factors giving the Division a competitive edge. The Division is aware of the need to develop this area and, accordingly, gives priority to the implementation of R&D projects.

R&D costs, RUB million

Company	2018	2019	2020 (target)	2020 (actual)
JSC CDBMB	0	70.15	79.02	71.22
PJSC ZiO-Podolsk	3.0	17.1	37.99	37.99
JSC AEM-Technology	0	45.84	6.88	5.20
JSC Afrikantov OKBM	2,454.7	2,642.4	3,685.1	3,804.5
JSC Experimental and Design Organisation GIDROPPRESS	158.66	130.77	874.73	756.68
JSC RPA CNIITMASH	149.47	207.66	808.48	150.57
Sverdlovsk Chemical Engineering Research Institute JSC	3,397.0	757.0	372.11	189.77
TOTAL (Division)	5,120.94	2,494.73	4,258.92	3,113.15

**NEW PRODUCTS
AND BUSINESSES**



A key topic of the Reporting Materials is the improvement of operating performance as the basis of achieving strategic goals. In 2020, the Division set an all-time record: three reactor vessels and 18 steam generators were manufactured. And now the Company is steadily continuing toward new achievements. The main advantage of ROSATOM's Mechanical Engineering Division is the package supply of equipment. JSC Atomenergomash supplies key equipment for all Russian-design NPPs under construction and for a number of foreign NPPs. The equipment produced by the Division's enterprises has been installed at one in five NPPs in the world.

Nuclear power industry

The Division is a reference supplier of a wide range of equipment for the reactor island and the turbine island of NPPs. In the reporting year, the Division's enterprises shipped mechanical engineering products to 19 NPPs on schedule.

The volume and geography of nuclear power markets are determined by ROSATOM's plans to build new NPP units in Russia and abroad; in recent years, there has been a significant growth in the number of foreign projects.

In 2020, the enterprises of JSC Atomenergomash manufactured the key turbine island equipment for a number of NPPs, including nine NPPs in Russia and ten NPPs abroad.

Shipbuilding

The expertise and capabilities of the Division's enterprises enable the Division to meet the highest quality standards. Enterprises of JSC Atomenergomash are leaders on the Russian market for the design and production of reactor units for the navy and the nuclear-powered icebreaker fleet. Today, the Company produces not only power units but also auxiliary equipment for the shipbuilding industry. The production chain formed in the Division and covering all stages, from a metal blank to the end product, enables the Division to offer a wide range of solutions meeting customer needs.

One of the key events for the shipbuilding business was the signing of contracts for the manufacture and supply of the power unit and large-size hull castings for the Lider nuclear icebreaker.

In the reporting year, the Division also developed a conceptual design and obtained funding to develop the engineering design of an optimised floating power unit, developed a conceptual design of a semi-submersible heavy transport vessel (SSHTV) and conducted the initial technical and economic assessment of the cargo base.

Thermal power energy

JSC Atomenergomash takes the leading position in the thermal power equipment market. Thanks to the capabilities of its enterprises, the Division can be involved in CHPP construction projects at all stages from design to post-sale services.

The target market for the Company is the market for equipment for thermal solid-waste treatment plants constructed under the Ecology national project. In 2020, the Division continued to manufacture and supply products for four thermal solid-waste treatment plants, with a capacity of up to 700,000 tonnes of waste and output of up to 70 MW per plant, in the Moscow Region. At the same time, the Division continues to supply and modernise power equipment in foreign markets: it delivered steam superheaters for the Riverside thermal solid-waste treatment plant located in the UK. The successful commissioning of that equipment gives the Mechanical Engineering Division an opportunity to receive references and participate in other foreign projects.

As part of the Programme for the Modernisation of CHPP Generating Facilities, the Division signed an agreement for manufacturing and supplying equipment for PJSC Irkutskenergo's TPP 10.

In 2021, the Division plans to actively participate in the DPM-shtrikh Modernisation Programme.

Gas and petrochemical industry

In the reporting period, JSC Atomenergomash produced and supplied a saline wastewater evaporation unit for ZapSibNeftekhim 2. The Company also manufactured and delivered Russia's first large-scale cryogenic LNG pump for a leading oil and gas producer. In 2020, the Division was still actively involved in import substitution of a wide range of critical oil and gas equipment.

A full-scale test bench for the testing of equipment for LNG production was designed at JSC D.V. Efremov Institute of Electrophysical Apparatus. The commissioning of this facility will enable full-scale development of Russian-designed LNG pumps and compressors, and testing and certification of Russian-made and foreign equipment in the Russian Federation.

Special steels

This business area comprises production and R&D assets specialising in the design of new structural materials and technologies and in the manufacture of finished products for the power industry, shipbuilding, the metals industry and mechanical engineering.

The priority task for this business area in 2020 was to produce blanks for follow-on nuclear icebreakers: hull castings for follow-on multipurpose nuclear icebreaker No. 3 were produced and shipped.

In addition, JSC Atomenergomash acts as a contractor manufacturing blanks for the nuclear power industry:

- it produced turbine rotors and HPC¹⁸ for Kudankulam NPP (power units No. 5, 6);
- after qualifying, orders were received from Akkuyu NPP (power unit No. 4).

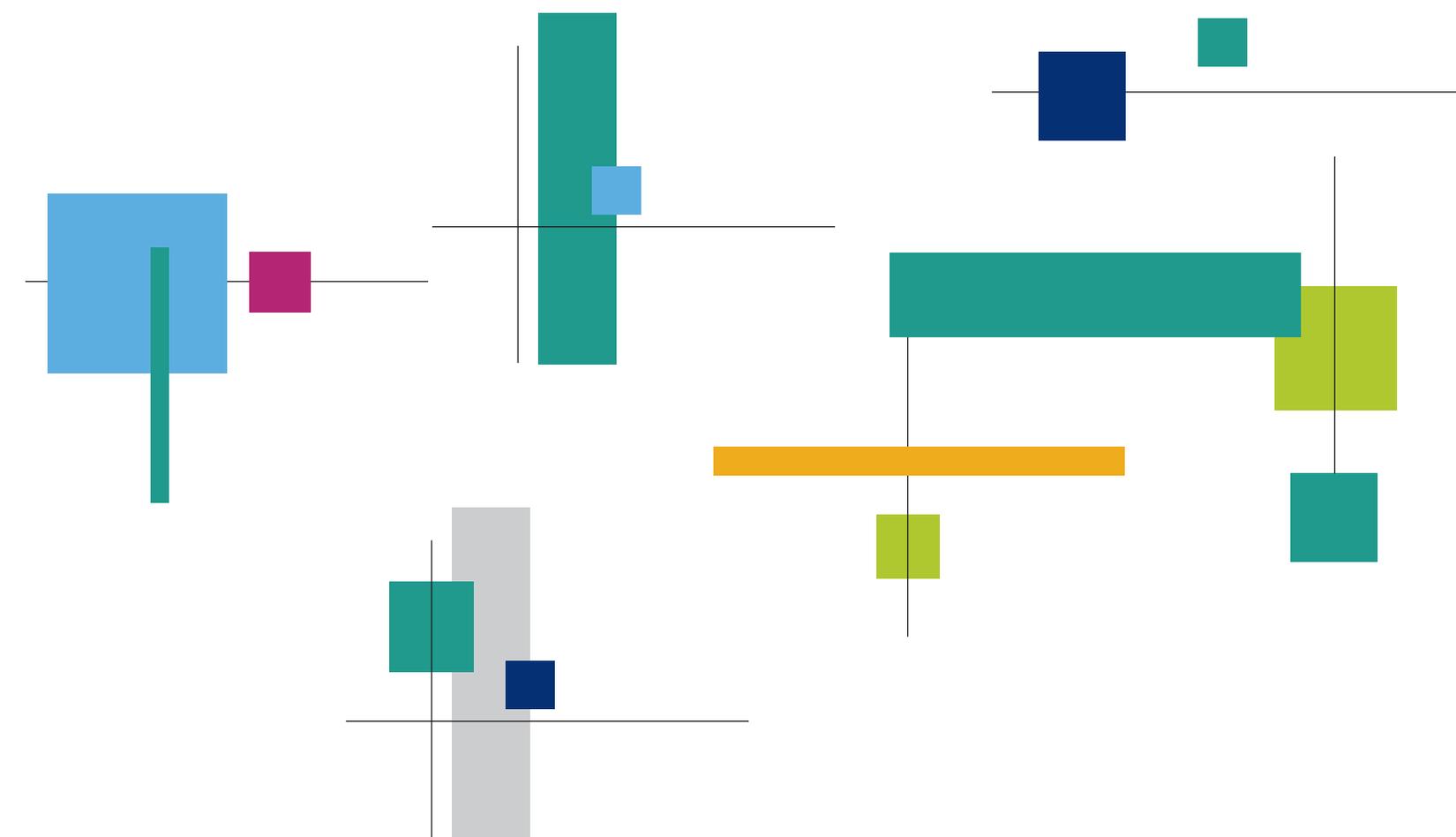
In the reporting year, the Division supplied products to Asia, Brazil and Mexico.

2020 was marked by deep R&D: JSC Atomenergomash's researchers created a special type of steel for mining equipment and a new corrosion-resistant material for equipment supplied to El Dabaa NPP.

Plans and objectives for 2021

- To ensure the supply of key equipment and perform work as part of ROSATOM's NPP construction projects.
- To consolidate the Division's position on target markets.
- To expand the range of equipment supplied by the Division and its sales footprint.

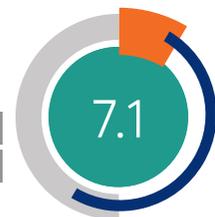
- To carry out existing contracts and develop cooperation with foreign companies and industrial partners.
- To develop NPP servicing.
- To increase revenue from new products and sales on foreign markets.
- To complete the construction of Russia's first LNG test bench and put it into operation.
- To commence the pilot operation of the first Russian large-capacity LNG pump.
- To participate in competitive tendering for the supply of equipment for leading national oil, gas and petrochemical producers.
- To proceed with qualification processes for the supply of special steel products and expand the overseas business footprint. To produce and complete the deliveries of reactor unit equipment (RITM-200), hull castings and propellers for follow-on multipurpose nuclear icebreakers No. 3 and No. 4.
- To ensure the engineering design of the Optimised Floating Power Unit.
- To produce sets of equipment for four waste-to-energy plants under construction.



¹⁸ High-Pressure Cylinder.

**DEVELOPING
THE HUMAN CAPITAL**





HR system

GRI 404-3

GRI 103-2

The Division has in place a single employee performance management policy that includes:

- developing standardised principles and tools for setting KPI targets and evaluating their achievement by employees;
- evaluating the level of employees' skills, including for the payment of bonuses¹⁹;
- preparing recommendations for forming the talent pool;
- preparing individual development plans for employees to plan further training.

The main indicator reflecting employee performance is labour productivity, which has been growing steadily in recent years.

Employee engagement surveys are an important driver of employee performance. Based on the findings of the survey, the Division's management can gain an insight as to whether employees in the industry are motivated to address prioritised tasks and can identify the key levers for increasing employee engagement and motivation.

GRI 402-1

In accordance with the Labour Code of Russia, employees in all enterprises of the Division are notified of organisational changes at least two months in advance.



Key personnel characteristics

GRI 103-1

Staffing of enterprises is one of the most important elements of effective business management and, undoubtedly, one of the key development priorities for the Division. The Company does business in a socially responsible manner and is committed to providing equal opportunities for employees in different gender and age groups.

GRI 102-7

GRI 102-8

GRI 405-1

The six largest enterprises of the Division (JSC Afrikantov OKBM, JSC AEM-Technology, PJSC ZiO-Podolsk, PJSC EMSS, JSC Experimental and Design Organisation GIDROPRESS and JSC CDBMB) account for more than 80% of the total headcount. The special features of their operations, namely the fact that jobs in these manufacturing enterprises are physically demanding, have resulted in the relevant predominance of men over women, with an average ratio of 65 to 35.

Headcount by gender (people)

Year	2018		2019		2020		2021 (estimate)	
Actual headcount	17,113		17,939		19,018		20,697	
By gender	male	female	male	female	male	female	male	female
	11,147	5,966	11,727	6,212	12,519		13,837	6,860
Average headcount	16,064.2		16,732.5		17,978.4		19,460.12	
By gender	male	female	male	female	male	female	male	female
	10,809.1	5,255.1	11,207.9	5,524.6	12,081	5,897	13,108	6,352.12

The majority of employees work full-time (98.9%). Fixed-term contracts were signed with 10.4% of employees.

Personnel structure by employment type

Employee category	2018		2019		2020		2021 (estimate)	
	male	female	male	female	male	female	male	female
Number of fixed-term contracts (people)	1,069	831	1,062	803	1,122	855	1,157	865
Share of fixed-term contracts (%)	11.1		10.4		10.4		9.7	
Number of part-time employees (people)	146	82	128	96	107	103	123	102
Share of part-time employees (%)	1.3		1.2		1.1		1.1	

The Division's enterprises successfully maintain an optimal balance between the number of highly qualified and experienced employees of retirement age (about 15%) and young promising employees (31%).

Personnel structure by age group (people)

Employee category	2018		2019		2020		2021 (estimate)	
	male	female	male	female	male	female	male	female
Under 35	3,861	1,769	4,006	1,648	4,164	1,790	4,926	2,019
Retirement age	1,493	1,364	1,474	1,354	1,454	1,336	1,371	1,273

All employees have received appropriate education necessary to obtain the relevant qualifications: at production sites, employees with secondary vocational education prevail, while employees in design bureaus and holding companies have higher vocational education. In 2020, the share of employees with higher education in the Division's enterprises stood at 55.4%. A number of employees have academic degrees and the titles of professors. The Division employs two academicians of the Russian Academy of Sciences and 22 professors.

¹⁹ Performance assessment covers employees in all of the Division's enterprises.

Employee turnover

GRI 401-1

Employee turnover²⁰ is inevitable in any company. Across the Division's enterprises, there are no cyclical (seasonal, etc.) headcount fluctuations: changes in the headcount are caused by downsizing and voluntary retirements. In 2020, the average employee turnover rate across the Division decreased against 2019 and reached 10%. The share of newly hired employees stood at 16%.

Employee turnover (people / %)

Age and gender	2018		2019		2020	
	people	%	people	%	people	%
Under 35	713	13	692	12	571	10
Over 35	1,235	11	1,251	10	1,154	9
Male	1,339	12	1,191	10	1,161	9
Female	608	10	752	12	564	11
TOTAL	1,947	11	1,943	11	1,725	10

Newly hired employees (people / %)

Age and gender	2018		2019		2020	
	people	%	people	%	people	%
Under 35	1,391	25	1,411	25	1,231	22
Over 35	954	8	1,049	9	1,578	12
Male	1,610	14	1,639	14	1,904	13
Female	735	12	821	13	905	14
TOTAL	2,345	14	2,460	14	2,809	16

²⁰ Calculations are based on the average headcount.



Employee training

GRI 103-1

Professional development of employees is a vital prerequisite for the Division's dynamic growth and competitive strength.

The Division's enterprises are active participants of professional skill and managerial competence development programmes. Special emphasis is placed on the onboarding of new employees and transfer of key knowledge from experienced mentors to ensure that young specialists quickly demonstrate high performance and preserve the unique and valuable proprietary information within the Division.

Average annual training hours per employee

Category	2018	2019	2020	2021 (estimate)
Top managers	32	43	36.47	35
Middle-level executives	34	30	63.95	52
Specialists and operating personnel	56	37	31.57	36

GRI 404-1

An increase in training hours for middle-level executives in 2020 was determined by the mandatory occupational safety certification. As for other employees, some training requests were postponed until 2021 due to a prohibition on mass in-person personnel training events.

Development of operating personnel

- As ROSATOM's team members, specialists of enterprises of JSC Atomenergomash won two gold medals in the WorldSkills Hi-Tech 2020 National Competition.
- An employee of JSC AEM-Technology won the silver prize in WorldSkills Russia 2020 and made Russia's top 3 best welders.
- Specialists of Afrikantov OKBM topped the Lifecycle Management rankings and won a special prize from the Industrial Development Fund.
- At the Atomash branch of JSC AEM-Technology and JSC RPA CNIITMASH, competence centres specialising in welding technologies trained over 700 specialists in the industry and employees of other organisations.

GRI 103-2



Implementation of the social policy

The Division's enterprises comply with the Industry-Wide Agreement on Nuclear Power, Industry and Science for 2018-2020 between ROSATOM, the Russian Union of Employers in the Nuclear Industry, Power and Science and the Russian Trade Union of Nuclear Power and Industry Workers. It establishes general principles for regulating social and labour relations in the nuclear industry, including mutual obligations of the parties related to matters concerning remuneration, working conditions and occupational health and safety, the work-life balance, employment, social guarantees, benefits and compensation for employees.

GRI 102-41

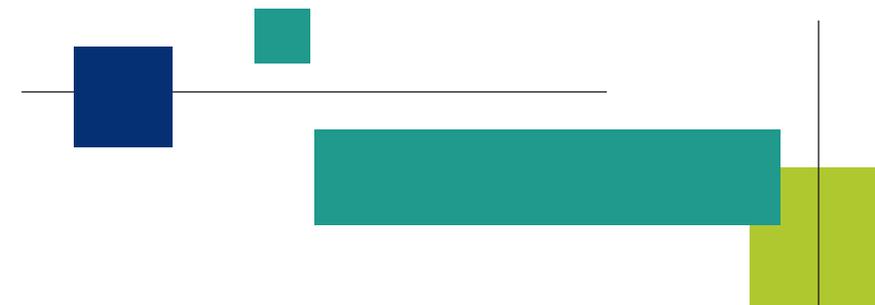
More than 80% of the Division's enterprises have in place collective agreements that cover all employees of the enterprises.

GRI 401-2

The Division's enterprises provide all their employees, regardless of the status and type of employment contract, with a package of social welfare payments and benefits approved in the relevant regulatory documents:

- health insurance;
- pension schemes;
- housing programmes;
- health resort treatment and recreation for employees and their children;
- sporting and cultural events;
- catering arrangements for employees;
- provision of financial assistance;
- subsidised gym membership;
- support for veterans and retirees of the industry.

In 2020, social expenses per employee totalled RUB 26,000.



Occupational health and safety

One of the Division's priorities is to reduce the number of accidents, incidents, fatalities and injuries. The Division is fully aware of its responsibility towards its employees, their friends and families, and towards society as a whole and, accordingly, seeks to provide the most favourable and comfortable working conditions.

The Division's enterprises comply with all industrial safety and occupational health and safety requirements. Performance in this area is assessed through the Lost Time Injury Frequency Rate (LTIFR) KPI. In the reporting year, it stood at 0.07, which is 4.5 times better than the target (0.32) and less than in 2019.

In 2020, there were two operational incidents at the Division.

To prevent injuries and occupational diseases, the Division's enterprises take preventive measures stipulated by local regulations.

As new rules stipulating national occupational safety requirements developed as part of the implementation of the 'regulatory guillotine' for 2021 came into force on January 1, 2021, the Division's enterprises plan to update their current local occupational safety documents.

Some enterprises (JSC Afrikantov OKBM, PJSC ZiO-Podolsk, JSC Experimental and Design Organisation GIDROPRESS, JSC RPA CNIITMASH, AAEM LLC) have undergone certification to the ISO 45001 international standard stipulating requirements for an occupational health and safety management system. In 2020, there were no serious injuries and fatalities at the Mechanical Engineering Division.



GRI 103-1

GRI 102-11

GRI 103-2

GRI 103-3

GRI 403-9

GRI 403-9

GRI 103-2

GRI 403-1

GRI 403-9
GRI 403-10

Workplace injuries and occupational diseases

Indicator	Gender	2018	2019	2020
Injuries	Male	2	5	2
	Female	2	1	0
Days lost because of injuries	Total	276	265	10
Occupational diseases	Male	2	1	1
	Female	0	0	0
Fatalities	Male	0	0	0
	Female	0	0	0
LTIFR	Total	0.11	0.14	0.07

A number of enterprises (Ganz EEM, ARAKO spol. s. r. o) have been issued with a certificate of compliance with the requirements of the OHSAS 18001 international standard on the occupational safety and health management system.

The Division's enterprises continue to actively invest in developing their occupational health and safety activities. In 2020, occupational health and safety costs totalled RUB 535 million.

Occupational health and safety costs (RUB million)

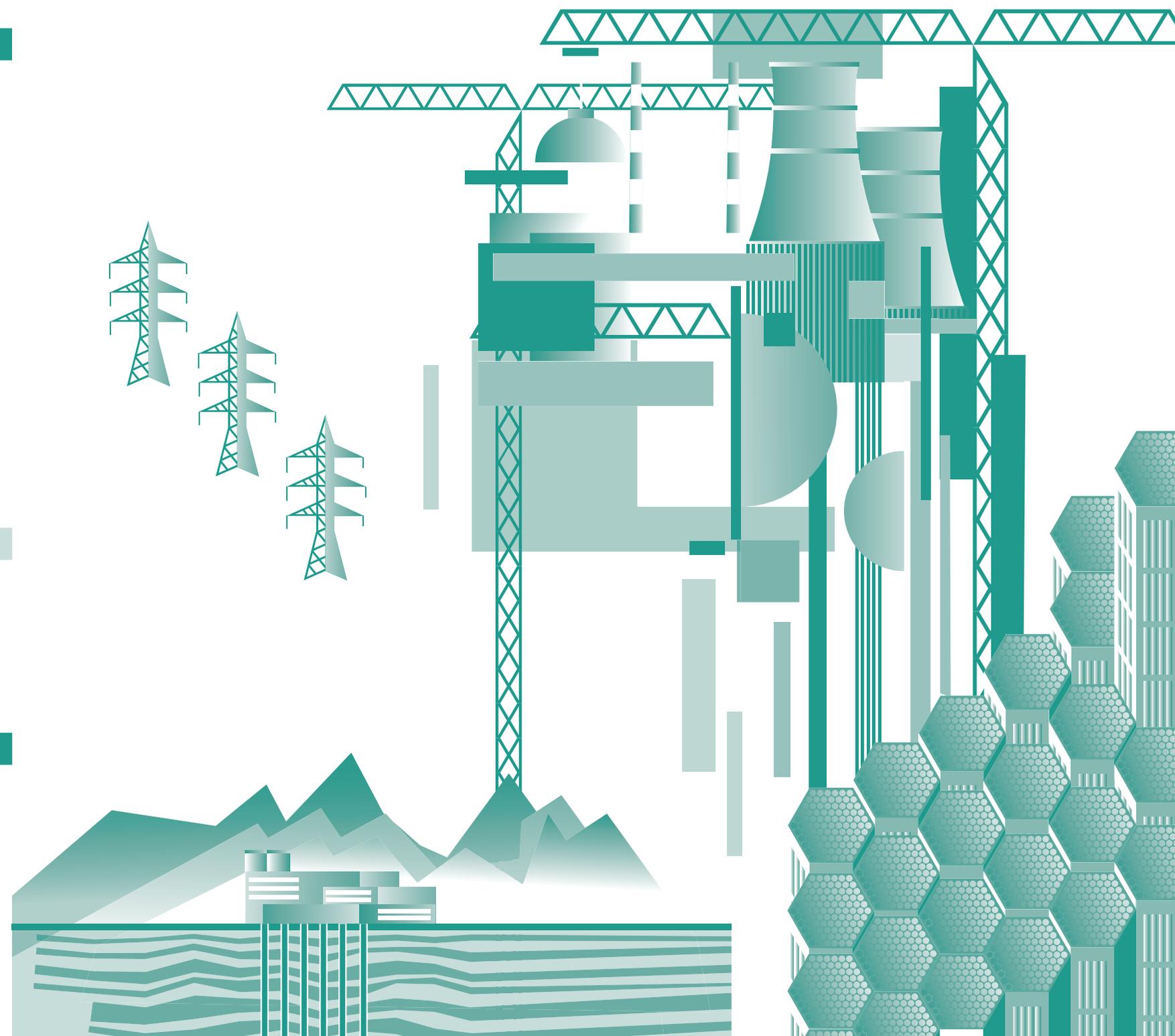
2018	2019	2020	2021 (estimate)
404.9	359.4	535	439.9

GRI 403-3
GRI 403-6

All employees working in hazardous working conditions (4,860 people) regularly undergo periodic medical examinations and are entitled to extra medical examinations.

Number of employees working in hazardous working conditions (people)

2018	2019	2020
4,377	4,498	4,860



**DEVELOPING
THE REGIONS
OF OPERATION**





8.1 Support for local communities

The Division’s enterprises make a significant impact on local communities through significant investment in production facilities, good working conditions, and charity programmes. The Company contributes to the social and economic development of the regions of operation.

In the reporting year, ROSATOM’s Mechanical Engineering Division continued to work in this area jointly with local authorities under current partnership agreements: the Division supported urban infrastructure, municipality improvement, and environmental projects. Despite the pandemic-related restrictions, in the reporting year, the Company continued to support sports and culture initiatives as much as possible and implemented some charity initiatives and sponsor projects.

The Division’s enterprises pay taxes to budgets of different levels every year, with JSC Experimental and Design Organisation GIDROPRESS, JSC Afrikantov OKBM, JSC AEM-Technology and PJSC ZiO-Podolsk ranking among the largest taxpayers in their respective regions.

GRI 207-4

Payments to budgets of different levels (RUB ‘000)

Indicator	2019		2020		2021 (estimate)	
	Accrued	Paid	Accrued	Paid	Accrued	Paid
Total taxes and duties:	8,212,297	8,167,557	10,251,882	7,636,857	3,383,730	5,816,064
Federal budget – total	8,009,664	7,942,870	9,507,536	6,828,788	2,783,515	5,193,630
Regional budgets – total	150,255	178,907	702,708	759,769	546,623	575,756
Local budgets – total	52,378	45,780	41,638	48,300	53,593	46,678



8.2 Charity and volunteering projects

GRI 103-1

The development of social programmes and active communication and cooperation with regional governments on matters related to the labour market helps to make ROSATOM’s Mechanical Engineering Division more attractive to employees and reduce social tension in the regions.

Regional enterprises of the Division are involved in urban improvement and infrastructure development in its regions of operation, especially in their host towns and cities. In addition, the Company takes part in charity projects. In total, in 2020, the Division’s enterprises spent over RUB 85 million on charity projects.

GRI 203-2

Charity expenses (RUB ‘000)

Enterprise	2018	2019	2020
JSC Atomenergomash	6,547	7,000	7,413
JSC Experimental and Design Organisation GIDROPRESS	450	5,700	1,695
PJSC ZiO-Podolsk	955	7,000	1,066
JSC Afrikantov OKBM	19,724	18,693	18,026
JSC AEM-Technology	166	15,653	35,916
JSC CDBMB	-	-	100
PJSC EMSS	-	22,296	21,023
TOTAL	27,842	76,342	85,239

Volunteering and charity projects

GRI 203-2

No.	Name	Description
1	Helping the elderly	The We Are Responsible. OKBM charity campaign: giving souvenir gifts in honour of the 75th anniversary of both the nuclear industry and JSC Afrikantov OKBM, as well as grocery New Year gift cards to retirees and veterans of the company. Retirees receive both financial aid and assistance with activities of daily living from employees (JSC Afrikantov OKBM, Nizhny Novgorod.)

No.	Name	Description
2	Helping children (assistance to orphans, cancer patients and those suffering from other diseases)	Collection of gifts and humanitarian aid for the Aistenok children’s social rehabilitation centre, for low-income families with many children, and for children with disabilities at boarding school No. 2. In addition to the gifts collected for children, a New Year party was held in the Aistenok SRC (Atomash branch of JSC AEM-Technology, Volgodonsk). The Pack a Schoolbag charity campaign aimed at collecting stationery for the beginning of the new school year (September 1) for children from low-income families (JSC Afrikantov OKBM, Nizhny Novgorod). The Marvel Christmas Tree charity campaign aimed at preparing gifts for children from Zolino Special Boarding School (JSC Afrikantov OKBM, Nizhny Novgorod).
3	Helping animals	Participation in the Best Friend charity campaign timed to coincide with International Homeless Animals Day, August 15. On-site collection of feed and pet supplies for homeless animals under the care of the Compassion NN charity fund located next to JSC Afrikantov OKBM, Nizhny Novgorod.
4	Helping employees	Collection of charitable contributions from employees in order to help colleagues who are in a difficult situation related to their health or the life and health of their children.
5	Preserving the environment	The Green Distance corporate marathon. At that corporate event, employees can run a chosen distance and collect waste at the same time (Afrikantov OKBM, Nizhny Novgorod). Used battery and plastic bottle cap collection points are now in place in offices, with recycling facilities available at several enterprises.
6	Other	Blood donation campaigns are conducted in the majority of the Division’s enterprises. The Share the Warmth campaign aimed at collecting clothes for homeless people. On-site collection of warm clothes to be donated to homeless people through the Mercy movement (Afrikantov OKBM, Nizhny Novgorod). The enterprise’s corporate team took part in the Run, Hero! charitable city race. The funds collected were donated to charitable foundations for holding events for disadvantaged groups of people (Afrikantov OKBM, Nizhny Novgorod).



Stakeholder engagement

GRI 102–43

The Mechanical Engineering Division’s Public Reporting Materials are intended to inform all stakeholders of the Company’s objectives, activities and achievements. The Reporting Materials contain information about the Company’s economics, occupational health and safety activities, environmental activities, climate effects and energy efficiency, interaction with stakeholders and local communities, corporate governance, supply chain management, innovative technology and other information for the period from January 1 to December 31, 2020. The Division regularly interacts with its stakeholders to determine their interests and expectations, list important aspects of the Company’s operations and analyse material topics through questionnaires. Key stakeholder engagement formats also include remote dialogues, press tours, and visits of environmental organisations, customers and other stakeholders to enterprises. Such an approach allows the Division to promptly react to potential risks, mainly social and reputational, related to stakeholder engagement.

JSC Atomenergomash focuses on the improvement of operating performance as the basis of achieving strategic goals, which is a key topic of these Reporting Materials. This topic was selected due to record-setting indicators achieved in 2020 despite pandemic-related challenges. To make the reporting process more transparent and open, the Division held dialogues with stakeholders in a remote format. As part of those dialogues, the Division discussed with its stakeholders socially important aspects of its activities to be disclosed in the Reporting Materials, as well as JSC Atomenergomash’s draft Reporting Materials.

The Reporting Materials are prepared in accordance with the Global Reporting Initiative Sustainability Reporting Standards (GRI SRS, Core option). Annual public reports give a comprehensive picture of the Division’s activities and strategic decisions and allow stakeholders to see the current level of the sustainable development agenda.

GRI 102–54

**SAFETY
OF OPERATIONS**





Environmental safety

GRI 103-1

For many years, the Division's enterprises have been implementing a well-considered and responsible environmental and radiation safety policy. They focus on sustainable development of the nuclear industry and are fully aware of their responsibility towards society for environmental preservation and sustainability.

GRI 103-2

In the course of its operations, JSC Atomenergomash adheres to the environmental policy approved by the order of its Chief Executive Officer. Provisions of the environmental policy are mandatory for all employees of the Division.

As part of implementing foreign projects and enhancing environmental responsibility, JSC Atomenergomash and its controlled organisations (PJSC ZiO-Podolsk, JSC RPA CNIITMASH, AAEM LLC, PJSC EMSS, JSC ATM, JSC Experimental and Design Organisation GIDROPRESS, JSC CDBMB, JSC Afrikantov OKBM) introduced environmental management systems and received certificates of conformity to ISO 14001.

Every year, the Division's enterprises assess environmental aspects and impacts and determine so-called reference points related to increased environmental risks. For critical risks and rising environmental impacts, they set environmental targets and develop measures to meet them.

An important priority is to minimise the negative environmental impact of nuclear facilities. As part of their large-scale projects, the Division's enterprises incur costs related to measures aimed at preventing and minimising the environmental impact and to the operation of the environmental management system. In 2020, the total environmental costs exceeded RUB 169 million.

Energy consumption

GRI 103-1

GRI 103-2

GRI 103-3

Mechanical engineering enterprises need an uninterrupted and efficient energy supply for the production process. Energy is needed for the operation of machine tools, heating and lighting in buildings, as well as for heat treatment of finished products and blanks. To assess the benefits from measures to improve energy efficiency, a differentiated target is set in the Division for the annual reduction in the consumption of resources. In 2020, the target was exceeded, with energy costs decreasing by 19.65% compared to the base year (2015) (in comparable conditions). Savings exceeded RUB 187 million (in prices of 2015).

Energy consumption ('000 GJ)

GRI 302-1

2018	2019	2020				2021 (estimate)
		Heat ²¹	Electricity	Gas	Total	
5,568.7	4,999.1	220.4	1,051.9	3,793.0	5,065.4	5,086.8

Energy savings ('000 GJ)

GRI 302-4

2018	2019	2020			
		Heat	Electricity	Gas	Total
573.2	653.1	3.9	143.8	317.1	464.8

Water resources are required for the business operations of the enterprises and are used in industrial processes (in cooling / heating systems, when checking whether products are leakproof, as part of process fluids). Water consumption decreased compared to 2019.

GRI 103-1

GRI 303-1

Water consumption ('000 m³)

GRI 303-5

Source	2018	2019	2020
Municipal water supply	1,481.6	1,490.2	622.4
Wastewater	1,058.7	1,068.1	980.8
Groundwater	345.5	340.8	328
Surface water	959.1	994.6	969.3
TOTAL	3,844.9	3,893.7	2,900.5

Wastewater discharges ('000 m³)

GRI 306-1

GRI 303-4

Destination	2018	2019	2020
Municipal sewerage systems	1,939	1,912	1,517.9
Surface water bodies	225.2	232.7	295.7
TOTAL	2,183	2,164	1,813.6

²¹ Heat is supplied to PJSC ZiO-Podolsk, JSC Afrikantov OKBM and the Petrozavodskmash branch of JSC AEM-Technology from their own boiler houses, which are fuelled mainly with natural gas.

Greenhouse gas emissions

GRI 103–2

In accordance with the legislation of the Russian Federation, enterprises develop draft standards regulating waste generation and setting limits for waste disposal, as well as draft standards stipulating maximum permissible emissions of air pollutants. As a result, enterprises receive documents for the disposal of industrial and consumer waste and permits for the emission of pollutants into the atmosphere.

The Division's enterprises are a source of direct emissions of two types of greenhouse gases: carbon dioxide (CO₂) and nitrous oxide (N₂O).

GRI 305–1

Direct greenhouse gas emissions (tonnes)

Gas	2018	2019	2020
carbon dioxide (CO ₂)	379.1	371.2	101.08
nitrous oxide (N ₂ O)	3.8	3.8	0

Emissions of pollutants

GRI 103–2

The Division's enterprises regularly undertake initiatives to reduce the emission of pollutants. As part of these initiatives, the following measures are implemented on the premises of the enterprises:

- industrial environmental control and monitoring of pollutant emissions into the atmosphere;
- monitoring of compliance with standards and the requirements of environmental legislation;
- pollutant monitoring in buffer areas;
- maintenance, servicing and cleaning of gas scrubbers.

Large enterprises of the Division (PJSC ZiO-Podolsk, JSC Afrikantov OKBM and Atommash branch of JSC AEM-Technology in Volgodonsk) account for the largest share of emissions.

GRI 305–6

Emissions of ozone-depleting substances (tonnes)²²

Substance	2018	2019	2020 (target)	2020 (actual)	2021 (estimate)
Tetrachloromethane	0.05	0.033	0.033	0.031	0.031

²² CFC-11 equivalent.

Pollutant emissions into the atmosphere (tonnes)

GRI 305–7

Pollutant	2018	2019	2020 (target)	2020 (actual)	2021 (estimate)
NOx	431.8	401.6	479.0	349.8	354.6
SOx	34.0	20.9	21.1	30.7	33.1
Volatile organic compounds (VOCs)	54.5	53.8	82.9	87.3	91.5
Hazardous air pollutants (HAPs)	0.1	0.1	0.1	0.1	0.1
Particulate matter (PM)	56.4	76.5	81.2	79.5	82.2
Other	209.6	206.4	230.4	190	192.6

Waste management

GRI 306–2

Waste sorting has been introduced at PJSC ZiO-Podolsk and Atommash branch of JSC AEM-Technology in Volgodonsk (this involves collecting waste paper, cardboard, polyethylene).

In addition, in 2020, Atommash branch of JSC AEM-Technology completed works to reduce the amount of hazard class 1 mercury-containing waste by replacing mercury-containing light bulbs with energy-saving LED light bulbs.

Total weight of waste (tonnes)

Waste	2018	2019	2020 (target)	2020 (actual)	2021 (estimate)
Hazardous	3,945.9	5,021.1	5,196.9	5,076.9	5,372.3
Non-hazardous	29,589.6	25,844.3	37,301.1	30,447.1	38,629.3
TOTAL	33,535.5	30,865.3	42,498.1	35,524.0	44,001.7

The main waste processing methods used by the Division's enterprises include reuse and disposal at a landfill.

Share of waste by disposal method

Disposal method	Volume and share of waste (tonnes / %)
Reuse	13,545.5 / 35.1
Recovery of valuable components	368.3 / 1.0
Disposal at a landfill	9,514.9 / 24.7
On-site storage	8,807.3 / 22.8
Other	6,326.5 / 16.4

**SPECIFIC RISKS
AND MANAGEMENT
APPROACHES**



A Risk Management Group has been formed in JSC Atomenergomash, acting on the basis of the Regulation on the Risk Management Group of JSC Atomenergomash. It is tasked with forming the Corporate Risk Management System (CRMS) and coordinating activities in the field of risk and insurance management, as well as the settlement of insurance claims. The Group's responsibilities include regular risk audit and verification of compliance with the established risk limits, organisation of communication and cooperation between all participants of the risk management process, from the level of COs to ROSATOM, in the course of decision-making related to risks and insurance.

Key risks for the Company in 2020 included currency risks (high foreign exchange volatility), operational risks (falling behind schedule or postponement of implementation), inflation and interest rate risks, and credit risks (counterparty risks).

The main risk factors include the persisting macroeconomic and foreign policy uncertainty, the pandemic, a possible deterioration in the market environment and the financial position of existing and potential counterparties.

The most effective methods and measures for risk management at year-end 2020 included the monitoring of purchases made in foreign currencies or in roubles at the foreign exchange rate, the terms and conditions of revenue contracts mirroring those of expense contracts, rescheduling the start of production, implementing RPS projects, achieving savings from procurement procedures, changes in the volume of overhead costs, reducing the consumption of raw materials, analysing counterparty risks when concluding contracts, and monitoring debt risks throughout the entire life cycle of a project.

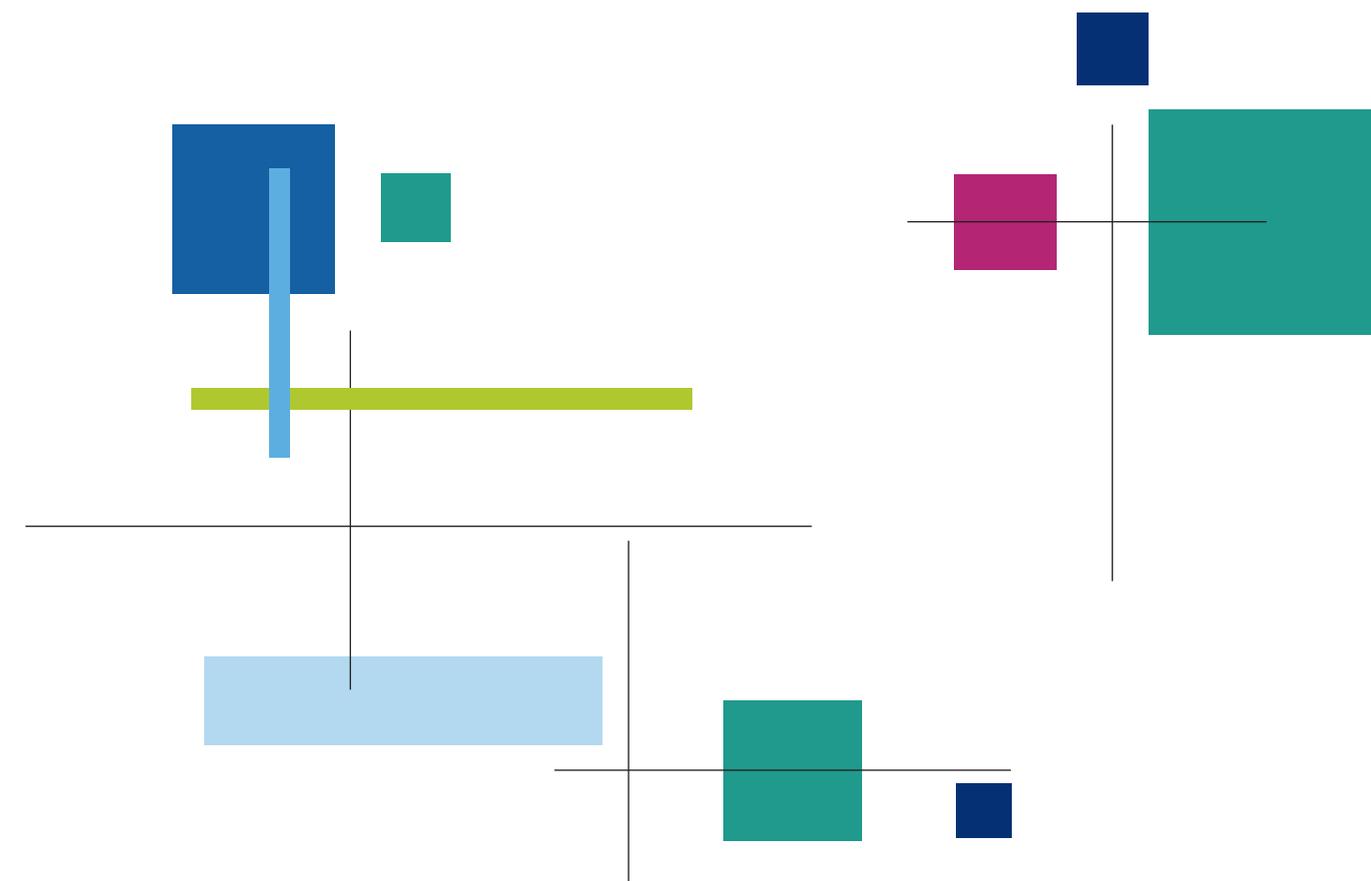
The Company regularly improves the risk management system and assesses its compliance with international standards (GOST R ISO 31000:2019, etc.) and best industry and international practice.

Plans for 2021 and the medium term

The Division has developed an action plan for 2021 covering the key areas of the Risk Management Programme for 2020-2025. This plan takes into account both external factors related to the requirements of foreign customers (NPP construction on time and on budget) and Russian government bodies, as well as internal factors (the need to build an efficient risk management system aligned with global best practices).

The plan involves the following key objectives for the development of risk management in the Russian nuclear industry:

- to develop an automated risk assessment and management system, which will, among other things, enable JSC Atomenergomash to maintain and update a knowledge base of typical risks and risk management measures;
- to develop the risk management expert community in the industry;
- to adopt procedures (including initial assessment) for managing risks associated with projects and programmes in the sphere of new business development;
- to minimise risks of external customers' doubtful and non-recoverable debts;
- to ensure better prime cost formation and pricing for the key NSGP equipment (preparing for a transition from class 4 to class 3 assessment accuracy) in terms of risk assessment;
- to reduce production facility risks through observing risks and implementing insurance programmes;
- to assess and manage ESG risks in accordance with modern best practices adopted in mechanical engineering and power industries.



Information on the Reporting Process

GRI 102–50

In accordance with Russian legislation, the Annual Reporting Standard of JSC Atomenergomash and the GRI Sustainability Reporting Standards, JSC Atomenergomash publishes these Reporting Materials, which disclose key performance indicators of the Mechanical Engineering Division of ROSATOM for the period from January 1, 2020 through December 31, 2020 and long-term development prospects.

GRI 102–52

JSC Atomenergomash traditionally uses an annual reporting cycle; the previous Reporting Materials covering performance in the 2019 reporting year was released in 2020.

The Reporting Materials were prepared taking into account the requirements of the following external regulatory documents (in the current versions):

- Federal Law No. 208-FZ of December 25, 1995 on Joint-Stock Companies;
- Order of ROSATOM No. 1/1481-P dated December 26, 2020 on Approval of the Uniform Industry-Wide Guidelines for Public Reporting of ROSATOM and Its Organisations;
- Order of ROSATOM No. 1/1060-P dated October 7, 2020 on Amendments to the Uniform Industry-Wide Public Reporting Policy of ROSATOM;
- Regulations of the Bank of Russia No. 454-P dated December 30, 2014 on Disclosure of Information by Issuers of Issue-Grade Securities;
- Letter from the Bank of Russia No. 06-52/2463 dated April 10, 2014 on the Corporate Governance Code;
- The AA1000 AP AccountAbility Principles Standard (2018);
- The Global Reporting Initiative (GRI) Sustainability Reporting Standards;
- The International Integrated Reporting Framework.

The Division has approved an internal regulatory document, namely the Public Annual Reporting Standard, updated by order No. 33/568-P of the Chief Executive Officer dated December 16, 2020. It establishes the procedure and requirements for the reporting process, the responsibility of the participants of this process, and the requirements for the Reporting Materials, including the System of Certified Performance Indicators of JSC Atomenergomash; in addition, requirements for the disclosure of information in the reports of the Division's COs were added.

GRI 102–32

Responsibility for the preparation of the Reporting Materials has been assigned to the Strategy and Development Department of the Company.

GRI 102–43

The Division recognises stakeholder engagement as one of the fundamental prerequisites of sustainable development and, together with the enterprises of the Division, consistently promotes constructive engagement. This involves the following:

- Analysing the mutual influence of the Company and its stakeholders with regard to various aspects of activities;
- Defining stakeholder expectations and aspirations;
- Responding to stakeholder expectations and seeking consensus on outstanding issues;
- Building long-term partnerships with key stakeholders.

In accordance with the stakeholder engagement practice adopted in the Company, the Company held dialogues in a remote format. Thus, at the beginning of the reporting campaign, a remote questionnaire survey was carried out among stakeholders concerning the content and relevance of the list of material topics to be disclosed and their prioritisation, as well as the approval of the concept of the Reporting Materials by the Chief Executive Officer of JSC Atomenergomash.

The practice adopted by the Company does not involve updating the stakeholder map on an annual basis: information on stakeholder prioritisation was disclosed in previous public annual reporting materials²³.

The most important stage in the preparation of the Reporting Materials is the definition of their content. For this purpose, the Company applies a procedure for assessing the materiality of topics related to its operations, which has been developed by the Company in accordance with the GRI Standards and has been recognised both in the industry and beyond²⁴.

When preparing the Reporting Materials, the Company adhered to the principles established in the GRI Standards.

There were no restatements of information as compared to the previous year.

Following a survey among the members of the Annual Reporting Committee of JSC Atomenergomash, no changes were made to the list of material topics in the reporting year. In 2020, there were changes in the structure of the Division: TOPMAX LIMITED, JSC VNIIAM, JSC SMK YUG were excluded from the scope of consolidation. JSC OZTM i TS and JSC OKTB IS were excluded due to the sale of the assets.

Disclaimer

These Reporting Materials contain a number of forecasts and estimates regarding the future position of the Company on various topics, its plans and projected results. Due to their nature, forecasts and estimates are associated with inherent risk and uncertainty. The Company's operations and its external environment can be influenced by a number of economic, political, social and other factors of a probabilistic nature. Accordingly, the Company would like to emphasise that actual results may differ from those stated, directly or indirectly, in the forward-looking statements contained in the Reporting Materials.

²³ <https://report.rosatom.ru/aem>.

²⁴ Included in the International Integrated Reporting Council's (IIRC) base of global best practices.

GRI 102–43

GRI 102–40

GRI 102–42

GRI 102–46

GRI 102–48

GRI 102–10

GRI 102–45

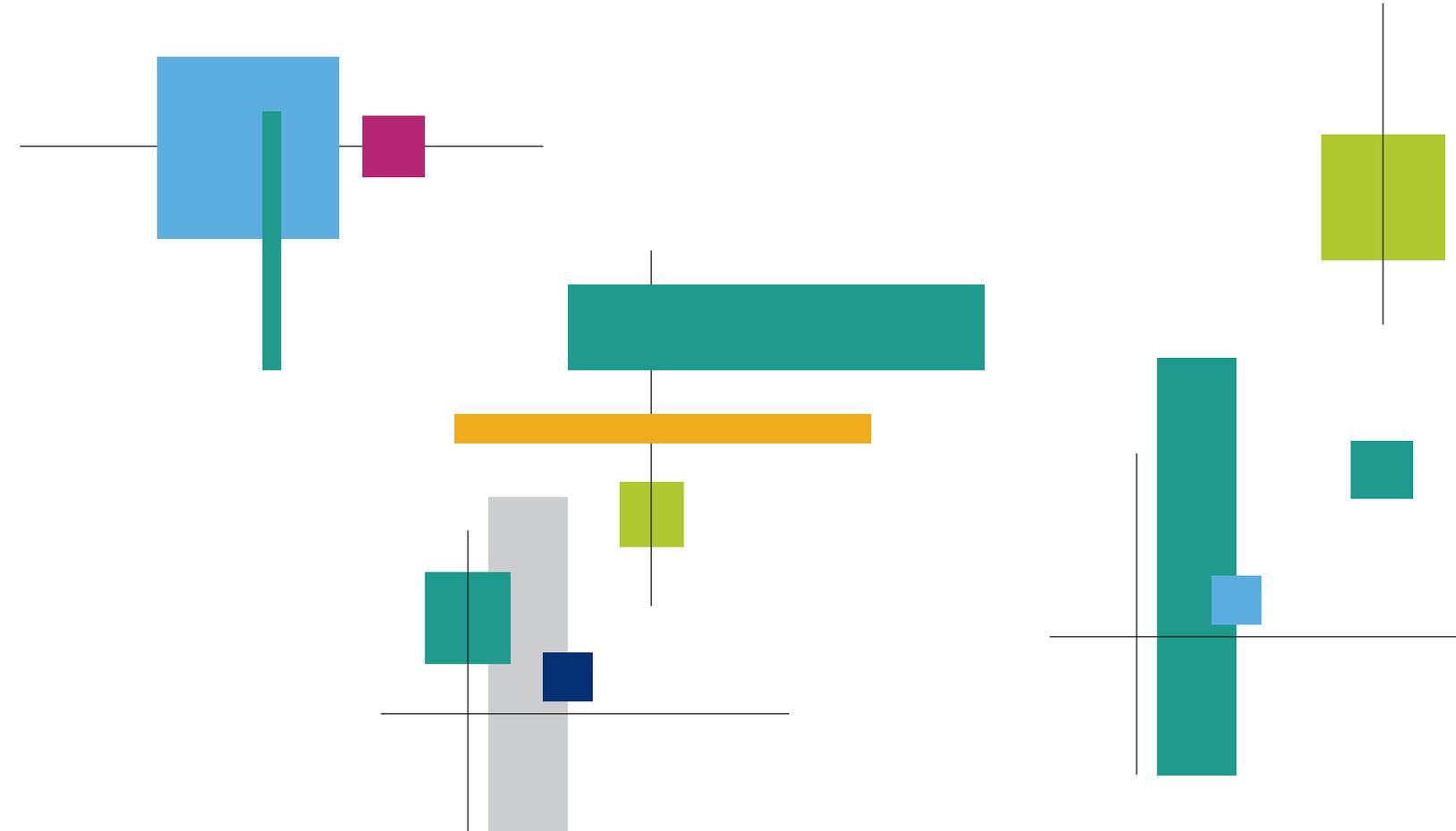
GRI 102–47

GRI 102–49

Material topics and management approaches

No.	Topic	Report section
1	Economic performance and financial position (GRI 201. Economic Performance (2016))	2. Key Results and Events of the Reporting Year
2	Market presence	1. Overview of the Division 6. New Products and Businesses
3	Commercial operations	1. Overview of the Division 2. Key Results and Events of the Reporting Year
4	Investment activities	2. Key Results and Events of the Reporting Year
5	Operating results	6. New Products and Businesses
6	Quality and safety (GRI 416. Customer Health and Safety (2016))	1. Overview of the Division
7	Optimisation of operations	4. Digitisation: Technologies and Products 5. Innovation and Development of Science
8	Procurement (GRI 204. Procurement Practices (2016))	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 41
9	Innovative development	5. Innovation and Development of Science
10	Scientific research	
11	Emissions and waste (GRI 305. Emissions (2016), GRI 306. Effluents and Waste (2016))	9. Safety of Operations
12.1	Environmental management and compliance (GRI 307. Environmental Compliance (2016))	
12.2	Water consumption (GRI 303. Water and Effluents (2018))	
12.3	Energy consumption (GRI 302. Energy (2016))	
13	Personnel composition	7. Developing the Human Capital
14	Working conditions and work organisation (GRI 402. Labour/Management Relations (2016))	
15	Health and safety in the workplace (GRI 403. Occupational Health and Safety (2018))	
16	Employee performance management	
17	Personnel replacement (GRI 401. Employment (2016), GRI 404. Training and Education (2016))	

No.	Topic	Report section
18.1	Impact on the regions of operation (GRI 203. Indirect Economic Impacts (2016))	8. Developing the Regions of Operation
18.2	Social investment and charity	
19	Anti-corruption practices (GRI 205. Anti-Corruption (2016))	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 51
20	Compliance with laws (GRI 419. Socioeconomic Compliance (2016))	7. Developing the Human Capital 9. Safety of Operations
21	Marketing and PR communications (GRI 417. Marketing and Labelling (2016))	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 85
22	Activities of corporate governance bodies	1. Overview of the Division
23	Internal control, audit and risk management	10. Specific Risks and Management Approaches



Incorporation of stakeholders' proposals

Table of the incorporation of stakeholders' proposals concerning the annual report²⁵

No.	Proposal/recommendation	Company's reaction
ROSATOM, Shareholders		
1	To add information on how Atomenergomash interacts with various groups of stakeholders.	Implemented, added.
Academic and expert community		
2	To significantly expand the Stakeholder Engagement section.	Implemented in part. The list of forms of shareholder engagement was extended.
3	The reporting materials should focus on the role of ROSATOM's Mechanical Engineering Division in developing and promoting the Nuclear Generation – Electric Transport and Energy Storage Devices system.	Not implemented. This area is outside the Division's competencies.
4	The reporting materials should focus on developing and promoting the Nuclear Generation – Hydrogen Engines and Hydrogen Accumulators system.	To be implemented in the following reporting campaign as approved.
5	The reporting materials should focus on developing international public reporting standards for nuclear companies as part of the Global Transparency Initiative (GTI).	Not implemented. The Company is not involved in developing international public reporting standards for nuclear companies as part of the Global Transparency Initiative (GTI).

Additional Information

GRI Index

Disclosure	Chapter / Comments
GRI 101: Foundation (2016)	
GRI 102: General Disclosures (2016)	
Organisational profile	
102-1 Name of the organisation	Chapter 1. Overview of the Division
102-2 Activities, brands, products, and services	Chapter 1. Overview of the Division
102-3 Location of headquarters	Contact details
102-4 Location of operations	Chapter 1. Overview of the Division
102-5 Ownership and legal form	Contact details
102-6 Markets served	Chapter 1. Overview of the Division
102-7 Scale of the organisation	Chapter 1. Overview of the Division Chapter 2. Key Results and Events of the Reporting Year Chapter 7. Developing the Human Capital
102-8 Information on employees and other workers	Chapter 7. Developing the Human Capital
102-9 Supply chain	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 41.
102-10 Significant changes to the organisation and its supply chain	Information on the Reporting Process
102-11 Precautionary principle or approach	Chapter 7. Developing the Human Capital
102-13 Membership of associations	Chapter 7. Developing the Human Capital
Strategy	
102-14 Statement from senior decision-maker	Message from the Head of the Division
Ethics and integrity	
102-16 Values, principles, standards, and norms of behaviour	Chapter 3. Sustainable Development
Governance	
102-18 Governance structure	Chapter 1. Overview of the Division
102-20 Executive-level responsibility for economic, environmental, and social topics	Chapter 1. Overview of the Division

²⁵ Editorial changes were taken into account in the regular course of work.

Disclosure	Chapter / Comments
102-22 Composition of the highest governance body and its committees	Chapter 1. Overview of the Division
102-23 Chair of the highest governance body	Chapter 1. Overview of the Division
102-26 Role of highest governance body in setting purpose, values, and strategy	Chapter 1. Overview of the Division
102-32 Highest governance body's role in sustainability reporting	Information on the Reporting Process
102-33 Communicating critical concerns	Chapter 1. Overview of the Division
102-36 Process for determining remuneration	Chapter 1. Overview of the Division
Stakeholder engagement	
102-40 List of stakeholder groups	Information on the Reporting Process
102-41 Collective bargaining agreements	Chapter 7. Developing the Human Capital
102-42 Identifying and selecting stakeholders	Information on the Reporting Process
102-43 Approach to stakeholder engagement	Chapter 8. Developing the Regions of Operation Information on the Reporting Process Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on pages 85-87.
102-44 Key topics and concerns raised	Information on the Reporting Process
Report profile	
102-45 Entities included in the consolidated financial statements	Information on the Reporting Process
102-46 Defining report content and topic boundaries	Information on the Reporting Process Detailed information on the Company's compliance with the principles of GRI standards is presented in the interactive annual report of JSC Atomenergomash for 2018 – https://ar2018.aem-group.ru/?/ru .
102-47 List of material topics	Information on the Reporting Process
102-48 Restatements of information	Information on the Reporting Process
102-49 Changes in reporting	Information on the Reporting Process
102-50 Reporting period	Information on the Reporting Process
102-52 Reporting cycle	Information on the Reporting Process
102-53 Contact point for questions regarding the report	Contact details
102-54 Claims of reporting in accordance with the GRI Standards	Chapter 8. Developing the Regions of Operation
102-55 GRI content index	GRI Index

Disclosure	Chapter / Comments
102-56 External assurance	Independent external expert assurance was not conducted.
Material topics	
GRI 201: Economic Performance (2016)	
<i>GRI 103: Management Approach (2016)</i>	
201-4 Financial assistance received from government	In 2020, JSC Atomenergomash and its controlled organisations did not receive significant financial assistance from the government.
GRI 203: Indirect Economic Impacts (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 8. Developing the Regions of Operation
203-2 Significant indirect economic impacts	Chapter 8. Developing the Regions of Operation
GRI 204: Procurement Practices (2016)	
<i>GRI 103: Management Approach (2016)</i>	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 41.
204-1: Proportion of spending on local suppliers	In 2020, the share of Russian suppliers in the total supplies reached 97% (compared to 95% in 2019).
GRI 205: Anti-Corruption (2016)	
<i>GRI 103: Management Approach (2016)</i>	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 51.
205-3 Confirmed incidents of corruption and actions taken	In 2020, no employee was held to account.
GRI 302: Energy (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 9. Safety of Operations
302-1 Energy consumption within the organisation	Chapter 9. Safety of Operations
302-4 Reduction of energy consumption	Chapter 9. Safety of Operations
GRI 303: Water and Effluents (2018)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 9. Safety of Operations
303-1 A description of how the organisation interacts with water, including how and where water is withdrawn, consumed, and discharged	Chapter 9. Safety of Operations
303-4 Water discharge	Chapter 9. Safety of Operations There is no breakdown by water category since this data is not recorded.
303-5 Water consumption	Chapter 9. Safety of Operations

Disclosure	Chapter / Comments
GRI 305: Emissions (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 9. Safety of Operations
305-1 Direct (Scope 1) GHG emissions	Chapter 9. Safety of Operations N ₂ O data was not calculated in CO ₂ equivalent.
305-6 Emissions of ozone-depleting substances	Chapter 9. Safety of Operations
305-7 Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions	Chapter 9. Safety of Operations
GRI 306: Effluents and Waste (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 9. Safety of Operations
306-1 Water discharge by quality and destination	Chapter 9. Safety of Operations There is no breakdown by water quality since this data is not recorded.
306-2 Waste by type and disposal method	Chapter 9. Safety of Operations There is no breakdown by hazard level since this data is not recorded.
GRI 307: Environmental Compliance (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 9. Safety of Operations
307-1 Non-compliance with environmental laws and regulations	There were no significant fines.
GRI 401: Employment (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
401-1 New employee hires and employee turnover	Chapter 7. Developing the Human Capital No breakdown by region.
401-2 Benefits provided to full-time employees	Chapter 7. Developing the Human Capital
GRI 402 Labour/Management Relations (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
402-1 Minimum notice periods regarding significant operational changes	Chapter 7. Developing the Human Capital
GRI 403 Occupational Health and Safety (2018)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
403-1 Occupational health and safety management system	Chapter 7. Developing the Human Capital
403-3 Occupational health services that contribute to the identification and elimination of hazards and minimisation of risks	Chapter 7. Developing the Human Capital

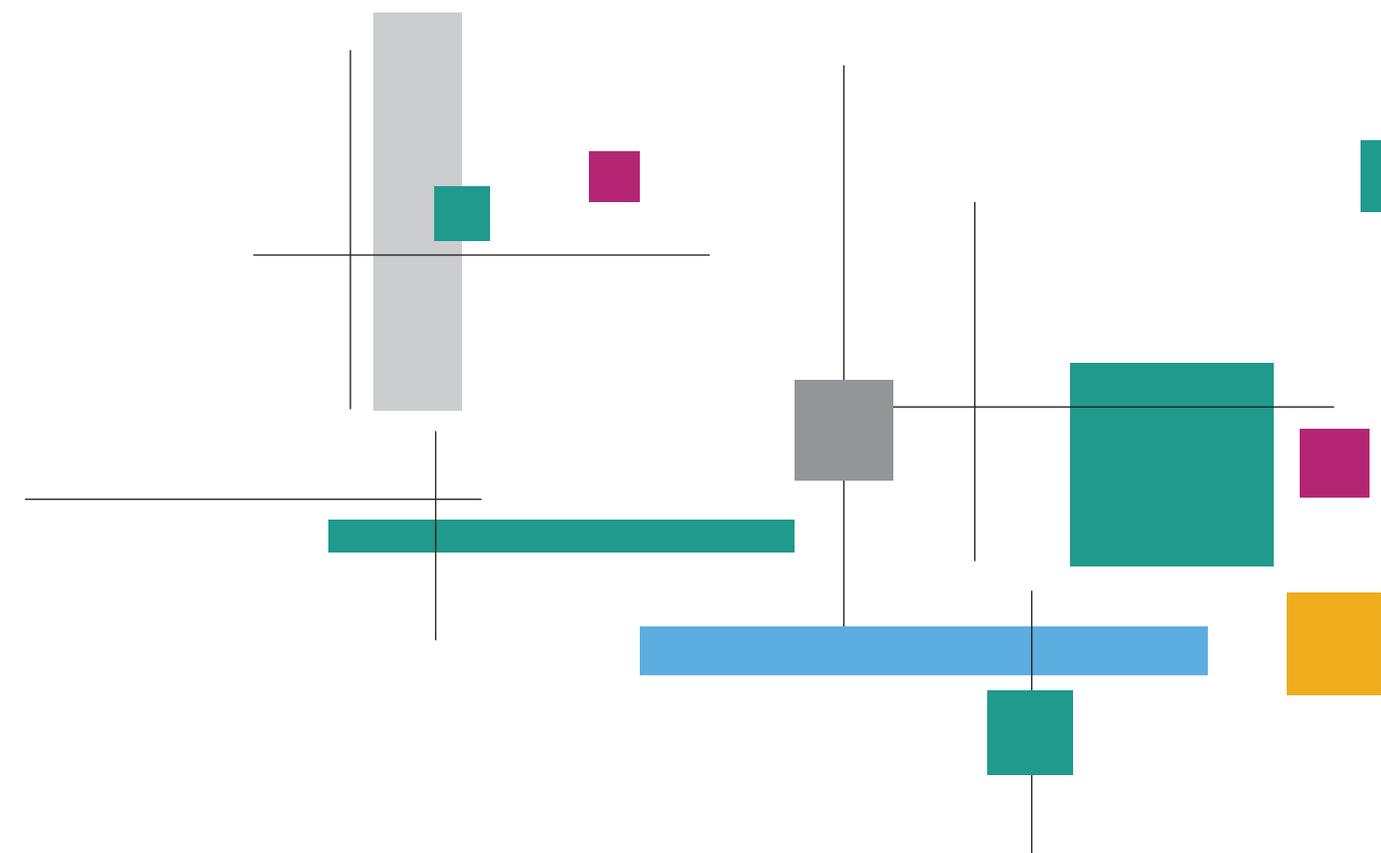
Disclosure	Chapter / Comments
403-5 Worker training on occupational health and safety	Chapter 1. Overview of the Division
403-6 Promotion of worker health	Chapter 7. Developing the Human Capital
403-8 Workers covered by an occupational health and safety management system	The reporting materials do not contain data on workers covered by an occupational health and safety management system since this data is not recorded.
403-9 Work-related injuries	Chapter 7. Developing the Human Capital The reporting materials do not contain accidents rates since this data is not recorded.
403-10 Work-related ill health	Chapter 7. Developing the Human Capital The reporting materials do not contain the rate, number of registered work-related diseases and number of fatalities caused by work-related diseases since this data is not recorded.
GRI 404 Training and Education (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital
404-1 Average hours of training per year per employee by gender and employee category	Chapter 7. Developing the Human Capital The indicator is disclosed in part, without a breakdown by gender.
404-3 Percentage of employees receiving regular performance and career development reviews	Chapter 7. Developing the Human Capital
GRI 416: Customer Health and Safety (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 1. Overview of the Division
416-1 Assessment of the health and safety impacts of product and service categories	Chapter 1. Overview of the Division
GRI 417: Marketing and Labelling (2016)	
<i>GRI 103: Management Approach (2016)</i>	Detailed information is presented in the annual report of JSC Atomenergomash for 2018 on page 85.
417-3 Incidents of non-compliance concerning marketing communications	JSC Atomenergomash complies with current Russian and international marketing communication laws, including advertising and promotion laws. In 2020, there were no violations.
GRI 419: Socioeconomic compliance (2016)	
<i>GRI 103: Management Approach (2016)</i>	Chapter 7. Developing the Human Capital Chapter 9. Safety of Operations
419-1 Non-compliance with laws and regulations in the social and economic area	In 2020, the Division's enterprises did not face significant fines or non-financial sanctions.

Glossary and Abbreviations

CHPP	Combined heat and power plant
CO	Controlled organisations
CSS	Control and safety system
FNI	Follow-on nuclear icebreaker
FNR	Fast neutron reactor
HIPC	High-pressure and intermediate-pressure cylinder
HPC	High-pressure cylinder
IP	Intellectual property
JV	Joint venture
KPI	Key performance indicator
LNG	Liquefied natural gas
MCP	Main circulation pump
MPNI	Multipurpose nuclear icebreaker
NPP	Nuclear power plant
NPU	Nuclear power unit
NPU	Nuclear propulsion unit
NSGP	Nuclear steam generating plant
OFPU	Optimised floating power unit
OKBM	Experimental Design Bureau of Mechanical Engineering
PME	Power machine engineering
QMS	Quality Management System
Refinery	Refinery
RPS	ROSATOM Production System
RU	Reactor unit
SMBs	Small and medium-sized businesses
SNPP	Small-scale nuclear power plant
STC	Scientific and Technical Council
TMFE	Thermomechanical fuel-element
UIS-Quality	Unified Industry-Wide Quality Management System of ROSATOM
VSG	Vertical steam generator
VVER	Water-cooled water-moderated power reactor
WEP	Waste-to-energy plant

Terms used in the report

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



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