

**75 YEARS  
OF NUCLEAR  
INDUSTRY**

AHEAD  
OF THE TIMES



**PERFORMANCE  
OF THE FUEL DIVISION  
IN 2019**



**75 YEARS  
OF NUCLEAR  
INDUSTRY**

*AHEAD  
OF THE TIMES*



**TVEL**  

---

**ROSATOM**

# **PERFORMANCE OF THE FUEL DIVISION IN 2019**

# TABLE OF CONTENTS

<b>CHAPTER 1. MESSAGE FROM THE HEAD OF THE DIVISION</b>	<b>4</b>
<b>CHAPTER 2. OVERVIEW OF THE FUEL DIVISION</b>	<b>8</b>
2.1. Core business areas	10
2.2. Regions of operation	11
2.3. Quality management standards and systems	14
<b>CHAPTER 3. KEY RESULTS AND PERFORMANCE INDICATORS OF THE DIVISION</b>	<b>16</b>
3.1. Key results	18
3.2. Improvement of production efficiency	19
3.3. Investment activities	20
3.4. Production plans	21
<b>CHAPTER 4. KEY EVENTS IN 2019</b>	<b>22</b>
<b>CHAPTER 5. SUSTAINABLE DEVELOPMENT</b>	<b>26</b>
5.1. Implementation of Executive Order No. 204 of the President of the Russian Federation dated May 7, 2018 on National Goals and Strategic Objectives of the Russian Federation until 2024	28
5.2. Projects in the area of environmental protection and decommissioning of facilities posing nuclear and radiation hazards	29
<b>CHAPTER 6. DIGITAL TECHNOLOGIES AND PRODUCTS</b>	<b>32</b>
<b>CHAPTER 7. INNOVATION AND DEVELOPMENT OF SCIENCE</b>	<b>36</b>
7.1. Progress on the project 'Towards Zero Nuclear Fuel Failure' in 2019	39
7.2. Progress in the improvement of nuclear fuel characteristics and production processes in 2019	40
7.3. Proryv project	42
<b>CHAPTER 8. NEW PRODUCTS AND BUSINESSES</b>	<b>44</b>
8.1. Chemical industry	46
8.2. Metals industry	46
8.3. Superconducting materials	47
8.4. Additive manufacturing technologies	47
8.5. Decommissioning of facilities posing nuclear and radiation hazards	48

<b>CHAPTER 9. DEVELOPING THE HUMAN CAPITAL</b>	<b>50</b>
9.1. Personnel composition	53
9.2. Employee engagement	55
9.3. Personnel training	56
9.4. Partnership with educational institutions	57
9.5. Social programmes	58
9.6. Occupational health and safety	59
<b>CHAPTER 10. DEVELOPING THE REGIONS OF OPERATION</b>	<b>60</b>
10.1. Establishment and development of priority social and economic development areas	62
10.2. Social projects and charity initiatives	62
10.3. Stakeholder engagement	63
<b>CHAPTER 11. SAFETY OF NUCLEAR TECHNOLOGIES AND NUCLEAR FUEL CYCLE PRODUCTS</b>	<b>66</b>
<b>CHAPTER 12. ENVIRONMENTAL SAFETY</b>	<b>70</b>
12.1. Management of industrial and consumer waste	72
12.2. Pollutant emissions	73
12.3. Environmental costs	75
12.4. Energy conservation and energy efficiency improvement programme	77
12.5. Water use and discharge	80
<b>CHAPTER 13. RISKS SPECIFIC TO THE DIVISION AND MANAGEMENT APPROACHES</b>	<b>82</b>
13.1. Key risks of the Division	84
<b>CHAPTER 14. ADDITIONAL INFORMATION</b>	<b>86</b>
<b>CHAPTER 15. INFORMATION ON THE REPORTING PROCESS</b>	<b>92</b>
15.1. Contact details	96

# 1. MESSAGE FROM THE HEAD OF THE DIVISION

In 2019, TVEL Fuel Company of ROSATOM (the Fuel Division or the Fuel Company) recorded steady growth across all key indicators. The revenue of the Fuel Division increased by 19% and totalled RUB 194.6 billion. The Fuel Company expanded its international order portfolio by 4% to USD 13.9 billion due to new export contracts.

**NATALIA NIKIPELOVA**  
CEO of the Fuel Division,  
President of TVEL JSC, the holding company  
of the Fuel Division



1

Dear colleagues and partners,

In 2019, TVEL Fuel Company of ROSATOM (the Fuel Division or the Fuel Company) recorded steady growth across all key indicators. The revenue of the Fuel Division increased by 19% and totalled RUB 194.6 billion. The Fuel Company expanded its international order portfolio by 4% to USD 13.9 billion due to new export contracts.

Given the current challenging economic environment and a complicated international situation, the priority for the Fuel Company is to continue to follow a customer-centric approach.

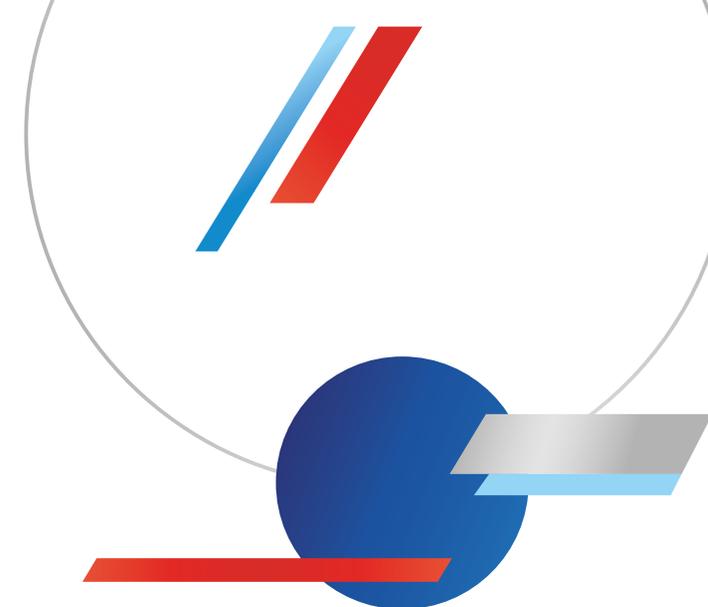
The ability to manufacture products tailored to individual customer needs and the competitiveness of our products are achieved through the efforts of the research and engineering unit of the Fuel Company. In 2019, almost RUB 7.8 billion, or more than 4% of the Division's consolidated revenue, was allocated for R&D and engineering. Significant progress was made in the development of a new-generation accident tolerant fuel with improved safety performance (the first stage of reactor testing was completed), as well as in closing the nuclear fuel cycle: the first batch of MOX fuel was delivered to Beloyarsk NPP and loaded into the BN-800 fast neutron reactor. This is a long-awaited achievement for the entire industry and a necessary prerequisite for accomplishing the strategic objective of developing a two-component nuclear power industry.

An important milestone was achieved in the implementation of the Proryv project, a key industry-wide initiative aimed at closing the nuclear fuel cycle. The general contract for the construction of a power unit equipped with the BREST-OD-300 reactor was signed; this facility will form part of the Pilot and Demonstration Energy Facility (ODEK) to be built on the site of the Siberian Chemical Plant (SCP JSC). In addition, SCP JSC produced another batch of experimental assemblies with mixed nitride uranium-plutonium fuel for fast reactors; its composition is identical to that of the fuel to be produced as part of the on-site nuclear fuel cycle of ODEK.

The Fuel Division is also actively developing new lines of business. The Fuel Company's revenue from non-nuclear products reached RUB 17.4 billion. However, one of the new promising areas is associated with the nuclear industry. In 2019, TVEL Fuel Company became ROSATOM's integrator for the decommissioning of facilities posing nuclear and radiation hazards, including reactor units. This gives us access to a huge market both in Russia and abroad and, even more importantly, this is fully consistent with the UN Sustainable Development Goals, to which the Fuel Division is strongly committed in the course of its operations.

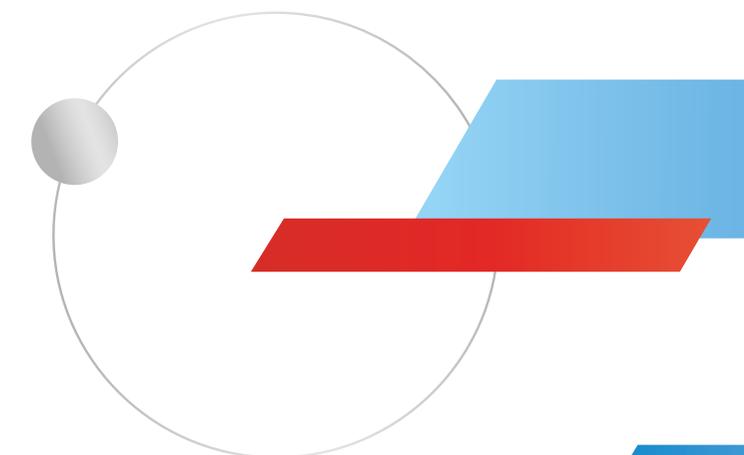
Last year, enterprises of the Fuel Division invested over RUB 3.3 billion in environmental protection. With assistance from TVEL Fuel Company, in 2019, the Company's host towns and cities managed to raise more than RUB 570 million for the development of infrastructure, educational, cultural, sports and healthcare institutions from the federal and regional budgets as part of national projects. New resident investors were registered last year in all priority social and economic development areas where our enterprises are situated; some of these investors will locate their production assets on the sites of the Fuel Company's enterprises.

We are convinced that technological development and business growth should be accompanied by the Company's growing contribution to harmonious social development in its regions of operation and the development of a comfortable and safe environment for local communities. This will remain the key focus of the Fuel Company's development efforts going forward, in line with the strategic priorities of the nuclear industry.



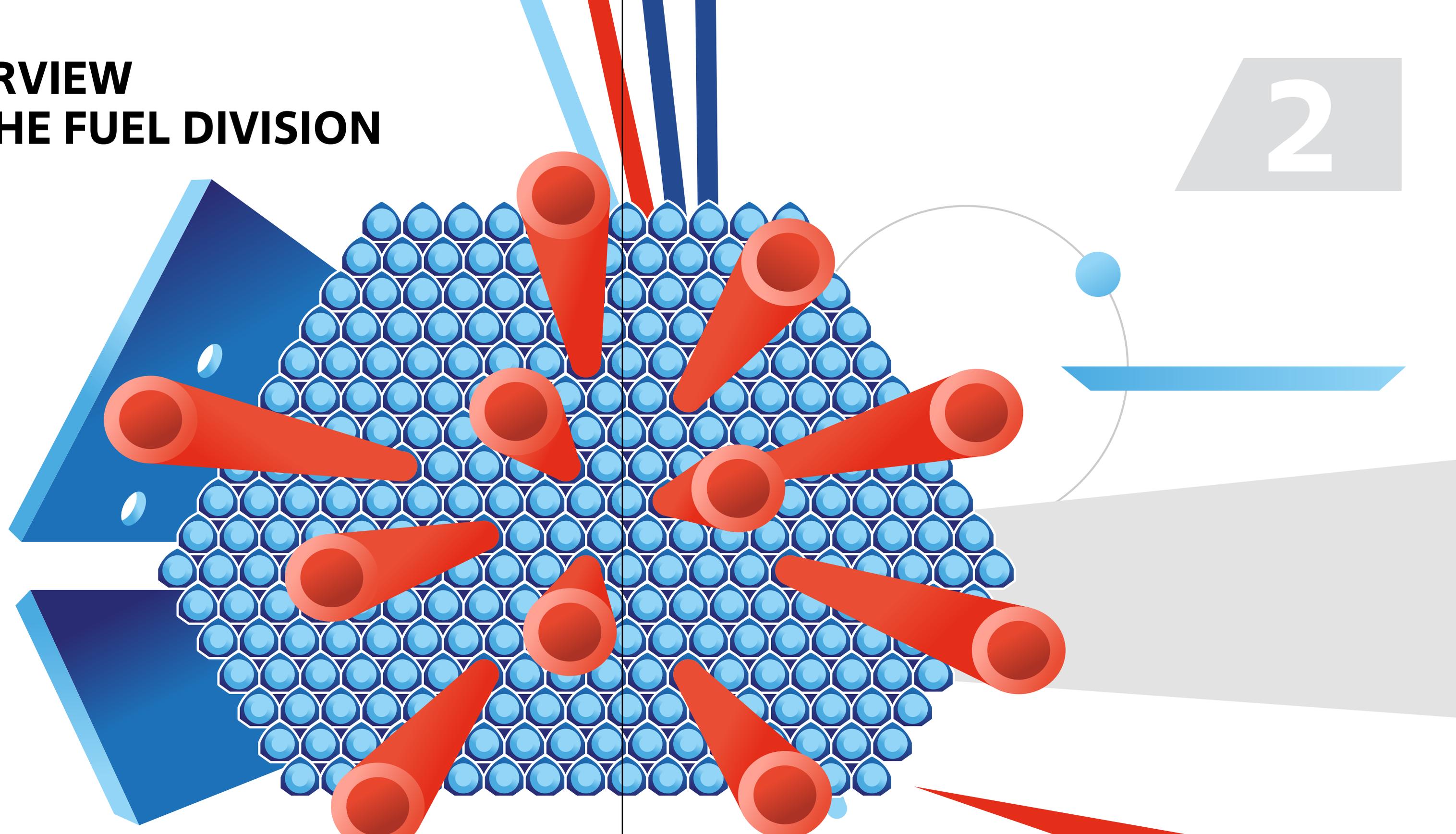
**Natalia Nikipelova**  
CEO of the Fuel Division,  
President of TVEL JSC,  
the holding company of the Fuel Division

Despite the progress that we have made, we still see significant potential for the development of the Fuel Company in all key areas of its business. Even amid the global economic crisis, the implementation of large-scale strategic projects of the Fuel Division should support the sustainable and effective development of our business and lay the foundation for sustainable growth for decades ahead.



## 2. OVERVIEW OF THE FUEL DIVISION

2



## 2.1. CORE BUSINESS AREAS

The Fuel Division of State Atomic Energy Corporation Rosatom (ROSATOM), TVEL (the Fuel Division, TVEL Fuel Company or the Company), is a leading player on the global nuclear fuel cycle (NFC) front-end market and the only supplier of nuclear fuel for Russian nuclear power plants (NPPs). The holding company of the Fuel Division is TVEL JSC.

**The Fuel Division comprises nuclear fuel fabrication, uranium conversion and enrichment enterprises, manufacturers of gas centrifuges, as well as research and development (R&D) and engineering institutions.**

Prioritized business areas:

■ The core business of TVEL JSC is fabrication of various types of nuclear fuel for NPPs, research reactors and marine propulsion systems. The nuclear business of TVEL JSC is largely focused on the global market. The Company is the main supplier of fuel for foreign NPPs equipped with Russian-design VVER reactors; it has the necessary capabilities for the production of nuclear fuel for PWR and BWR reactors, fuel components from reprocessed uranium (in cooperation with Framatome), as well as fuel pellets for BWR and PHWR reactors. TVEL Fuel Company has developed its own design of a fuel assembly for PWR reactors, TVS-KVADRAT, which it offers to foreign operators.

■ TVEL Fuel Company supplies a wide range of non-nuclear products and services to the Russian and international markets in the following areas: the metals and chemical industries, mechanical engineering, additive manufacturing technologies and energy storage systems. The optimal or-

ganizational format for non-nuclear business development in the Company is the establishment of industry integrators.

■ Research and development in TVEL Fuel Company comprises a wide range of areas, including the improvement of nuclear fuel designs and materials, implementation of the closed nuclear fuel cycle concept, and development of innovative types of nuclear fuel.

**One in every six reactors in the world runs on fuel produced by the Company.**

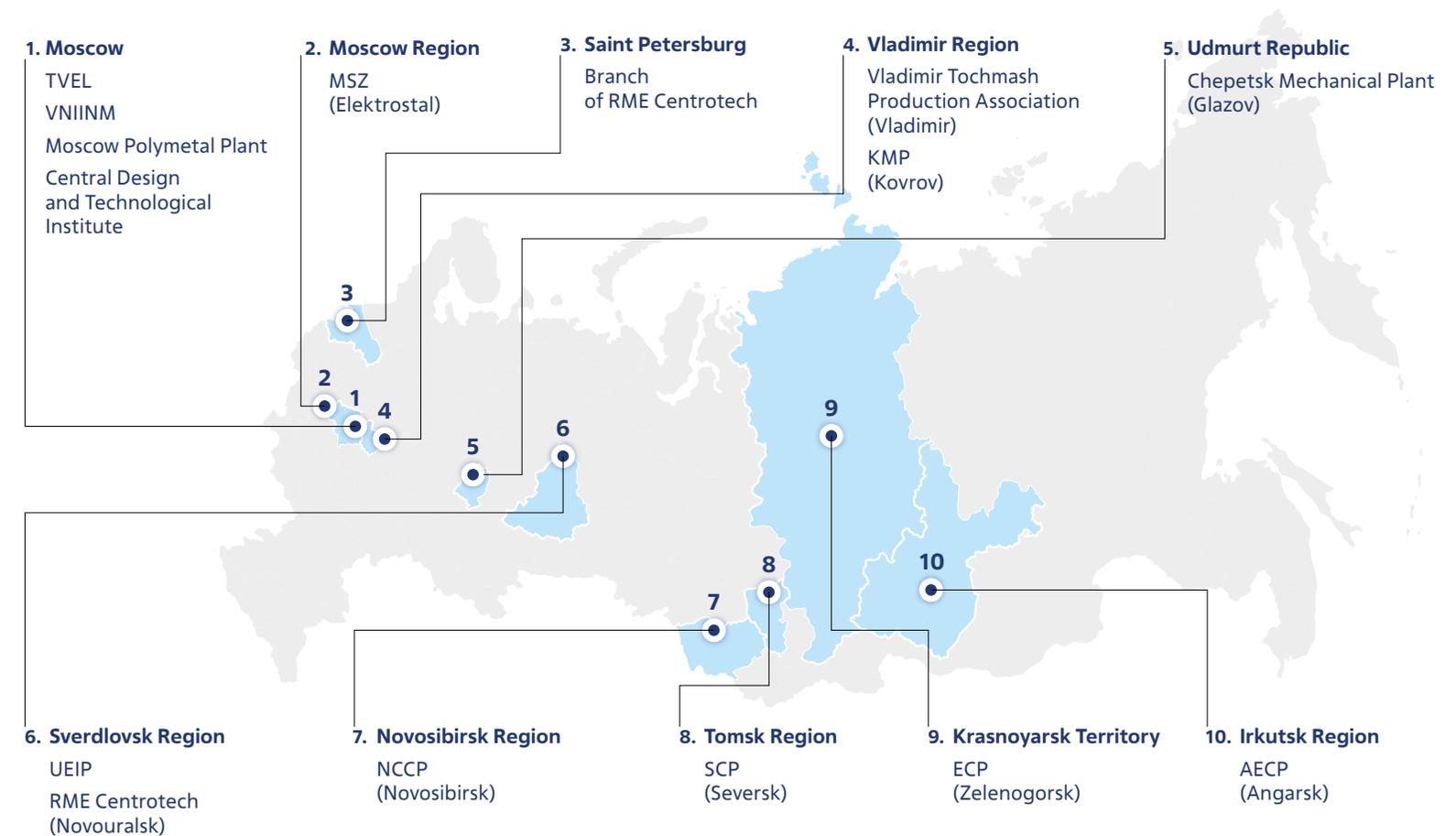
**All stages of operations strictly comply with nuclear and radiation safety, industrial, fire and environmental safety requirements, as well as requirements for occupational health and safety, physical protection of nuclear facilities and nuclear materials, and emergency preparedness.**

## 2.2. REGIONS OF OPERATION

A special feature of the social environment in the Company's regions of operation is the fact that some of its enterprises are located in closed administrative and territorial formations (CATFs), such as Seversk, Novouralsk and Zelenogorsk, and in a single-industry town, Glazov. These enterprises play a central role in the local economy and are major taxpayers.

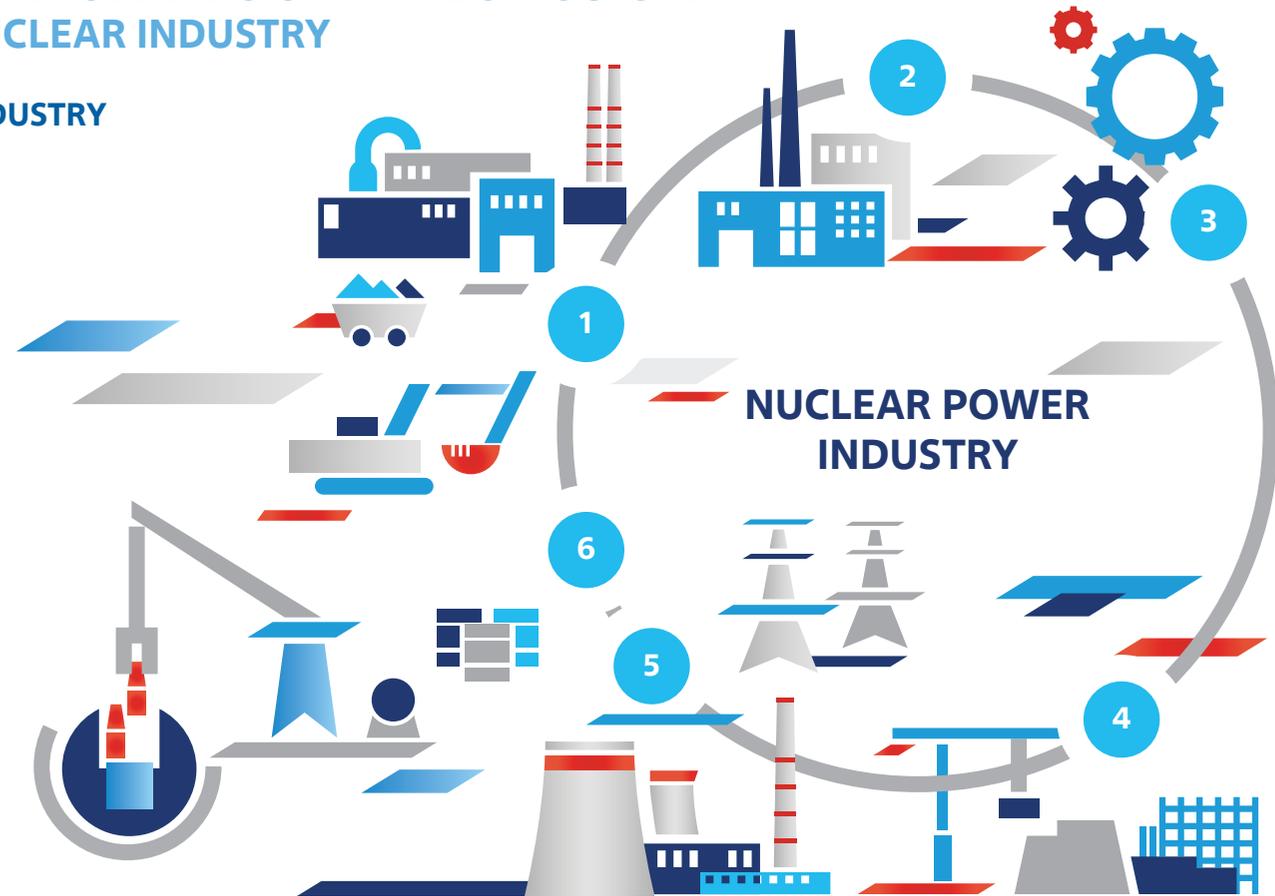
**The enterprises of TVEL Fuel Company are located in 10 regions of the Russian Federation, from Saint Petersburg to Eastern Siberia.**

### GEOGRAPHICAL FOOTPRINT OF TVEL FUEL COMPANY



# ROLE OF THE FUEL DIVISION IN THE STRUCTURE OF THE NUCLEAR INDUSTRY

## NUCLEAR INDUSTRY STRUCTURE



- 1 MINING DIVISION**
  - Geological exploration
  - Uranium mining
  - Ore processing

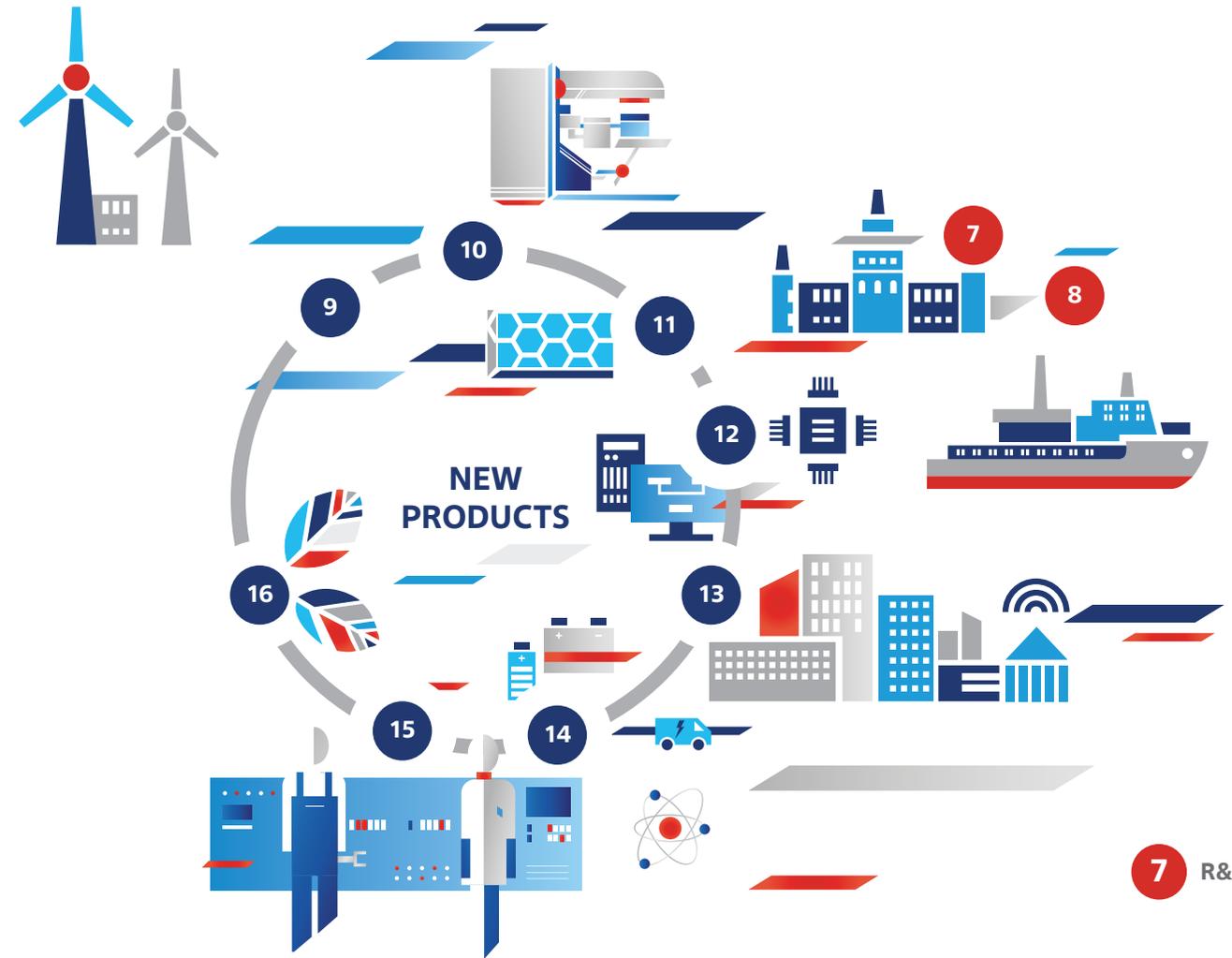
- 2 FUEL DIVISION**
  - Conversion
  - Enrichment
  - Fuel fabrication

- 3 MECHANICAL ENGINEERING DIVISION**
  - Equipment design
  - Equipment manufacture
  - Equipment supply
  - Installation and pre-commissioning
  - Maintenance and upgrade

- 4 ENGINEERING DIVISION**
  - Design and engineering
  - NPP construction

- 5 POWER ENGINEERING DIVISION**
  - Power generation at NPPs
  - NPP servicing

- 6 BACK END**
  - SNF management
  - Decommissioning
  - RAW management



- 8 DEVELOPING THE NORTHERN SEA ROUTE**

- 9 WIND POWER**

- 10 NUCLEAR MEDICINE**

- 11 ADVANCED MATERIALS AND TECHNOLOGIES**

- 12 DIGITAL PRODUCTS**

- 13 INFRASTRUCTURE SOLUTIONS**

- 14 ADDITIVE MANUFACTURING AND ENERGY STORAGE SYSTEMS**

- 15 PROCESS CONTROL SYSTEMS AND ELECTRICAL ENGINEERING**

- 16 ENVIRONMENTAL SOLUTIONS**

## 2.3. QUALITY MANAGEMENT STANDARDS AND SYSTEMS

In 2019, steps were taken to develop an Integrated Management System (IMS) in the enterprises of the Fuel Company meeting the requirements of the ISO 9001, ISO 14001, ISO 45001 and ISO 50001 international standards, the Nuclear Quality Assurance Standard (NQA-1), as well as other requirements of foreign customers and their national laws and regulations. The Fuel Company developed and implemented standards ensuring the effective IMS functioning based on the findings of analysis of requirements set out in the 2018 version of the international ISO 45001 and ISO 50001 standards ahead of the certification procedure in 2020.

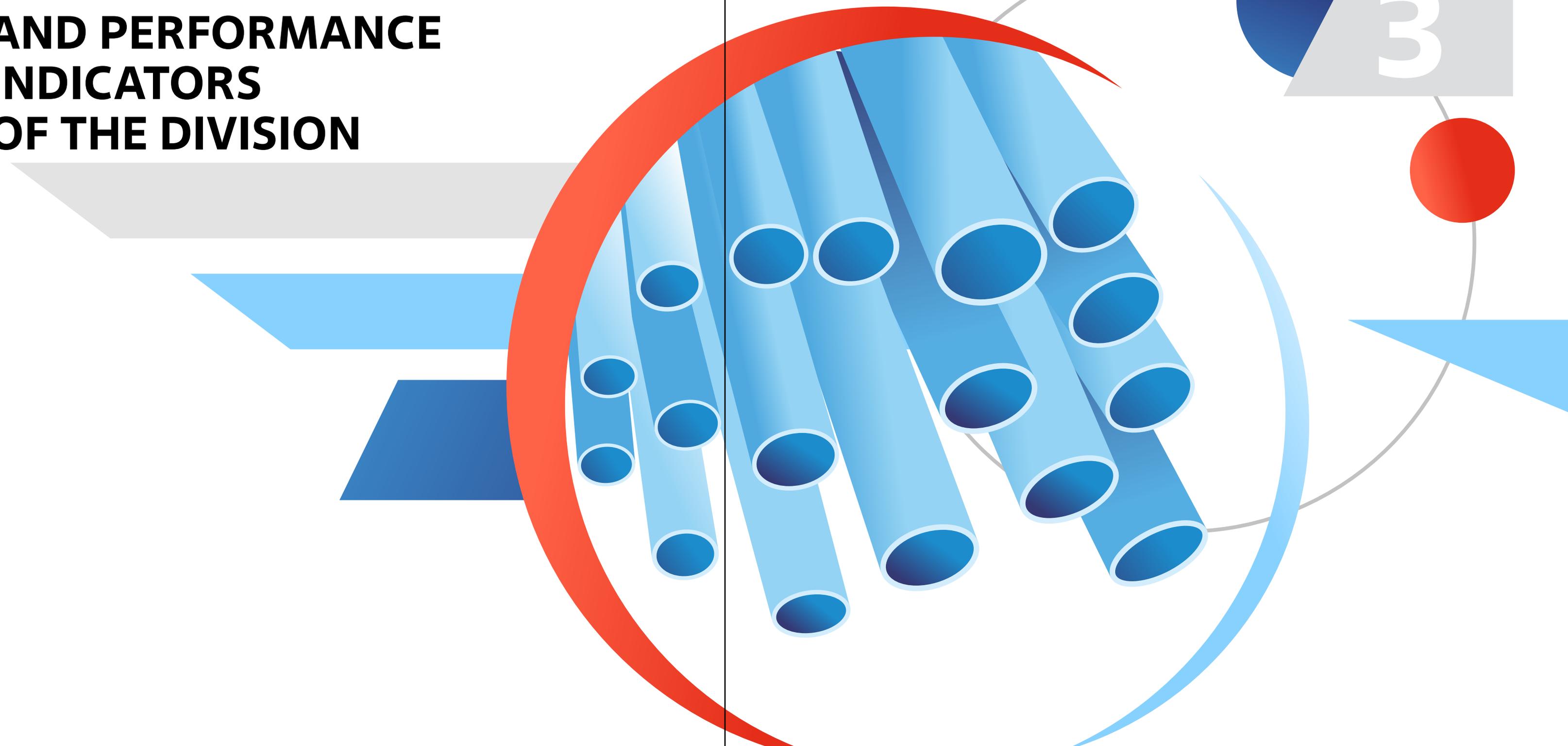
A survey (diagnostic audit) was organized and carried out in JSC UEIP and TVEL JSC to assess their compliance with the requirements of the ISO 28000 international standard (Specification for security management systems for the supply chain). In 2020, the Fuel Company plans to develop a series of standards in order to undergo the certification procedure in 2021, undergo an audit and confirm the status of TVEL JSC and JSC UEIP as qualified suppliers of enrichment and conversion products for both Russian and foreign customers.

### **Outcomes of the first witness audit of the Fuel Company's enterprises assessing conformity of the management system with the requirements of the ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and ISO 50001:2011 standards.**

To confirm the validity of their certificates, the enterprises of TVEL JSC (PJSC MSZ, NCCP PJSC, Chepetsk Mechanical Plant JSC, JSC VNIINM, SCP JSC, JSC PA ECP, JSC UEIP, AECP JSC, PJSC KMP, Vladimir Tochmash Production Association JSC, LLC RME Centrotech and Industrial Innovation JSC) successfully passed the first witness audit by an international certification body TÜV Thüringen e.V. (conducted by representatives of LLC Intercertifika TÜV jointly with TÜV Thüringen). The validity of the certificate of conformity of the Integrated Management System with four standards (ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007 and ISO 50001:2011) was extended until March 11, 2021.

In recent years, the quality management systems of TVEL JSC and its subcontractors have been audited by foreign partners and customers. Based on the findings of the audits, TVEL JSC has been qualified as a supplier of nuclear fuel. In 2019, the quality management system of TVEL JSC, PJSC MSZ, NCCP PJSC, NZHK-Instrument LLC, Chepetsk Mechanical Plant JSC, JSC VNIINM and JSC UEIP successfully passed an assessment of conformity with the requirements of ASME NQA-1, a US standard. Following the assessment, the relevant reports were prepared, and a positive opinion was issued regarding the implementation of the ASME NQA-1 Standard.

### **3. KEY RESULTS AND PERFORMANCE INDICATORS OF THE DIVISION**



## 3.1. KEY RESULTS

Indicator	2017	2018	2019
Consolidated revenue, RUB million	180,683	163,173	194,619
Average headcount, people	21,793	22,451	22,111
Gross tax deductions (actually paid), RUB million	14,644	15,106	12,976 <sup>1</sup>
Lost Time Injury Frequency Rate (LTIFR)	0.06	0.13	0.02
10-year portfolio of overseas orders for NFC front-end products and services, USD billion	10.8	13.3	13.9
Environmental costs, RUB million	2,207	2,204	3,297.3 <sup>2</sup>

<sup>1</sup> The calculation includes the following taxes and fees imposed on the organizations covered in the Report:

- Income tax paid by both organizations forming part of the consolidated taxpayer group and organizations outside the consolidated taxpayer group;
- Insurance premiums paid to extra-budgetary funds;
- Other taxes, fees and charges to be included in the cost or value of non-current assets (property tax, land tax, state duties, etc.). The amount of VAT to be paid in 2019 totalled RUB 7.2 billion. Taxes paid (including VAT payable to the budget) in 2019 totalled RUB 20.19 billion.

<sup>2</sup> The increase in environmental costs was caused mainly by the fact that tailings storage facility No. 1 of Chepetsk Mechanical Plant JSC, which had been in federal ownership, was recorded on the balance sheet of the enterprise.

## 3.2. IMPROVEMENT OF PRODUCTION EFFICIENCY

The ROSATOM Production System (RPS) is a lean production culture and a system for continuous process improvement to provide competitive advantages globally.

To support the achievement of strategic goals of ROSATOM and the Fuel Company, the implementation of divisional and industry-wide programmes and operational efficiency projects aimed at achieving key business targets (costs, adjusted free cash flow and labour productivity) was continued in 2019.

As part of an industry-wide project titled ‘Comprehensive Optimization of Operations in the Nuclear Industry’, in 2019, eight enterprises of the Fuel Company (PJSC MSZ, JSC UEIP, PJSC KMP (including Vladimir Tochmash Production Association JSC), SCP JSC, JSC PA ECP, Chepetsk Mechanical Plant JSC, NCCP PJSC and AECJ JSC) successfully underwent operational peer reviews of RPS deployment quality (OPQR) to confirm the status of RPS Leaders. Seven of these companies were ranked in the top ten RPS enterprises in the industry. Two enterprises of the Fuel Company, JSC VNIINM and LLC RME Centrotech, confirmed their compliance with the criteria of the RPS Minimum on the divisional level.

### REDUCTION OF LABOUR INTENSITY IN FUNCTIONAL PROCESSES

In 2019, as part of measures to improve the performance of functions, the labour intensity of work performed was reduced by 322,000 man-hours in the following functions:

- Production (95.5%);
- Production engineering and management (1.2%);
- Maintenance and repairs (2.3%);
- Production efficiency management and production development (1%).

### COMPREHENSIVE SUPPLY CHAIN MANAGEMENT

The implementation of a programme titled ‘Transition to an Operating Model Based on Comprehensive Supply Chain Management in 2017–2019’ was completed in 2019. To accomplish the main objectives of the programme, key product flows were selected in all enterprises, with the following key project goals set for 2019: cost reduction by RUB 2.25 billion (RUB 5.36 billion for the period from 2017), a reduction in labour intensity of work performed by operating personnel by 4.1% (9.4% for the period from 2017), reduction of unscheduled downtime for key products in the flow by 1.6% (38.6% for the period from 2017), and improvement in production efficiency and product quality.

## IMPROVEMENT PROJECTS AND SUGGESTIONS (IPSS)

598 RPS projects aimed at addressing issues related to product flows and improving business process efficiency were implemented in the Fuel Division in 2019. Over 95% of managers in the Fuel Company's enterprises are involved in project activities. Economic benefits from the implementation of RPS projects totalled RUB 501.9 million.

In 2019, 100,200 IPSs were submitted in the enterprises of the Fuel Company, with 92,970 IPSs (92.8%) accepted for implementation and 92,770 IPSs (99.8%) implemented. 82% of employees submit IPSs. The value of one IPS totals RUB 1,700. The majority of the IPSs (approximately 70%) are aimed at improving working conditions and ensuring occupational safety.

**Economic benefits from the implementation of RPS projects in 2019 totalled RUB 501.9 million. Economic benefits from the implementation of IPSs and suggestions for optimization in 2019 totalled RUB 157.3 million.**

## 3.3. INVESTMENT ACTIVITIES

In 2019, TVEL initiated a project to transform the Investment and Project Management (IPM) function in the Fuel Company. The key objectives of the project are to reduce the lead time and costs within the function and increase the internal customer satisfaction level. As part of transformation of the function, the Company conducted an audit of current investment processes and identified opportunities for streamlining them.

In addition, a procedure was established for a comprehensive expert review of investment project charters. Taking into account additional activities, the lead time from the development of a project charter to its review by an investment decision-making authority is expected to be reduced by 50%.

At the subsequent stages of the IPM function transformation, it is intended that investment processes will be concentrated in one location in those instances where remote work away from the project implementation site does not result in a decrease in the overall process efficiency and makes it possible to achieve synergies when the process is scaled up.

As part of its efforts to improve project management maturity, the Company started to compile a divisional knowledge base on lessons learned in the course of implementation of investment projects. The knowledge base enables project managers to share their unique experience. By drawing on this experience, managers and project management teams are able to prevent errors recorded in the knowledge base at the planning stage and leverage the know-how acquired from their colleagues.

## 3.4. PRODUCTION PLANS

In 2020 and in the longer term, the Fuel Division will continue to implement all its key initiatives aligned with the principles of sustainable development.

In order to achieve the Sustainable Development Goal 'Responsible Consumption and Production', experts in the Fuel Division continue to develop and implement various recycling technologies in both nuclear and non-nuclear businesses. For instance, a promising technology has been developed at Chepetsk Mechanical Plant for the processing of spent graphite used in zirconium and calcium production into marketable products.

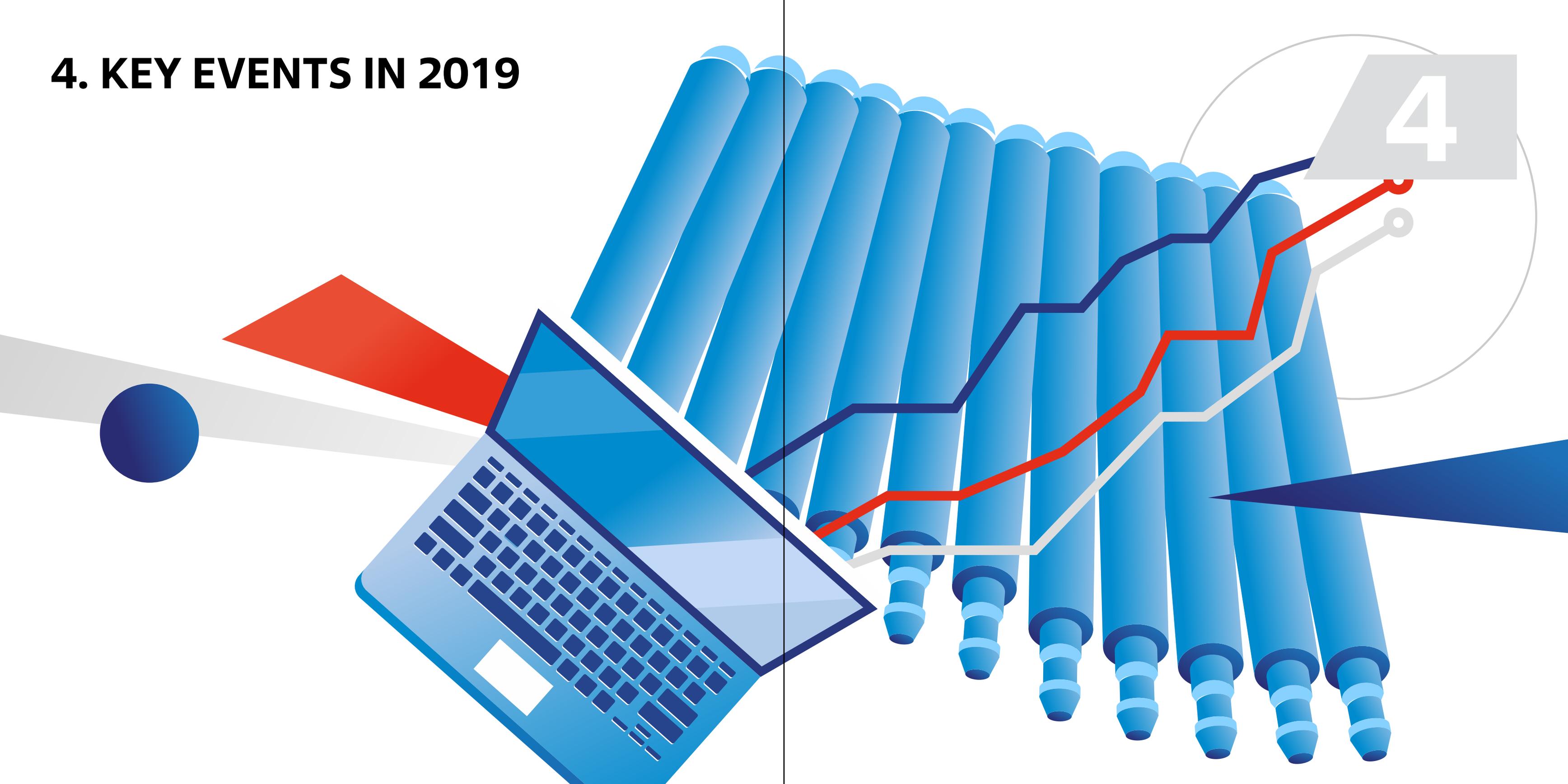
An important project aimed at closing the NFC is the pilot operation of the BN-800 fast reactor with its core fully loaded with mixed oxide (MOX) fuel, which is produced from reactor-grade plutonium and depleted uranium. Plans for 2020 include operating the power unit after loading the first batch of MOX fuel supplied by TVEL in 2019, and supplying MOX fuel assemblies for the first complete reloading. Thus, by the beginning of 2022, the stationary core of the BN-800 reactor with uranium-plutonium fuel is expected to be formed.

In addition, as part of measures aimed at achieving the strategic objective of closing the NFC, a transition from the preparatory to the main stage of the construction of a power unit equipped with the BREST-OD-300 fast reactor at the site of SCP JSC in Seversk is scheduled for 2020; the power unit will become one of the key parts of the Pilot and Demonstration Energy Facility (ODEK). The Company also plans to conclude contracts for the delivery of long-lead equipment.

At another ODEK facility that is currently under construction as part of the Proryv industry-wide strategic project, namely the fuel fabrication/refabrication module, the Company plans to start the installation of main process equipment.

Plans for the development of new businesses in 2020 include starting the production of new products in the chemical sector, starting to supply lithium-ion energy storage systems for electricity distribution grids in Russia and developing new superconductor designs for foreign and Russian mega science projects. In addition, it is intended that experts from Central Design and Technological Institute JSC will work on the design of the Siberian Circular Photon Source (a state-of-the-art Russian synchrotron).

# 4. KEY EVENTS IN 2019



## January

### Russia

- Testing of Russian accident tolerant fuel for VVER and PWR reactors started in a research reactor at SSC RIAR.

## February

### China

- The contract for fuel delivery for the CFR-600 Chinese fast reactor came into force.

## February

### Russia

- Priority social and economic development areas (PSEDAs) were established in the towns of Glazov, Novouralsk and Seversk in accordance with the relevant decrees of the Russian Government.

## April

### Egypt

- Contractual documents were signed for the supply of nuclear fuel components fabricated by NCCP PJSC for the ETRR-2 research reactor to Egypt.

## May

### Russia

- A facility for potassium bifluoride production was commissioned at AECJ JSC.

## June

### Slovakia

- TVEL JSC and Slovenské elektrárne a.s. signed contractual documents for the supply of nuclear fuel to Slovakian NPPs between 2022 and 2026 with an option to extend the contract until 2030.

## July

### China

- TVEL JSC signed a contract for the supply of nuclear fuel to future power units No. 7 and No. 8 of Tianwan NPP with Chinese customers forming part of China National Nuclear Corporation (CNNC).

## July

### Czech Republic

- TVEL JSC and ČEZ a.s. signed an agreement on the implementation of a new model of RK-3+ nuclear fuel for VVER-440 reactors at Dukovany NPP.

## July

### Hungary

- TVEL JSC and the Hungarian Academy of Sciences Centre for Energy Research signed a contract for the supply of Russian nuclear fuel to the Budapest Research Reactor.

## August

### Russia

- TVEL JSC supplied the first batch of MOX fuel for the BN-800 fast neutron reactor to Beloyarsk NPP.

## August

### Russia

- The first Russian project to reprocess bottom sludge from a tailings storage facility of a uranium conversion plant was launched at Chepetsk Mechanical Plant JSC.

## November

### China

- TVEL JSC signed a contract for the supply of nuclear fuel to future power units No. 3 and No. 4 of Xudabao NPP with Chinese customers forming part of China National Nuclear Corporation (CNNC).

## November

### Russia

- TVEL JSC became the winner at the federal stage of the Exporter of the Year competition in the High-Technology Exporter of the Year category among large businesses.

## December

### India

- TVEL JSC carried out the contract for the delivery of fuel pellets for Tarapur NPP to India.

## December

### Bulgaria

- TVEL JSC and Kozloduy NPP signed contractual documents for the supply of Russian nuclear fuel to Bulgaria until 2025.

## December

### Russia

- SCP JSC and JSC CONCERN TITAN-2 signed a contract for the construction of a power unit equipped with the BREST-OD-300 fast reactor at the site of the Siberian Chemical Plant.

## December

### Russia

- JSC PA Electrochemical Plant and Orano Projets (France) signed a contract for the supply of equipment for the construction of a second facility for depleted uranium hexafluoride defluorination in Zelenogorsk.

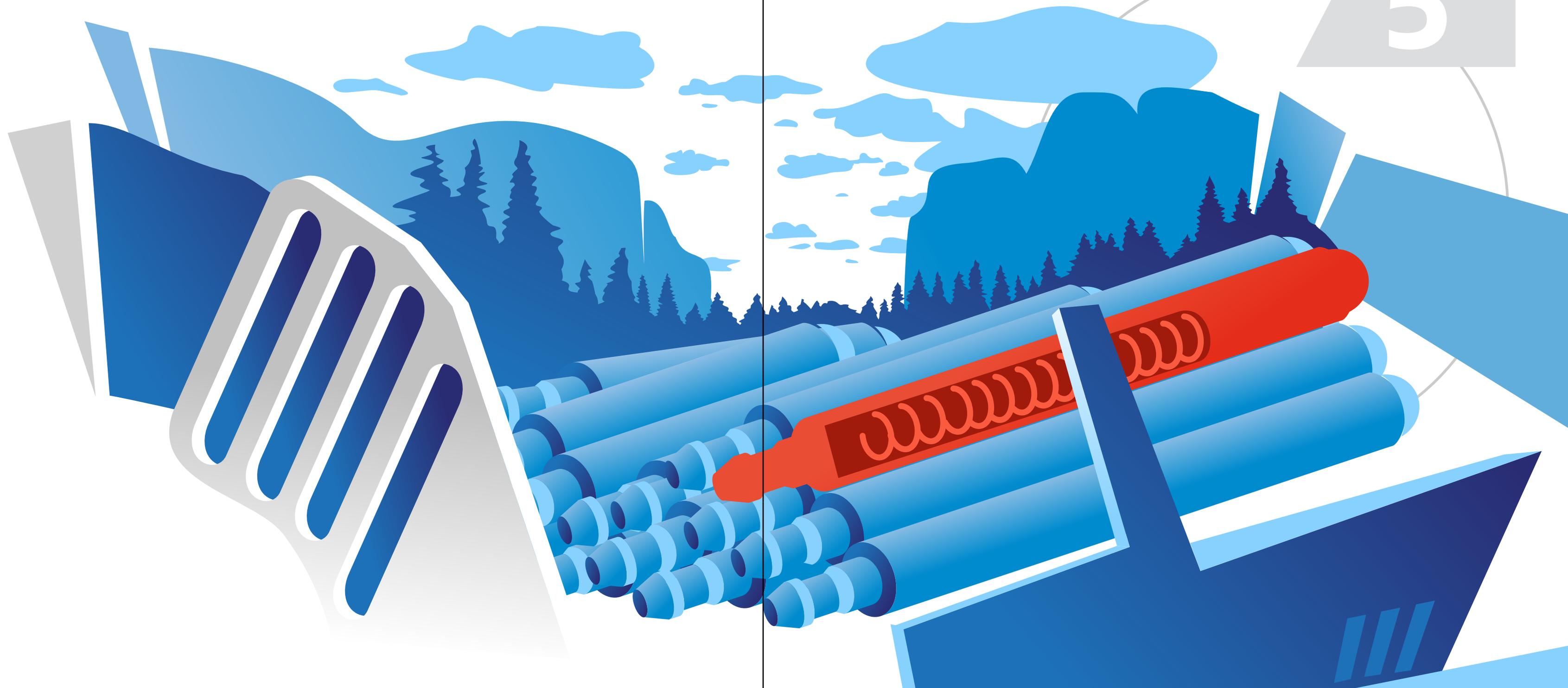
## December

### Russia

- The first fuel assemblies with Russian-made accident tolerant fuel pellets for the VVER-1000 reactor were produced and underwent acceptance tests at NCCP PJSC.

# 5. SUSTAINABLE DEVELOPMENT

5



## 5.1. IMPLEMENTATION OF EXECUTIVE ORDER NO. 204 OF THE PRESIDENT OF THE RUSSIAN FEDERATION DATED MAY 7, 2018 ON NATIONAL GOALS AND STRATEGIC OBJECTIVES OF THE RUSSIAN FEDERATION UNTIL 2024

Comprehensive urban social and economic development programmes have been developed for Glazov and Novouralsk with assistance from the Centre for Urban Competencies of the Agency for Strategic Initiatives; the programmes incorporate prioritized focus areas of national projects in the Russian Federation, with a special focus given in the relevant dedicated sections to job creation and the demographic situation. The prioritized development project for Zelenogorsk has also been updated and aligned with the national projects.

Cooperation agreements on support for the implementation of national projects have been drafted and signed between TVEL JSC and regional governments (Udmurt Republic, Sverdlovsk Region, Krasnoyarsk Territory; an agreement with the Tomsk Region is being drafted). Municipal administrations in these federal subjects of Russia signed 56 agreements with regional governments on the implementation of initiatives forming part of national projects and received grants totalling RUB 566.3 million. TVEL's financial investments in these projects totalled RUB 56.2 million.

The Company provided expert assistance and methodological support for the applications submitted by the towns/regions for the federal tender for the allocation of subsidies from the federal budget for the establishment of Quantoriums and Digital Education Centres in TVEL's host towns and cities. As a result, resolutions were adopted and recorded in the minutes of tender committees on the establishment

of children's science parks in Glazov (2021), Elektrostal and Zelenogorsk (2022), and IT Cubes in Seversk and Glazov (2022). The target for federal budget investments in these projects in the regions has been set at RUB 280 million.

An IT Cube, the first digital education centre for children and teenagers in TVEL's host towns and cities, was founded in Elektrostal with financial assistance from the Fuel Company (federal and regional subsidies totalled RUB 12.5 million; the Fuel Company allocated RUB 2 million for the establishment of an additional area of training, Educational Robotics). In addition, an engineering education centre was established at the Station of Young Engineers (with RUB 3 million donated by TVEL).

High-technology workshops specializing in Information Technology were opened at the Seversk Industrial College as part of the Education national project; the workshops meet WorldSkills standards. Subsidies allocated for the project from the federal and regional budgets totalled RUB 27.1 million, with TVEL providing financial support totalling RUB 2 million.

## 5.2. PROJECTS IN THE AREA OF ENVIRONMENTAL PROTECTION AND DECOMMISSIONING OF FACILITIES POSING NUCLEAR AND RADIATION HAZARDS

In 2019, work performed under a government contract for the liquid decontamination of process equipment removed from building No. 804 was completed at AECJ JSC (Angarsk, Irkutsk Region). Previously, building No. 804 had accommodated a uranium enrichment plant using diffusion equipment. This production facility was built in the early years of the Soviet atomic project and was shut down before the end of the 20<sup>th</sup> century. The contractor was AECJ JSC itself; all work was performed by its full-time employees using its own equipment. A total of over 4,500 tonnes of equipment were decontaminated. The clean metal was sold on the market.

The second stage of mothballing of the B-1 liquid radioactive waste storage pool was completed at SCP JSC (Seversk, Tomsk Region); the pool is located in the buffer area of the enterprise. Work completed in 2019 included installing a clay screen, filling the pool with a protective layer of soil, and installing a system for monitoring the pool during the permanent isolation period.

In addition, the main stage of the mothballing of the B-25 radioactive waste storage facility was completed at SCP JSC. This included permanently covering the storage facility with the first protective screen and installing a drainage system. The work completed at the site formed part the preparatory stage of the permanent mothballing of the storage facility.

### CUSTOMER SATISFACTION

A customer survey was conducted, and a memo on the findings of customer satisfaction assessment for 2019 was prepared in accordance with corporate standard P-9 'Customer Satisfaction Assessment' of TVEL JSC, followed by the development of measures to improve the customer satisfaction level. Pursuant to P-9 methodology, a histogram was constructed showing the distribution of average scores for the following sections of the survey:

- The contracting process;
- Sales management;
- Product quality;
- Quality assurance;
- Feedback;
- Overall rating.

**The overall customer satisfaction level at year-end 2019 was assessed as 'good' (the highest score).**

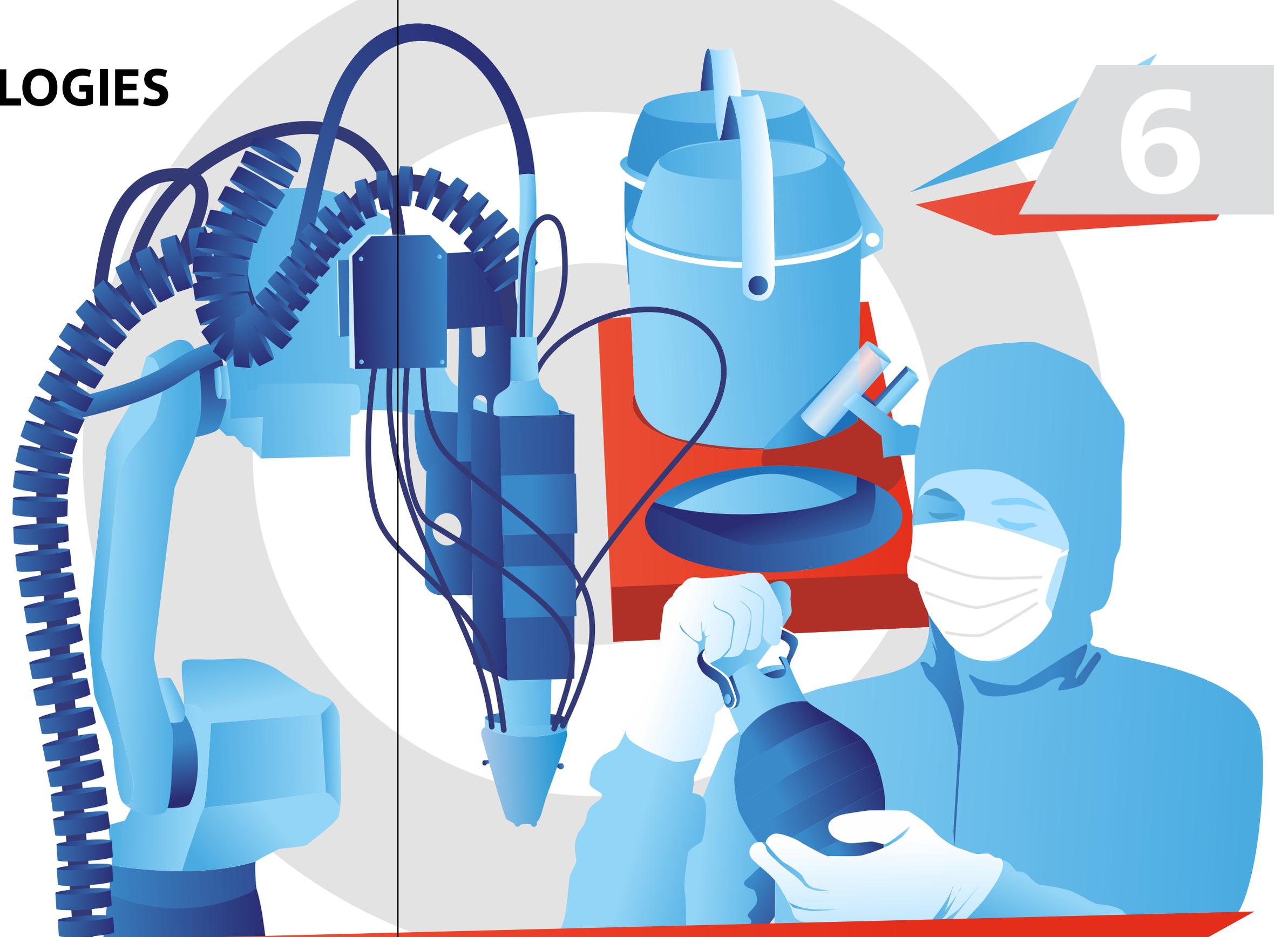
**FUNDING OF INITIATIVES FORMING PART OF NATIONAL PROJECTS IN THE HOST TOWNS AND CITIES IN 2019, RUB MILLION**

NATIONAL PROJECTS	Seversk		Novouralsk	
	Number of agreements	Amount	Number of agreements	Amount
Housing and urban environment	3	71.3	1	22.0
		5.0*		2.59*
Demographic situation	3	20.05	2	1.51
		2.0*		—
Education	4	32.35	2	20.92
		3.05*		6.9*
Small and medium-sized businesses and support for individual business initiatives	1	10.31	1	1.09
		—		—
Culture	1	45.73	3	31.58
		1.5*		10.25*
Safe and high-quality roads	3	115.74	-	—
		—		—
Healthcare	-	—	-	—
		—		2.0*
<b>Total</b>	<b>15</b>	<b>295.48</b>	<b>9</b>	<b>79.1</b>
		11.55*		21.74*

\* Involvement of TVEL in implementation of national projects/federal programmes.

Zelenogorsk		Glazov		Total	
Number of agreements	Amount	Number of agreements	Amount	Number of agreements	Amount
1	34.80	3	64.74	8	192.84
	5.0*		5.8*		18.39*
5	8.11	2	35.61	12	65.28
	0.46*		0.64*		3.1*
5	5.02	4	2.57	15	60.86
	3.55*		2.25*		15.75*
-	—	-	—	2	11.4
	—		—		—
-	—	3	12.04	7	89.35
	3.04*		2.2*		16.99*
2	3.51	-	—	5	119.25
	—		—		—
-	—	7	24.96	7	24.96
	—		—		2.0*
<b>13</b>	<b>51.44</b>	<b>19</b>	<b>140.28</b>	<b>56</b>	<b>566.3</b>
	12.05*		10.89*		56.23*

# 6. DIGITAL TECHNOLOGIES AND PRODUCTS



Pursuant to the Fuel Division's digitization strategy, the Company is implementing eight digital transformation sub-programmes that include over 80 IT projects aimed at improving business performance.

In particular, the Company has initiated subprogrammes involving full-scale implementation of design and production engineering management (PDM/PLM systems), real-time production management (manufacturing execution (MES) systems), equipment maintenance and repairs; the Company is also actively developing and rolling out an enterprise resource planning (ERP) system. The Fuel Company has launched projects to establish an Engineering Centre and introduce digitized production.

**Economic benefits from digital transformation are projected at RUB 5 billion as a cumulative total by the end of 2030.**

As part of its efforts to introduce state-of-the-art information technologies, TVEL JSC launched a project to digitize its procurement activities. As a result, the amount of time and effort spent by the relevant experts on the review of technical specifications was reduced by up to 30%, while the number of errors and corrections to technical specifications for procurement was reduced by up to 90%. The project was recognized as the best IT project of 2019 in Russia according to Global CIO Digital Experts; steps are being taken to further develop this solution and roll it out across the Fuel Company.

**In 2019, Vladimir Tochmash Production Association JSC and JSC VNIINM implemented an integrated divisional EPR system, which is now used by over 350 employees of these enterprises.**

Enterprises have been provided with access to information on the outcomes of innovative projects implemented earlier by TVEL, which involved applying artificial intelligence, computer vision and robotics as part of user activities in procurement and treasury transactions, as well as for the processing of expense reports and their automatic recording in the accounting system.

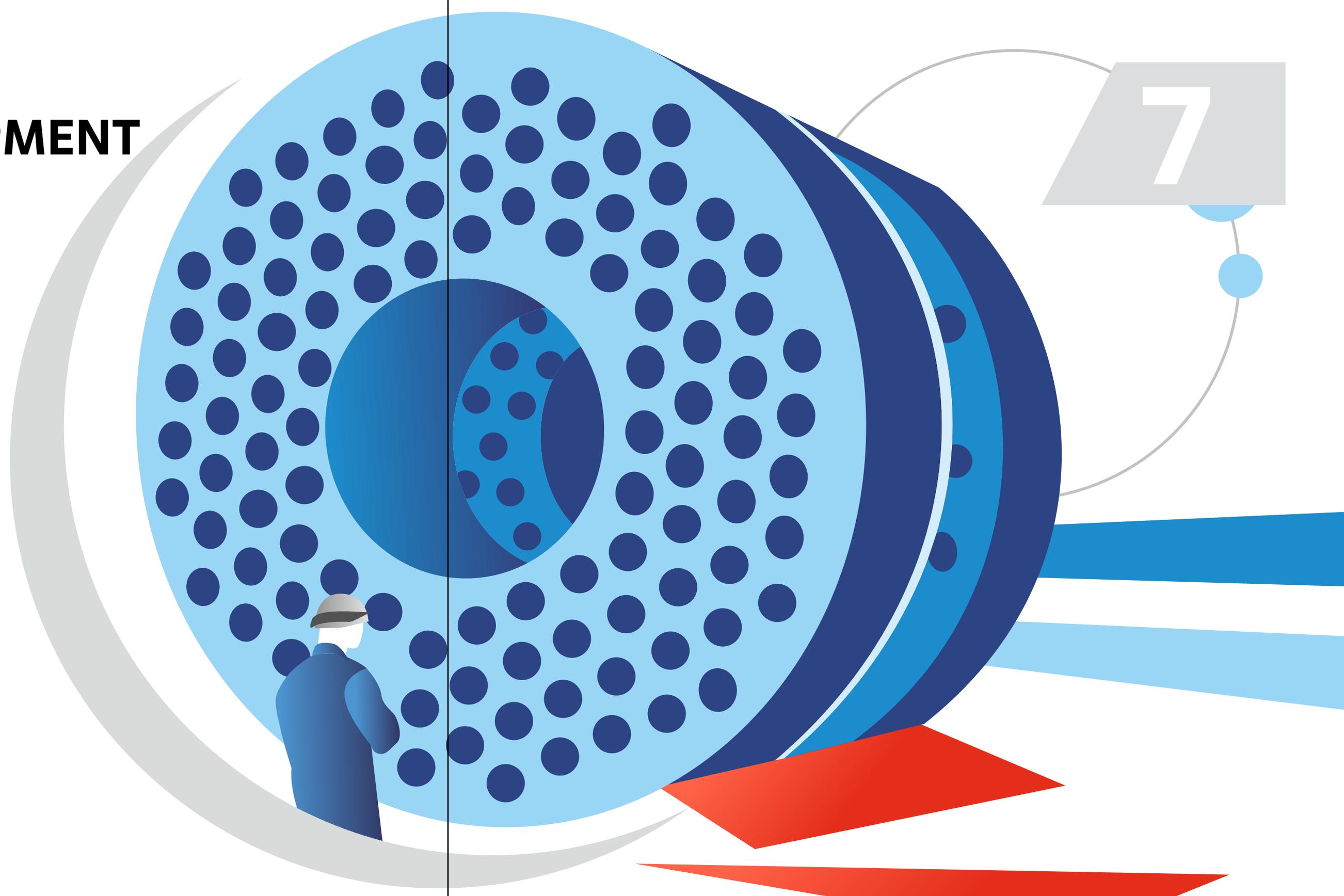
JSC VNIINM has implemented a project to establish an information system for the management of experimental and engineering data.

The system enables the Institute's employees to manage electronic design and technical documentation and R&D reports, and agree the documentation with manufacturing enterprises in a shared divisional information space for engineering data management. Information contained in the system is available to participants of R&D and production engineering processes, who can do a quick search and leverage scientific knowledge and expertise of the Institute in new projects. The system will enable knowledge transfer to young specialists of JSC VNIINM.

The outcomes of the project have provided a basis for the development of a centralized solution: an integrated divisional information system for product data management in the Fuel Company (PDM TK).

**In 2019, the Company established a new business responsible for the development and commercialization of digital products; it started to operate on the export market in the field of digitization and generated the first revenue from the sales of in-house digital solutions totalling RUB 34.5 million. The Fuel Company is implementing scheduled measures to develop this business; revenue from the sales of digital products by 2030 is projected at RUB 4 billion.**

# 7. INNOVATION AND DEVELOPMENT OF SCIENCE



Innovative activities in the nuclear industry are a key prerequisite for long-term business competitiveness and sustainability of TVEL Fuel Company, since NFC front-end services and products form part of the core business of enterprises in the Fuel Division.

**KEY R&D AREAS INCLUDE:**

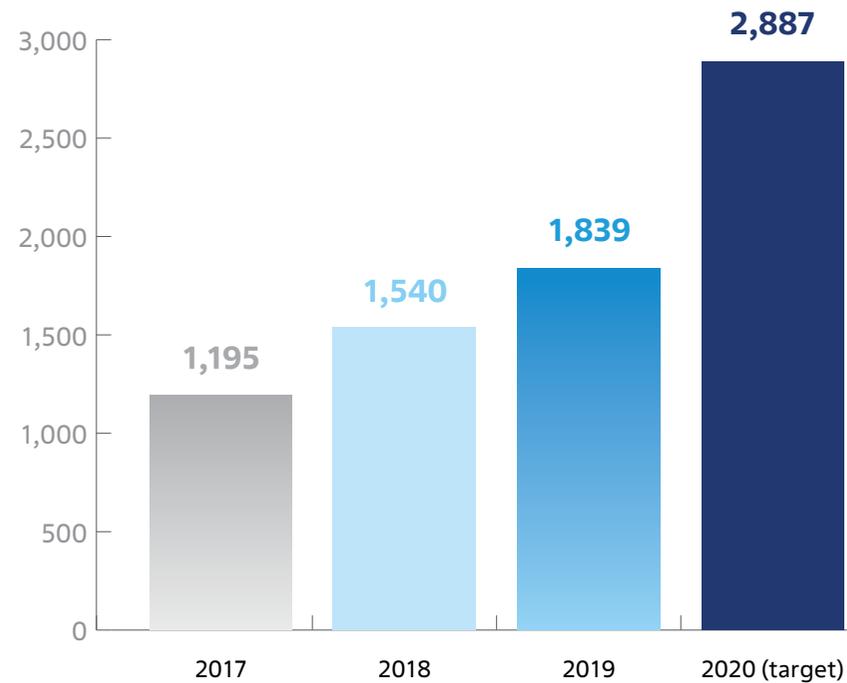
- Developing and improving fuel and reactor cores for Russian-design power reactors (primarily VVER-1000/1200/1300);
- Developing nuclear fuel for Western-design reactors (PWR);
- Developing nuclear fuel for small nuclear power plants, research reactors and nuclear icebreakers.

**WORK ON NPP POWER UNITS THAT ARE CURRENTLY IN OPERATION OR UNDER CONSTRUCTION IS FOCUSED ON THE ACHIEVEMENT OF THE FOLLOWING OBJECTIVES:**

- Achieving higher fuel burnup;
- Extending the service life of fuel assemblies;
- Improving the operational reliability of nuclear fuel;
- Proving the feasibility of using the fuel during NPP operation at increased capacity (for VVER-1000, up to 107% of rated capacity) in strict compliance with safety requirements.

The implementation of plans for international business development and expansion into new markets is supported by the development of new types of gas centrifuges, optimization of TVS-KVADRAT fuel assemblies (for PWR reactors), and development of new fuel types for research reactors and new reactor cores for nuclear icebreakers.

**TVEL'S INVESTMENTS IN R&D, RUB MILLION**



## 7.1. PROGRESS ON THE PROJECT ‘TOWARDS ZERO NUCLEAR FUEL FAILURE’ IN 2019

During the 2019 fuel cycle, there were no leaking fuel assemblies at newly commissioned Russian NPP power units equipped with VVER-1200 reactors (power unit No. 6 of Novovoronezh NPP and power unit No. 5 of Leningrad NPP).

Fabrication plants implemented measures to improve the technology and nuclear fuel quality control. The Company established a working group for amending design, engineering and operating documentation for nuclear fuel for VVER reactors (the group is tasked with promptly reviewing suggestions from suppliers, customers, NPPs, fuel fabrication plants and fuel developers for the improvement of fuel fabrication quality and performance).

In March, international experts made a peer visit to Kozloduy NPP (Bulgaria) (participants of the Zero Failure project studied fuel operation conditions at Kozloduy NPP). In December, international experts made a peer visit to Temelin NPP (Czech Republic).

In 2019, post-irradiation examination of irradiated fuel assemblies was conducted in order to determine the causes of leaks and confirm fuel performance characteristics.

During the year, there were no complaints against TVEL JSC from customers.

## 7.2. PROGRESS IN THE IMPROVEMENT OF NUCLEAR FUEL CHARACTERISTICS AND PRODUCTION PROCESSES IN 2019

### DEVELOPMENT AND IMPLEMENTATION OF NUCLEAR FUEL AND CORES FOR RUSSIAN-DESIGN POWER REACTORS (VVER)

■ A rationale was provided for the design of second-generation VVER-440 fuel assemblies with an optimal water/uranium ratio.

■ Licences were obtained from the National Nuclear Safety Administration of China (NNSA) for the operation of power units No. 3 and No. 4 of Tianwan NPP in 18-month fuel cycles. This marked the completion of licensing of TVS-2M fuel assemblies by the NNSA for operation in 18-month fuel cycles at power units No. 3 and No. 4 of Tianwan NPP.

■ Contractual documents were signed for the introduction of new VVER-440 (RK3+) fuel and advanced fuel cycles at power units No. 1–4 of Dukovany NPP (Czech Republic).

■ Reactor tests and post-irradiation examination of recycled VVER-1000 fuel assemblies with an artificial cladding defect were completed (experiments No. 6 and No. 7).

■ A cooperation agreement on research and testing of structural materials was signed with the Research Centre Řež (Centrum výzkumu Řež s.r.o.; Czech Republic).

### DEVELOPMENT OF NUCLEAR FUEL FOR FOREIGN-DESIGN REACTORS (PWR)

Several fuel rods from an irradiated assembly were sent to a Swedish centre, Studsvik Nuclear AB, for post-irradiation examination. The fuel rods are leak-tight; no damage has been detected. The characteristics of the irradiated fuel rods (thickness of the oxide film produced during the operation, the pressure and composition of gases under the cladding, etc.) are within the design parameters.

In 2019, the operation of a batch of experimental TVS-KVADRAT fuel assemblies was continued at power unit No. 3 of Ringhals NPP in Sweden (PWR-900 reactor).

### DEVELOPMENT OF ACCIDENT TOLERANT FUEL

■ The first stage of testing of experimental fuel assemblies with accident tolerant fuel (ATF) was completed in the MIR research reactor at JSC SSC RIAR. A decision on the organization of the first stage of activities for the start of pilot operation of three combined TVS-2M fuel assemblies with accident tolerant fuel rods was approved. Fuel rods and assemblies were produced for the start of operation in a VVER-1000 power reactor.

■ An investment project is underway to research and develop technology for the production of new-generation leak-tight SiC-based fuel rods.

## 7.3. PRORYV PROJECT

The Proryv project is of the utmost importance for the nuclear industry. This is a strategic project of ROSATOM aimed at creating a new technological platform for the nuclear industry with a closed nuclear fuel cycle (CNFC) and addressing issues associated with spent nuclear fuel and radioactive waste processing.

**As part of the project, the Pilot and Demonstration Energy Facility (ODEK) is being constructed at the site of SCP JSC.**

The ultimate goal of ODEK is to demonstrate the sustainable operation of a full range of facilities that make it possible to close the nuclear fuel cycle based on inherently safe fast reactors. The construction of ODEK will make it possible to develop and demonstrate industrial technologies for closing the nuclear fuel cycle to be rolled out on an industrial scale based on an industrial power generation facility equipped with fast reactors.

### KEY RESULTS IN 2019:

- The construction of an NPP power unit equipped with the BREST-OD-300 reactor was initiated. All preparations were completed; the general contractor was selected, and the contract was signed;
- Procurement of equipment for a training centre for ODEK personnel was commenced;
- Steps were taken to reduce the cost of production of components for simulation and starting cores of the BREST-OD-300 reactor; as a result, the cost of projects was reduced by ~ RUB 1.8 billion.

Thanks to the progress made to date, the Russian Federation now possesses all required capabilities and a high degree of technological maturity to promote the innovative development of a two-component nuclear power industry based on fast and thermal neutron reactors with the CNFC.

**The CNFC based on an industrial power generation facility equipped with fast reactors is a new integrated product in the area of nuclear power technologies that will enable the Fuel Division to be a sustainable global company and a leader in the NFC and related industrial sectors.**

**A new batch of experimental fuel assemblies with mixed nitride uranium-plutonium fuel for a fast reactor was produced and delivered to Beloyarsk NPP (BN-600).**

REMIX fuel is an innovative type of uranium-plutonium fuel for VVER reactors.

### REMIX FUEL

Experimental TVS-2M fuel assemblies with REMIX fuel loaded earlier into the reactor at power unit No. 3 of Balakovo NPP (VVER-1000) were examined in 2019. The findings of the examination confirmed the operability of the experimental fuel rods, and it was decided to continue the tests.

Plans for 2020 include starting the development of technology and fabrication of six fuel assemblies containing only REMIX fuel. In the medium term, the Company plans to start the pilot production of REMIX fuel for operation in Russian-design VVER-1000/1200 reactors and accumulate reference experience in REMIX fuel fabrication and operation.

If pilot operation is successful, REMIX fuel may start to be used in VVER-1000/1200 reactors and may be launched on foreign markets.

Significant progress was made on the project to produce mixed oxide (MOX) fuel consisting of a blend of uranium and plutonium.

### MOX FUEL

Industrial production of MOX fuel assemblies for fast reactors was launched in Russia for the first time; the first batch (18 fuel assemblies) was delivered to Beloyarsk NPP and loaded into the core of the BN-800 reactor. The Company managed to achieve a performance level and production output enabling it to initiate a phased transition of the BN-800 reactor to operating with its core fully loaded with MOX fuel.

### KEY RESULTS IN 2019:

- In November 2019, the first batch comprising 18 MOX fuel assemblies was installed into the core of the BN-800 reactor at power unit No. 4 of Beloyarsk NPP.
- A decision was made to transition the BN-800 reactor to operating with its core fully loaded with MOX fuel starting with the eighth refuelling (in the autumn of 2020).



## 8.1. CHEMICAL INDUSTRY

■ Lithium metal was successfully registered with the European Chemicals Agency in accordance with REACH regulations, which enabled the Company to sign a long-term contract with a European customer for the supply of 49 tonnes of products.

■ NCCP PJSC successfully completed a qualification procedure as a supplier of battery materials, signed contracts with leading global manufacturers of primary lithium batteries and supplied battery-grade lithium metal worth a total of more than USD 6 million.

■ Product quality targets were met as part of a project to start the production of titanium dioxide pigment at the site of SCP JSC at a pilot unit using fluoride technology. Input data was prepared for the design of a commercial produc-

**The Company also renewed contracts with existing consumers for the supply of lithium products worth a total of more than USD 21 million.**

tion facility. The project operator, LLC Siberian Titanium, was granted the status of a resident of the priority social and economic development area in Seversk.

■ An order was received for the supply of Euro 6 automotive catalysts for new Renault-Nissan-AVTOVAZ projects.

## 8.2. METALS INDUSTRY

■ In November 2019, pilot tests of new types of combined calcium injection wire were successfully carried out at Vyksa Steel Works (VSW) under the Road Map for Cooperation between ROSATOM and OMK.

■ The production of calcium injection wire was increased by 15% (~570 tonnes) as compared to 2018.

■ The production of new types of cold-finished titanium pipes was started, and plans for the production of rolled titanium pipes for an industry consumer, JSC Afrikantov OKBM, were successfully completed for all orders accepted for production.

■ The Company started to manufacture over 50 new types of titanium products that are in demand among foreign consumers under a contract with a German company Hermith GmbH.

■ The Company also started the production of tantalum bars and began preparations for the start of production of rolled tantalum products.

## 8.3. SUPERCONDUCTING MATERIALS

■ A contract for the supply of strands for a prototype superconducting dipole magnet for upgrading the Super Proton Synchrotron (SPS) at the European Organization for Nuclear Research (CERN, Switzerland) was successfully completed.

■ The Company finalized the design and the technology for the production of superconducting wires to be used in magnetic systems of DEMO-FNS controlled fusion devices. The pilot batch successfully passed acceptance tests and meets customer requirements.

## 8.4. ADDITIVE MANUFACTURING TECHNOLOGIES

■ Additive manufacturing technologies were included in the scope of the agreement between ROSATOM and the Government of the Russian Federation. LLC RusAT was appointed as operator under a road map for the development of a high-technology area, Technology for New Materials and Substances, as part of the additive manufacturing business.

■ LLC RusAT signed and is performing the first commercial contract for the supply of RusMelt600 3D printers.

■ The first 3D printers were produced at LLC RME Centrotech.



## 8.5. DECOMMISSIONING OF FACILITIES POSING NUCLEAR AND RADIATION HAZARDS

■ Pursuant to Order No. 1-634-Pr of ROSATOM dated July 1, 2019, TVEL JSC was appointed integrator for a new business area, decommissioning of facilities posing nuclear and radiation hazards, including operations associated with NPP reactors, in-vessel components and primary circuit equipment, as well as the management of the resulting radioactive waste.

The integrator has been established in order to consolidate the industry capabilities for the sales of products and services related to the decommissioning of facilities posing nuclear and radiation hazards in Russia and abroad (including preparation for decommissioning and radioactive waste management).

■ Decommissioning competence centres were established in four enterprises in the Fuel Division. Short-term and medium-term development programmes were prepared for the competence centres; they include plans for the acquisition and modernization of facilities and equipment, obtaining the necessary licences for the relevant operations, and recruitment and retraining of personnel. The programmes also stipulate target revenue, including from the operations of third-party operators at the sites.

# 9. DEVELOPING THE HUMAN CAPITAL

9



The HR policy of TVEL Fuel Company is focused on achieving a steady growth of labour productivity, maintaining a balance between the interests of the employer and employees, and leveraging professional and managerial capabilities of employees in accordance with the Company's long-term development strategy.

- Medium-term plans for developing the HR policy include:
- Developing the corporate culture;
  - Developing and further improving the safety culture;
  - Ensuring the effectiveness of incentives;
  - Developing a system of professional qualifications;
  - Promoting the employer brand.

#### PERSONNEL MANAGEMENT PRINCIPLES SUPPORTING THE ACHIEVEMENT OF STRATEGIC GOALS

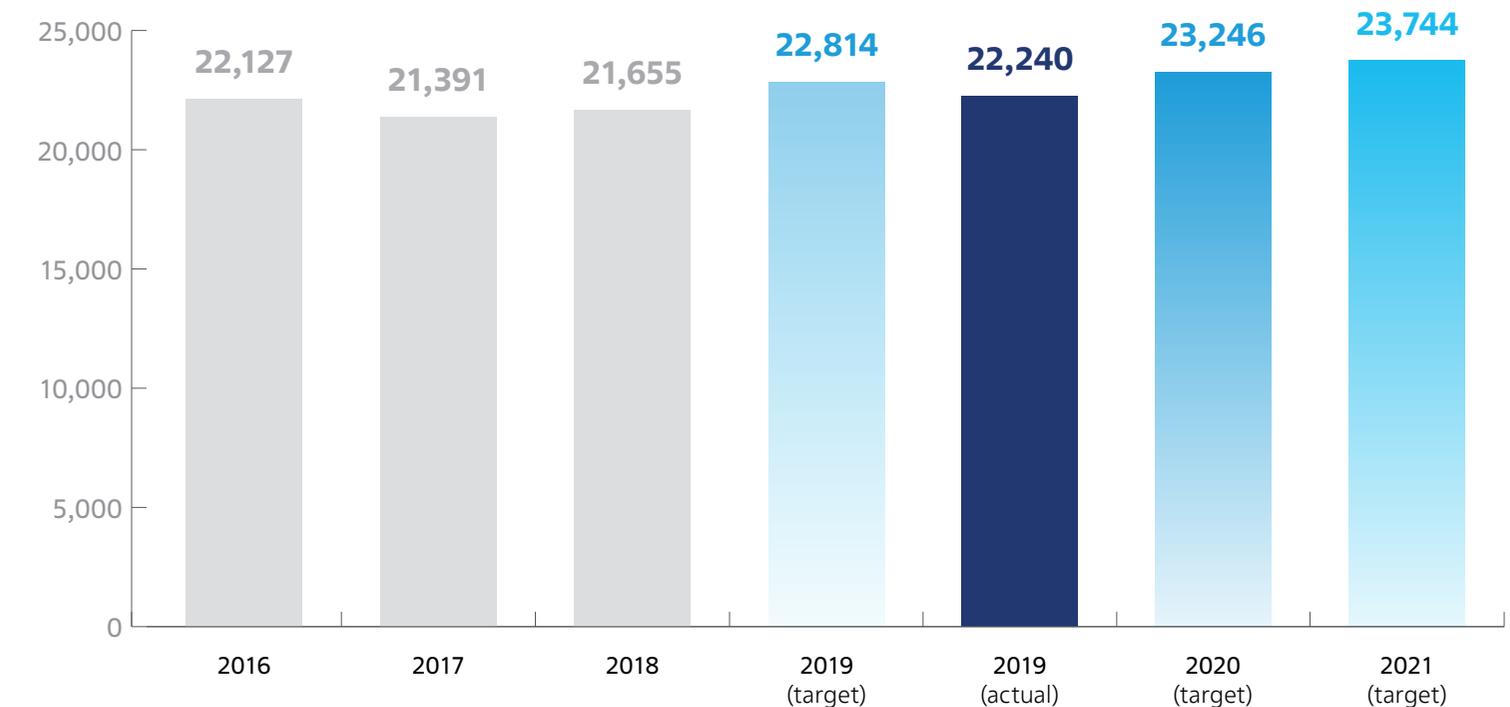


## 9.1. PERSONNEL COMPOSITION

The number of employees is growing due to the expansion of general industrial operations.

The manufacture of non-nuclear products not only provides the Company with access to new product markets and geographic regions, but also opens up some additional employment opportunities for qualified personnel if employees are released as a result of downsizing in core operations.

#### HEADCOUNT IN TVEL FUEL COMPANY, PEOPLE



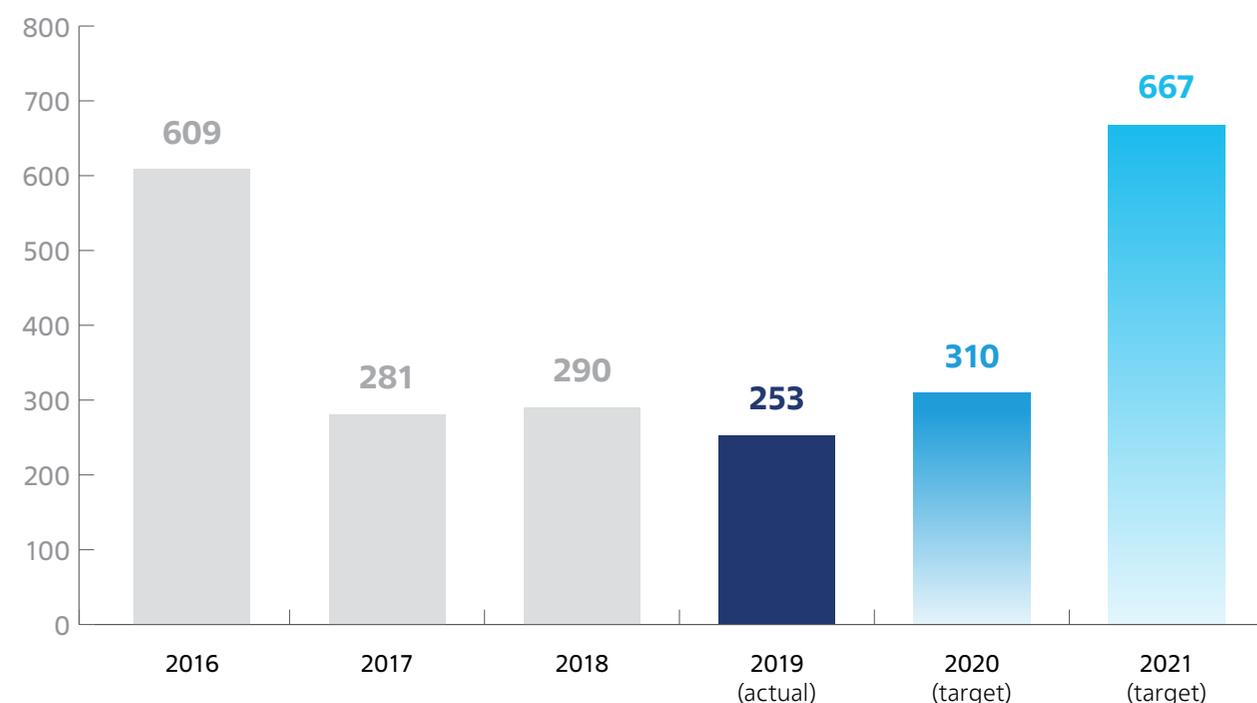
THE AVERAGE AGE OF EMPLOYEES IN THE FUEL COMPANY IS 45 YEARS.  
THE SHARE OF YOUNG PROFESSIONALS AGED UNDER 35 TOTALS 20.2%.

1,806 new employees were hired by TVEL Fuel Company in 2019, including 1,196 men; 641 of these employees are under 30.

The biggest number of new employees were hired in the Udmurt Republic (506), while the smallest number of new hires was recorded in the Krasnoyarsk Territory (44).

253 new jobs were created in TVEL Fuel Company in 2019.

### JOB CREATION IN TVEL FUEL COMPANY



## 9.2. EMPLOYEE ENGAGEMENT

Employee engagement is of great importance for the industry. Employee engagement and commitment to the Company's mission and success are a major driver of business efficiency and performance.

Enterprises in the Division and in the industry conduct an annual employee engagement survey under a single brand, *Your Opinion Matters to ROSATOM*. The annual surveys provide an insight into the overall attitude of teams in the enterprises, and make it possible to measure trends in the level of satisfaction with working conditions across 19 factors and assess the share of engaged employees, who:

- Recommend the company as an employer to their families and friends;
- Strive to perform their duties to the best of their abilities, improve processes in the enterprise and make suggestions for improvements;
- Intend to remain with the Company in the future.

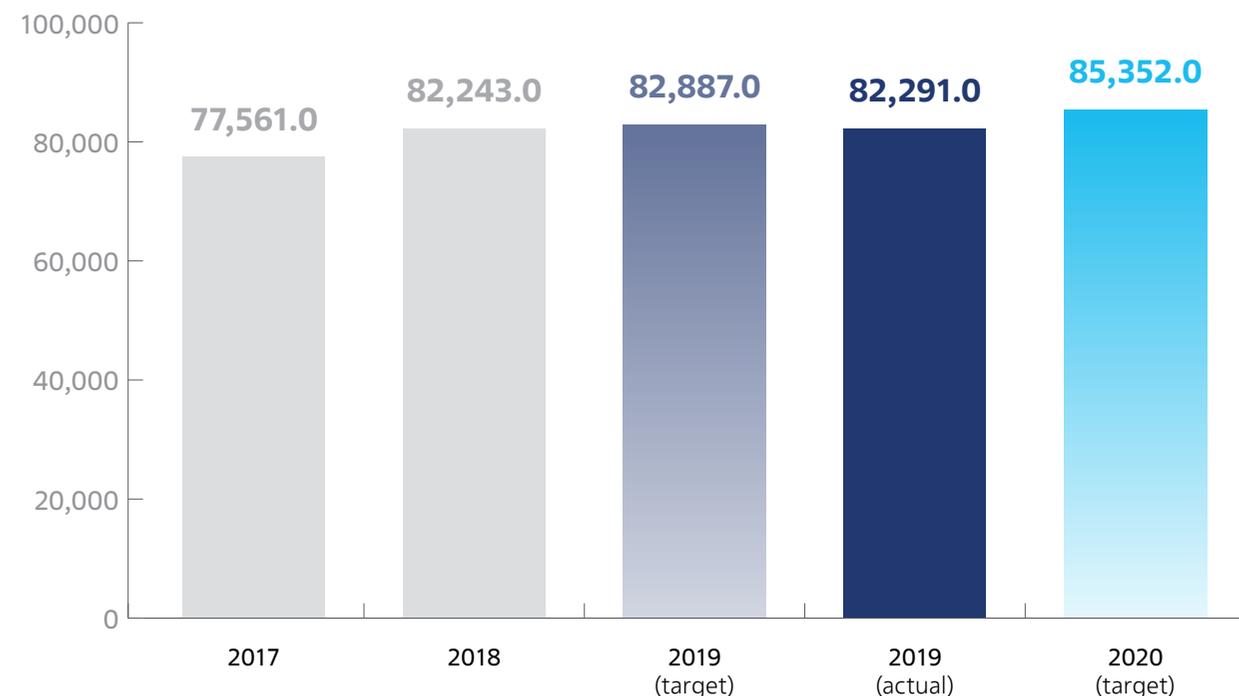
Based on the findings of the surveys, the management of each TVEL subsidiary develops the relevant action plans aimed at maintaining and improving the employee engagement rate.

**These efforts enable TVEL Fuel Company to remain a leader among the Divisions of the industry in terms of employee engagement, with the final scores matching those of the best employers in Russia.**

### EMPLOYEE ENGAGEMENT RATE, %

	2017	2018	2019
Average across TVEL Fuel Company	83	82	87

### AVERAGE SALARY IN TVEL FUEL COMPANY (INCLUDING THE HEADQUARTERS), RUB



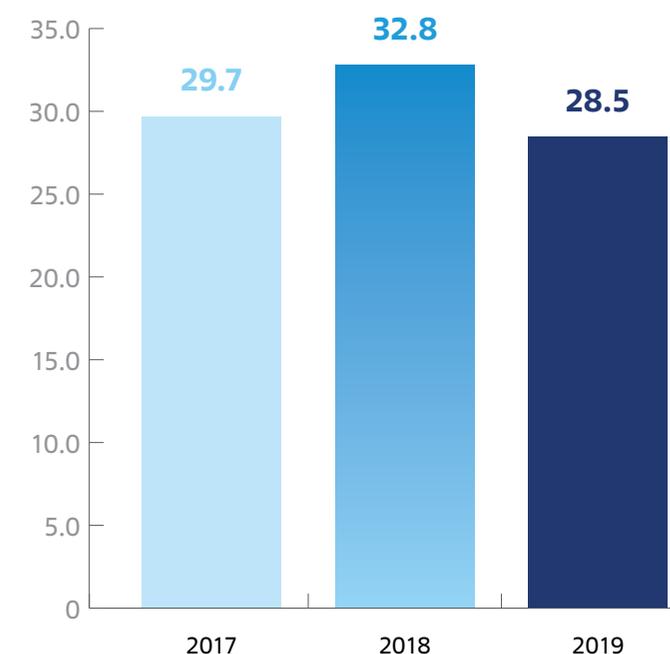
## 9.3. PERSONNEL TRAINING

The Company's HR policy traditionally prioritizes personnel training and development.

Enterprises in the Fuel Division regularly implement training programmes aimed at developing employees' competences pursuant to the Regulations on Personnel Training and Development.

TVEL's enterprises regularly implement both industry-wide and divisional training programmes aimed at developing the competences of both the Company's managers and employees.

### AVERAGE NUMBER OF TRAINING HOURS PER EMPLOYEE



**Investments in personnel training in 2019 totalled RUB 127.2 million. In the reporting year, the number of the Fuel Company's employees who completed at least one training programme totalled 11,555 people.**

## 9.4. PARTNERSHIP WITH EDUCATIONAL INSTITUTIONS

Recruitment of promising young people is a priority in the HR policy of TVEL Fuel Company. The Fuel Division expects that, by recruiting young professionals, in the future it will be able to maintain and strengthen its positions in the field of science and advanced technology. The Division cooperates with educational institutions under a plan for collaboration with universities and graduates, which is annually updated.

In 2019, 605 students of universities and vocational schools did an internship in the Company's enterprises, with 42 students subsequently hired by the enterprises of the Fuel Division. It is intended that in 2020, about 620 students will do an internship.

## 9.5. SOCIAL PROGRAMMES

TVEL Fuel Company is implementing eight corporate social programmes:

- Private pension plans;
- Voluntary health insurance for employees;
- Accident and illness insurance;
- Providing better living conditions for employees;
- Health resort treatment for employees and their children, recreation for children;
- Financial assistance to employees;
- Support for retirees;
- Sporting and cultural events.

**Social programmes implemented by TVEL Fuel Company are an important motivation tool.**

**The Company's expenditure on social programmes in 2019 totalled RUB 1,294 million, i.e. RUB 58,500 per employee.**



## 9.6. OCCUPATIONAL HEALTH AND SAFETY

**The Company's occupational health and safety costs<sup>3</sup> in 2019 totalled RUB 2.3 billion, or RUB 93,500 per employee.**

**The Lost Time Injury Frequency Rate (LTIFR) in TVEL Fuel Company in 2019 stood at 0.02, with the target set by ROSATOM at 0.3.**

The injury frequency rate (calculated as the number of injuries per 1,000 employees) in 2019 stood at 0.04; an injury was recorded only in one enterprise. There were no fatalities among employees of TVEL Fuel Company.

<sup>3</sup> Including Financial Responsibility Centres 3 and 4.



# 10. DEVELOPING THE REGIONS OF OPERATION



## 10.1. ESTABLISHMENT AND DEVELOPMENT OF PRIORITY SOCIAL AND ECONOMIC DEVELOPMENT AREAS

Pursuant to Decrees No. 125, 130 and 132 of the Government of the Russian Federation dated February 12, 2019, priority social and economic development areas (PSEDAs) were established in the towns where the Fuel Company's enterprises operate: Glazov, Novouralsk and Seversk.

Eight PSEDA residents were registered in the Fuel Company's host towns and cities with active support from ROSATOM, TVEL JSC, enterprises of the Fuel Company and local governments in 2019. As a result, 163 new jobs were created, and over RUB 75 million was invested.

Special emphasis is placed on developing a system for attracting residents and on establishing an effective structure for the administration and management of PSEDAs.



## 10.2. SOCIAL PROJECTS AND CHARITY INITIATIVES

As part of a competition of important social projects, TVEL JSC received over 90 applications from non-governmental organizations in the Fuel Company's regions of operation for the funding of projects in the sphere of sports, culture and arts, support for the disabled, and fostering patriotic, moral and spiritual values.

The competition panel selected 24 projects worth a total of about RUB 23 million, which received funding from TVEL JSC. These projects have been implemented in seven towns: Kov-

rov, Elektrostal, Glazov, Angarsk, Zelenogorsk, Seversk and Novouralsk.

An educational project, Children's Foresight, is being implemented in cooperation with the Agency for Strategic Initiatives in Glazov and Zelenogorsk, where children are taught social entrepreneurship skills as part of the project. This initiative will not only make it possible to develop and implement social projects, but will also enable the younger generation to learn business administration skills and skills required for

promoting projects that help to improve the standard of living in their home towns and cities.

In 2019, the Company drafted and signed several agreements to promote cooperation on important social projects. These include an agreement between TVEL JSC and the Agency for Strategic Initiatives on cooperation in the implementation of a strategic initiative titled 'Future Talent for the Region' in Glazov, Zelenogorsk, Novouralsk and Seversk. Participation in the project produced important results both for the teams as a whole and for individual team members, as they studied the best practices in business and social design, acquired leadership and creative thinking skills, honed their digitization skills and engaged in teamwork. The main result is an opportunity to offer the town a project that will help to improve the standard of living, i.e. a socially important project. Authors of the best projects were awarded trips to the Artek International Children's Centre (with five people selected from each town). In the 2020/2021 academic year,

the project will be continued in Glazov and will be launched in the CATF of Seversk.

Under the Agreement on the Development of Children's Science Parks between TVEL JSC and the National Research Centre Kurchatov Institute (NRCKurchatovInstitute), a model and a plan for cooperation between the Children's Science Park of NRC Kurchatov Institute and school science parks in the host towns and cities of the Fuel Company were developed.

A children's technology festival was held as part of the *Innovouralsk* exhibition and was attended by experts from NRC Kurchatov Institute. Five teams representing school science parks in Novouralsk, Glazov, Seversk and Zelenogorsk participated in the festival.

## 10.3. STAKEHOLDER ENGAGEMENT

**TVEL Fuel Company is committed to the principle of transparency<sup>4</sup> and continuously engages with its stakeholders; it also systematizes, analyses and takes into account their requests.**

<sup>4</sup> To the extent possible given objective constraints inherent in the nuclear industry.

This approach enables it to promptly respond to potential risks associated with stakeholder relations, primarily social and reputational risks.

Two face-to-face public dialogues with stakeholders (representatives of non-governmental organizations, environmental NGOs and trade unions) were held in Moscow at TVEL's headquarters in 2019. Representatives of the Fuel Company's enterprises and stakeholders from its regions of operation (including representatives of local governments) also took part in these events via videoconferencing.

## COMMUNICATION WITH THE GENERAL PUBLIC CONCERNING THE SAFE MANAGEMENT OF DEPLETED URANIUM HEXAFLUORIDE

Given considerable public interest concerning matters related to the safe management of depleted uranium hexafluoride, at the end of 2019, a comprehensive awareness campaign was launched in the nuclear industry.

ROSATOM, jointly with TVEL JSC and TENEX JSC, organized six specialized events, including technical tours for experts and media tours for journalists to uranium enrichment enterprises in the Fuel Division (JSC PA ECP, JSC UEIP), round-table discussions, as well as visits to the port of Saint Petersburg during the transshipment of casks with depleted uranium hexafluoride.

These events enabled the Company to demonstrate to stakeholders the safety of processes involved in the transportation, processing and storage of depleted uranium hexafluoride (including secondary tailings generated in the course of enrichment), and to answer outstanding questions of interest for both specialists and the general public.

Matters related to depleted uranium hexafluoride management were put on the agenda of three meetings of the Public Council of ROSATOM, including an offsite meeting attended by Deputies of the Legislative Assembly of Saint Petersburg.

The programme for the safe management of depleted uranium hexafluoride underwent an expert review by the Public Council of ROSATOM involving a number of environmental organizations.

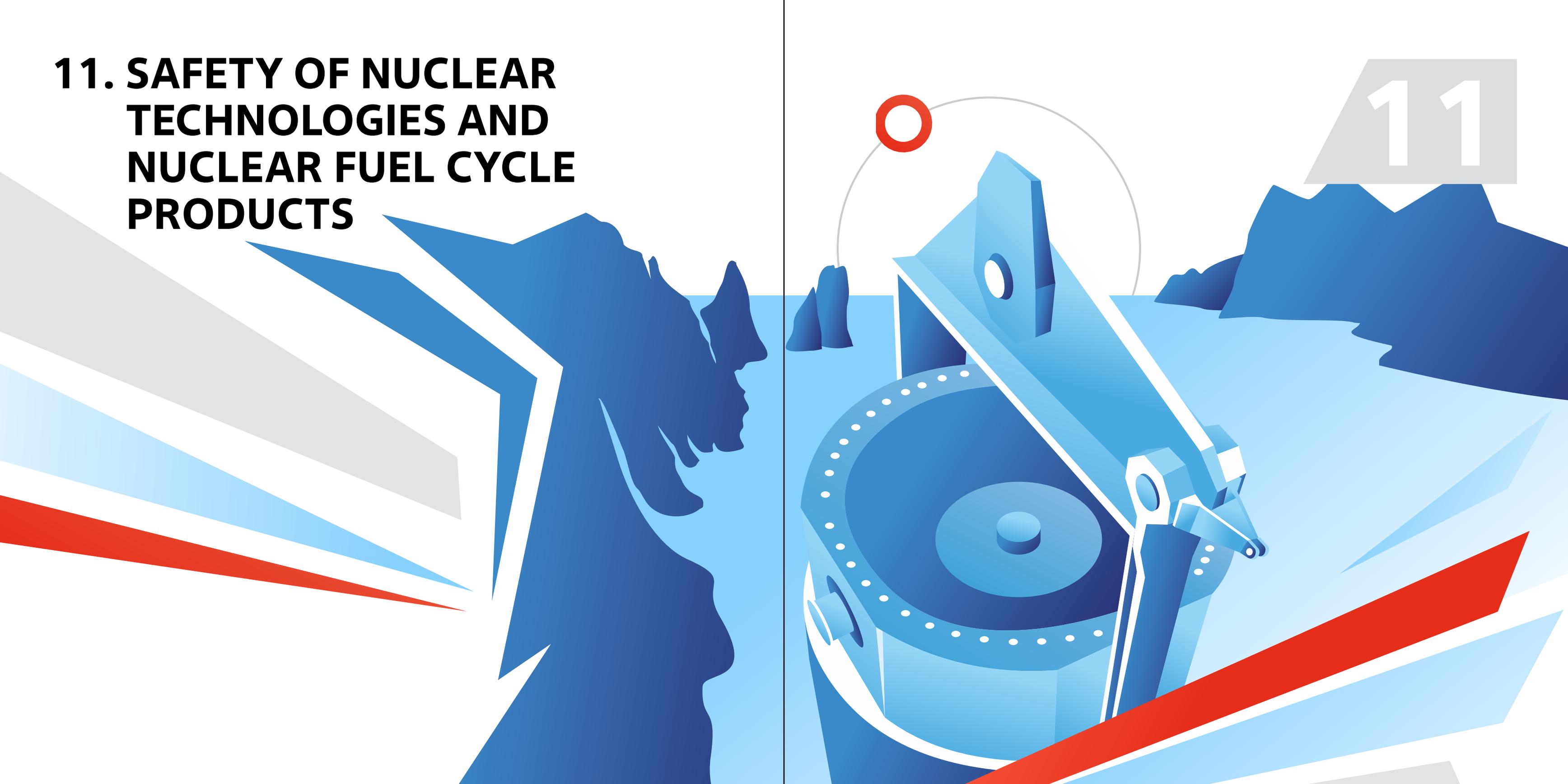
## LEADERSHIP IN THE AREA OF CORPORATE TRANSPARENCY

In 2019, TVEL JSC was ranked first in the Leader of Corporate Transparency among State-Owned Companies category in the ranking compiled by the Russian Regional Integrated Reporting Network.

That was the sixth corporate transparency survey among the largest Russian companies conducted by the Russian Regional Integrated Reporting Network. In 2019, the ranking covered 1,191 Russian companies.

Furthermore, in 2019, TVEL won an award in the contest of public annual reports held by RA-Expert Agency in the Best Disclosure of Environmental Policy in an Annual Report category and was ranked second in the Best Integrated Report category.

# 11. SAFETY OF NUCLEAR TECHNOLOGIES AND NUCLEAR FUEL CYCLE PRODUCTS



The key priorities of the environmental policy of TVEL Fuel Company include ensuring nuclear and radiation safety at all of the Company's facilities and preventing radiation exposure of personnel, the general public and the environment.

TVEL Fuel Company takes steps to address the 'nuclear legacy', including the rehabilitation of contaminated territories, as part of its strategic initiative, Environmental Responsibility.

2016 saw the launch of a new Federal Target Programme on Nuclear and Radiation Safety for the Period from 2016 through 2020 and for the Period until 2030 (FTP NRS 2, <http://фцп-яр62030.рф>)<sup>5</sup>.

**FTP NRS 2 includes 17 measures to be implemented by TVEL Fuel Company worth a total of RUB 36.3 billion, with RUB 31.4 billion to be allocated from the federal budget. These measures will be implemented at the sites of SCP JSC, AECJ JSC, JSC UEIP, NCCP PJSC, JSC MSZ and JSC VNIINM.**

<sup>5</sup> As amended by Decree No. 1838 of the Russian Government dated December 25, 2019

**There were no events rated at level 2 or higher on the INES scale in the enterprises of TVEL Fuel Company in 2019.**

## DECOMMISSIONING COMPETENCE CENTRES

**Competence centres for the decommissioning of facilities posing nuclear and radiation hazards have been established in SCP JSC, AECJ JSC, Central Design and Technological Institute JSC and JSC VNIINM.**

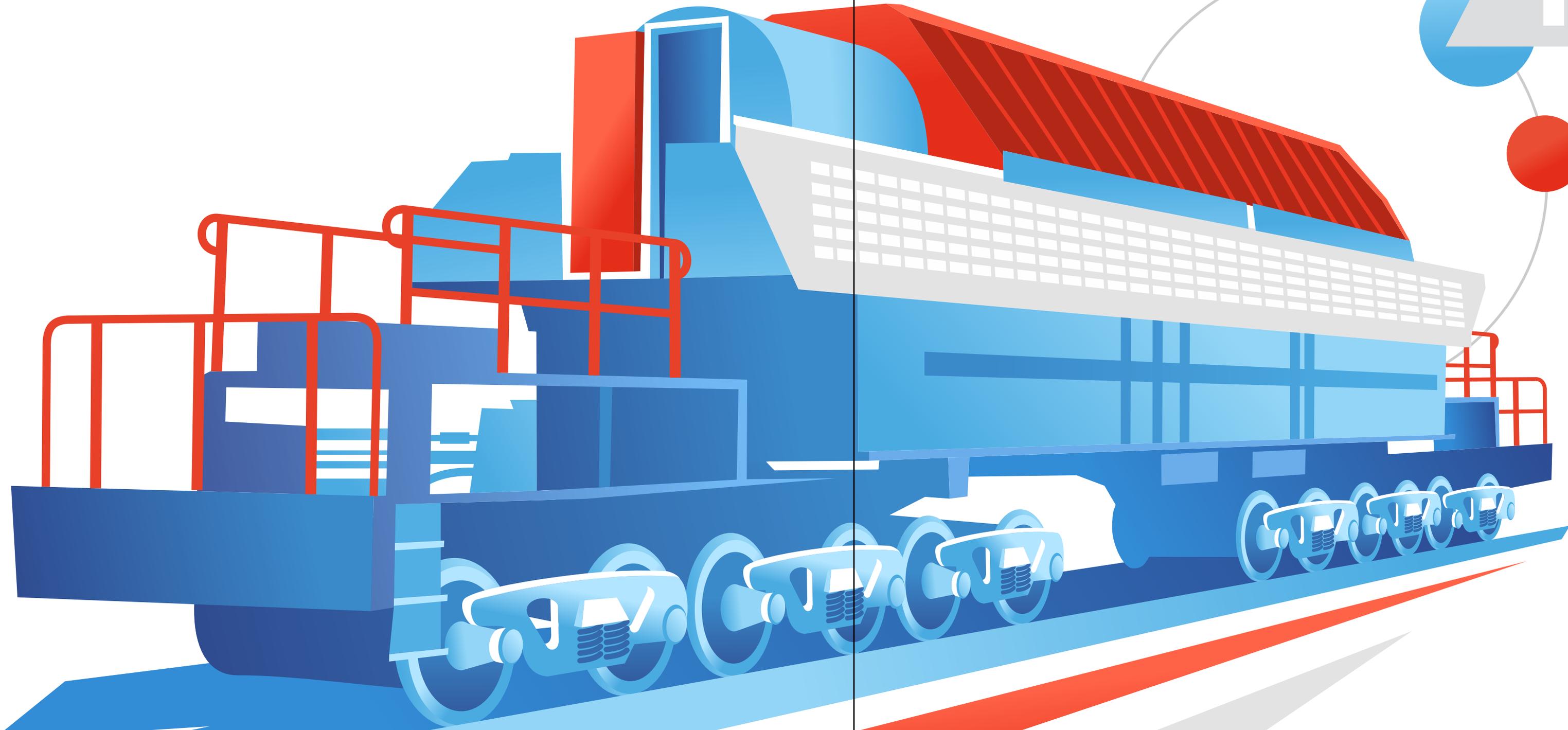
The key task of the competence centres for the decommissioning of facilities posing nuclear and radiation hazards is to prepare for the decommissioning and decommission facilities posing nuclear and radiation hazards both in Russia and abroad using the enterprises' own resources.

In 2019, under a resolution of ROSATOM, TVEL JSC was appointed industry integrator in the sphere of decommissioning of facilities posing nuclear and radiation hazards, including the decommissioning of NPP reactors, in-vessel components and primary circuit equipment, as well as the management of the resulting radioactive waste.

**The new business area will enable TVEL Fuel Company to create new jobs and earn additional revenue.**

# 12. ENVIRONMENTAL SAFETY

12



## 12.1. MANAGEMENT OF INDUSTRIAL AND CONSUMER WASTE

In 2019, the total amount of industrial and consumer waste in the Fuel Company's enterprises increased by 9% as compared to 2018 and reached 34,600 tonnes.

The increase in waste generation in 2019 at JSC UEIP and JSC PA ECP was caused by the following factors:

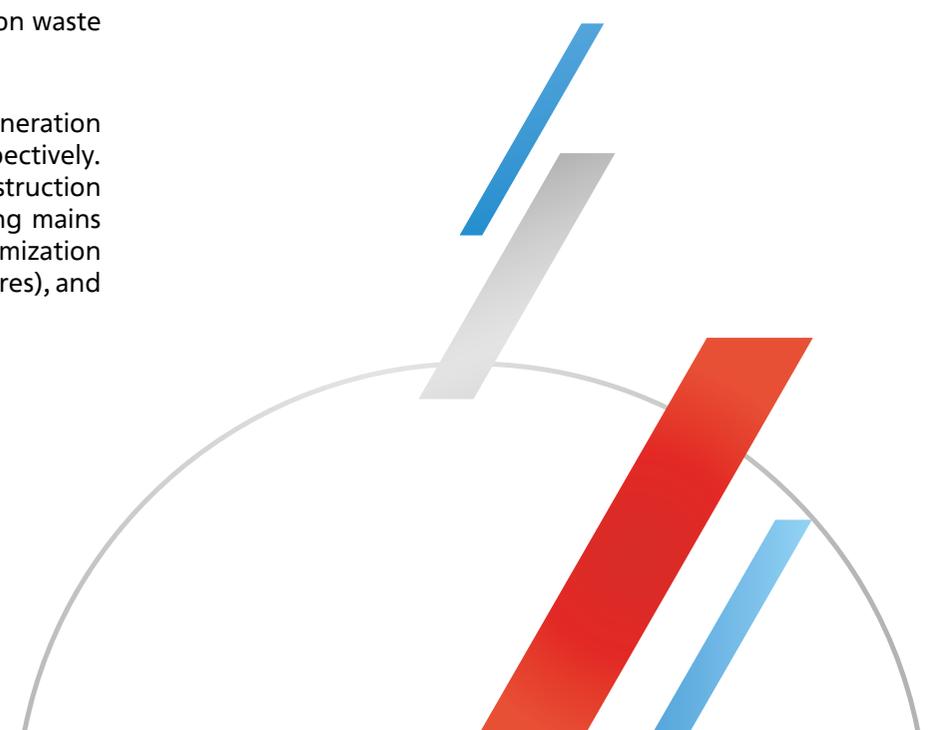
### 1. An increase in waste generation at JSC UEIP:

- Production of unsorted scrap and waste containing un-contaminated ferrous metals in the form of products, pieces, etc. increased by ~1,730 tonnes due to the replacement of existing equipment and maintenance work;

- Production of unsorted waste from offices and amenities of organizations (excluding bulk waste) increased by ~660 tonnes as a contract was signed with a regional operator LLC TBO Ekoservis for the management of municipal solid waste (the approach to solid waste accounting was revised: previously, payments were made based on the actual volume of waste generation, whereas now they are based on waste generation targets).

2. At JSC PA ECP, industrial and consumer waste generation and disposal increased in 2019 by 28% and 60% respectively. The increase was caused by the generation of construction waste as a result of large-scale upgrades of heating mains and improvements made at the production site, optimization (disposal) of unused premises (buildings and structures), and road repairs.

The amount of industrial and consumer waste transferred for treatment and recycling in 2019 remained unchanged year on year. The major part of the waste (53%) is hazard class 5 waste (practically non-hazardous), comprising mainly metal scrap and waste transferred to specialized organizations for processing and disposal.



## 12.2. POLLUTANT EMISSIONS

The reduction in pollutant emissions was achieved as a result of the following:

- Equipment relocation to the branch of Vladimir Tochmash Production Association in Kovrov as part of a project to integrate the production capacities of PJSC KMP and Vladimir Tochmash Production Association JSC;

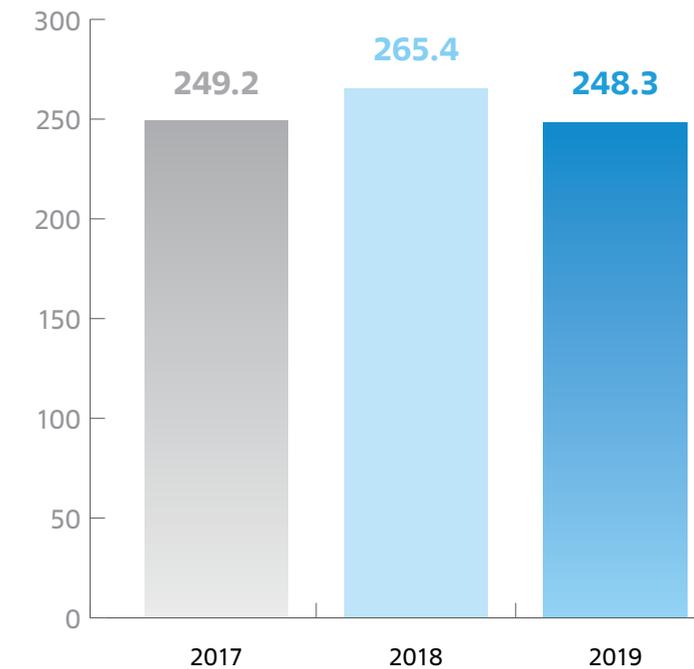
- Reduction of emissions from Chepetsk Mechanical Plant due to the improved performance of gas scrubbers.

The largest volume of emissions was recorded at Chepetsk Mechanical Plant as a result of industrial processes involved in chemical and metals production.

**In 2019, the total pollutant emissions into the atmosphere from the Company's enterprises decreased by 5.5% to 1,400 tonnes (55% of the permissible limit).**

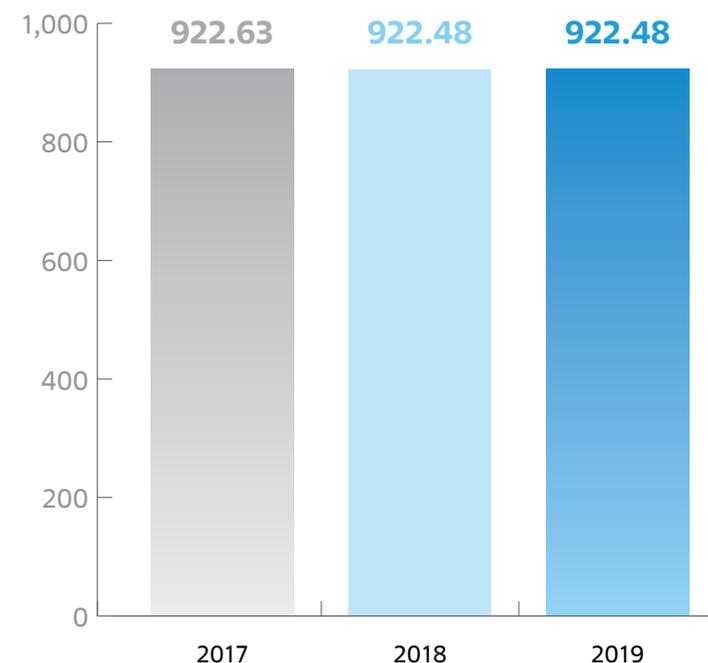


### EMISSIONS OF OZONE-DEPLETING SUBSTANCES, TONNES



There were no emergencies or incidents that had a negative impact on the environment in the enterprises of TVEL Fuel Company in 2019.

## GREENHOUSE GAS (GHG) EMISSIONS, '000 TONNES OF CARBON DIOXIDE EQUIVALENT<sup>6</sup>



The major share of greenhouse gas emissions in TVEL Fuel Company is associated with industrial processes.

<sup>6</sup> The calculation of greenhouse gas emissions includes carbon dioxide emissions, since carbon monoxide released into the atmosphere from industrial sources is oxidized to carbon dioxide. The indicators were calculated and recalculated in accordance with the Methodological Guidelines and Procedure for Quantifying GHG Emissions by Organizations Carrying Out Economic and Other Activities in the Russian Federation, approved by Order No. 300 of the Ministry of Natural Resources and Environment dated June 30, 2015, namely:

1. The calculation was based on formula No. 2 provided in the Methodological Guidelines.
2. The amount of CO<sub>2</sub> emissions was calculated by recalculating the amount of CO emissions (multiplication by a factor of 1.57).
3. The calculation of the total amount of greenhouse gas emissions from the enterprises of TVEL Fuel Company includes CH<sub>4</sub> (methane) emissions from JSC UEIP and perfluoromethane (Freon 14) emissions from Chepetsk Mechanical Plant, taking into account the global warming potential specified in Appendix No. 3 to the Methodological Guidelines.

## 12.3. ENVIRONMENTAL COSTS

### ENVIRONMENTAL COSTS IN TVEL FUEL COMPANY, RUB MILLION<sup>7</sup>

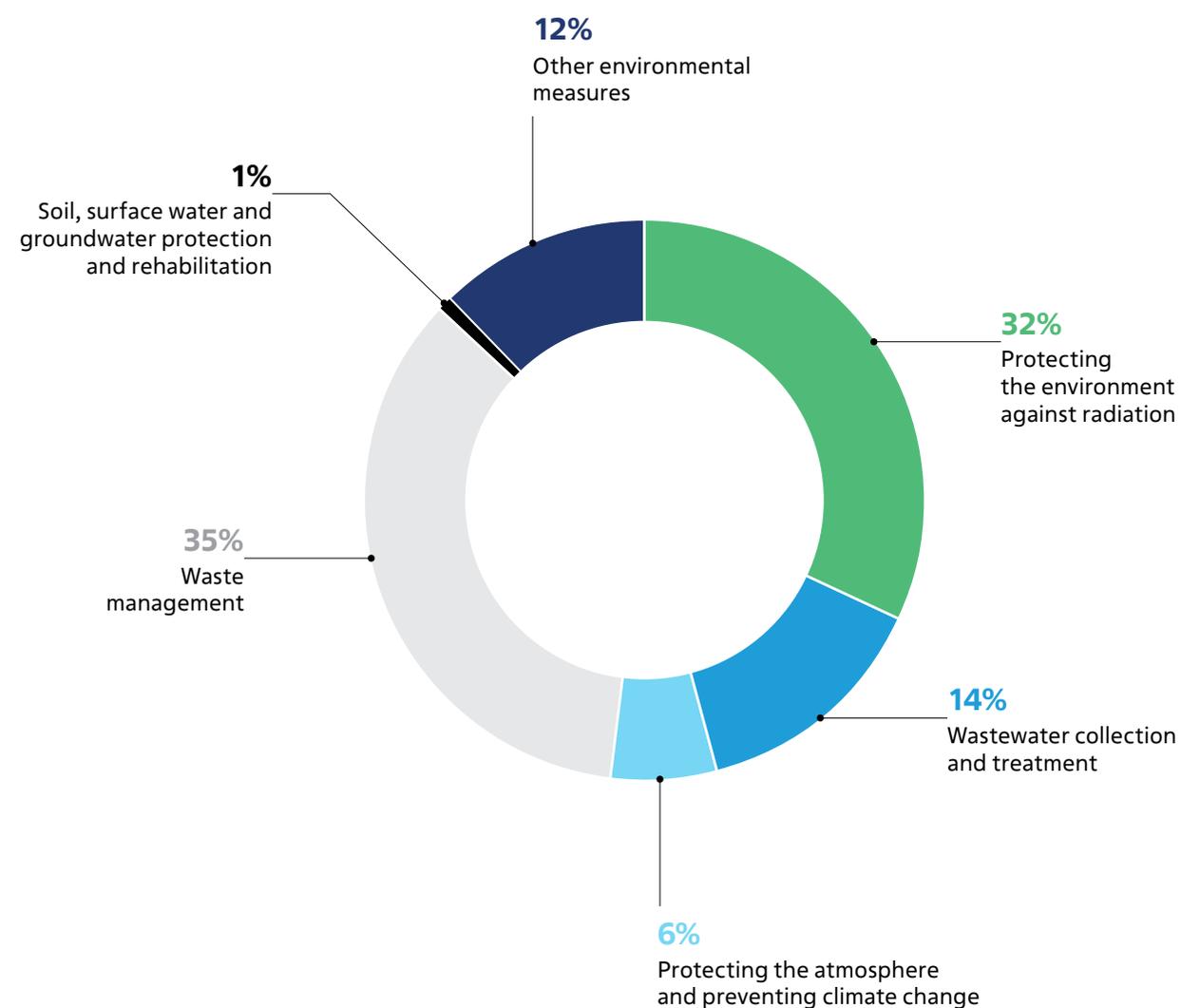
Cost item	2017	2018	2019
Protecting the environment against radiation	848.3	944.2	1,020.6
Wastewater collection and treatment	480.2	482.9	463.0
Protecting the atmosphere and preventing climate change	208.7365	180.2	188.7
Waste management	121.1	38.2	1,116.7
Protection and rehabilitation of soil, surface water bodies and groundwater	56.368	95.2	49.2
Other environmental measures	492.3713	463.0	378.7
<b>Total:</b>	<b>2,207.03</b>	<b>2,203.7</b>	<b>3,301.4</b>

<sup>7</sup> The funds were allocated for both technical and organizational measures.

The major share of the costs was related to waste management (RUB 1.1 billion) and protecting the environment against radiation (RUB 1.02 billion). Wastewater collection and treatment (RUB 463 million) also made up a significant share of the costs. Chepetsk Mechanical Plant, SCP JSC and JSC UEIP accounted for the largest share of environmental costs in TVEL Fuel Company.

**In 2019, environmental costs across the Company totalled RUB 3,301.4 million.**

## STRUCTURE OF ENVIRONMENTAL COSTS IN TVEL FUEL COMPANY IN 2019, %



## 12.4. ENERGY CONSERVATION AND ENERGY EFFICIENCY IMPROVEMENT PROGRAMME

The Fuel Company is a leader in the implementation of automated energy accounting systems and a methodology for improving energy efficiency in the nuclear industry, including energy audits, developing long-term investment, organizational and technical programmes, and implementing specific energy conservation measures. Since 2011, the Company's enterprises have been participating in the implementation of the Energy Conservation and Energy Efficiency Improvement Programme approved following energy audits and thermal inspections in the Company's enterprises.

In 2019, electricity and heat consumption in enterprises managed by TVEL Fuel Company was reduced by 8.09% (244.63 million kWh) and 14.8% (346,130 Gcal) respectively against 2015 as the base year under comparable conditions. The reduction in energy consumption (under conditions comparable to 2015) in monetary terms totalled 13.45% (RUB 1,336 million), against a target of 7%.

The reduction in energy consumption did not involve a reduction in the scope of the production programme of TVEL Fuel Company; it was achieved by implementing measures forming part of the Energy Conservation and Energy Efficiency Improvement Programme.

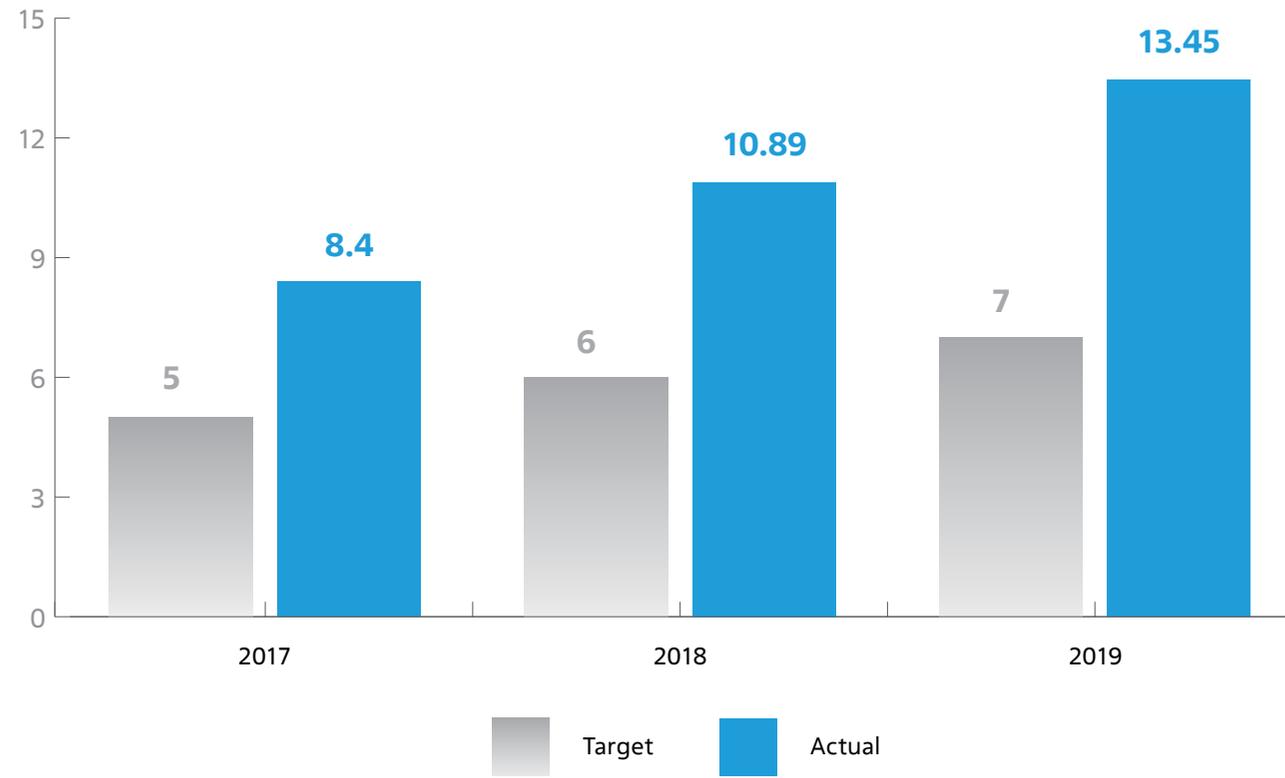
**Over the next five years (by the end of 2025), TVEL Fuel Company intends to reduce energy and water consumption by 2.5% (in monetary terms).**

### USE OF PRIMARY ENERGY SOURCES, MILLION GJ<sup>8</sup>

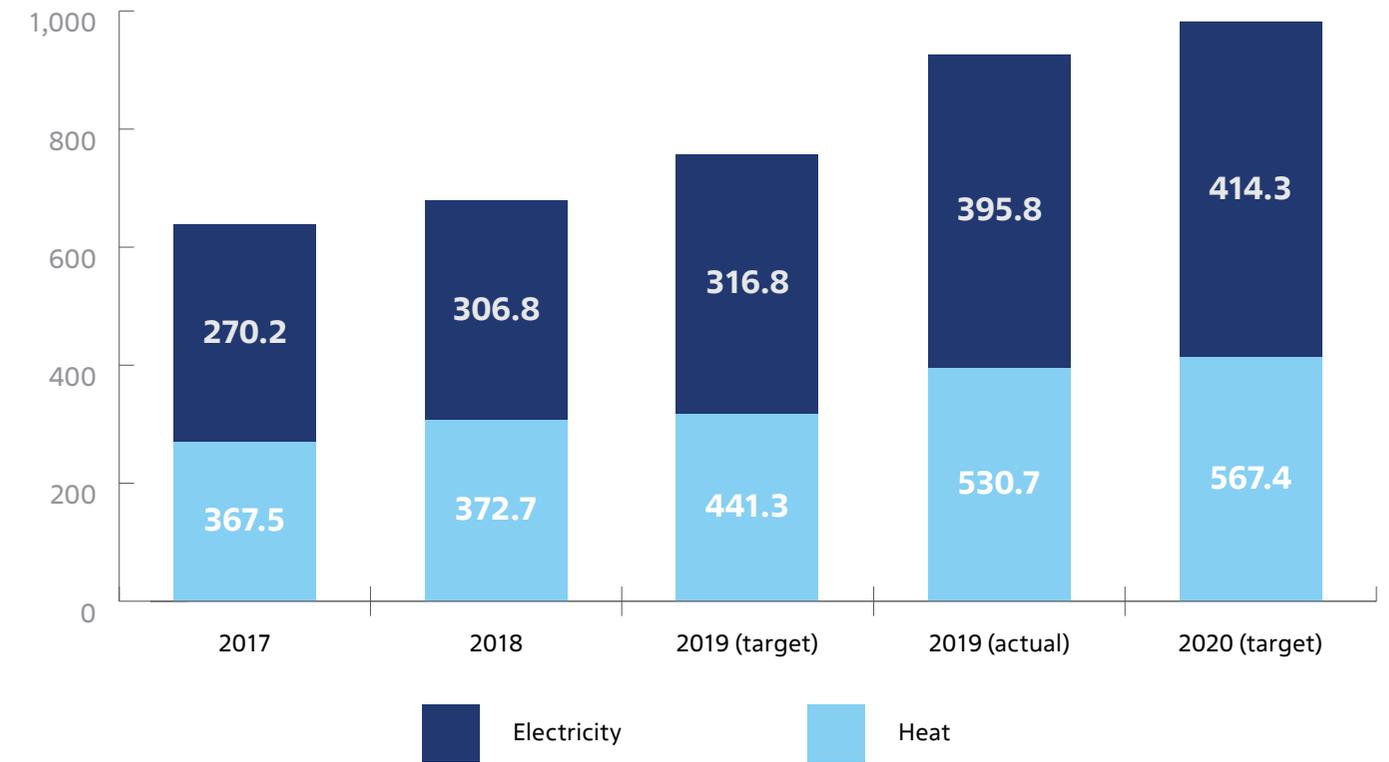
Energy source	2017	2018	2019 (target)	2019 (actual)	2020 (target)
Coal	4.193	0	0	0	0
Gas	21.189	0.313	0.095	0.27	0.25
Fuel oil	0.262	0	0	0	0

<sup>8</sup> Including those associated with electricity and heat generation at thermal power plants in the subsidiaries of TVEL Fuel Company. In 2017, Chepetsk Mechanical Plant and JSC UEIP sold their thermal power plants to JSC ITPC; in 2018, JSC ITPC acquired the thermal power plants of SCP JSC. All thermal power plants previously owned by the enterprises of TVEL Fuel Company were excluded from its scope as from January 1, 2018. Between 2017 and 2019, coal for the thermal power plant of SCP JSC was supplied by JSC ITPC.

**REDUCTION OF ENERGY CONSUMPTION IN THE FUEL COMPANY'S ENTERPRISES IN 2019  
(UNDER CONDITIONS COMPARABLE TO 2015) IN MONETARY TERMS, %**



**TOTAL ENERGY SAVINGS FROM ENERGY CONSERVATION AND ENERGY EFFICIENCY  
IMPROVEMENT MEASURES, IN MONETARY TERMS UNDER COMPARABLE CONDITIONS,  
RUB MILLION**



## 12.5. WATER USE AND DISCHARGE

In 2019, water withdrawal by the Company's enterprises increased by 4% and totalled 566.2 million m<sup>3</sup>; water consumption for operational needs increased by 1% to 201.6 million m<sup>3</sup>.<sup>9</sup> As a result, the Company's enterprises discharged 253.6 million m<sup>3</sup> of water (72.8% of the permissible limit) into water bodies, making up a major portion of the total water discharge.

**The water withdrawal limit for 2019 was set at 542.1 million m<sup>3</sup>, while the actual water withdrawal amounted to 104.4% of the limit.**

**The volume of recycled water totalled 313.6 million m<sup>3</sup> in 2019. The share of recycled and reused water in the total water withdrawal totalled 55% and 0.01% respectively.**

<sup>9</sup> Data for 2018 has been recalculated due to a change in the approach to estimating water consumption for operational needs (including the procedure for recording water consumption in a recycled water supply system).

# 13. RISKS SPECIFIC TO THE DIVISION AND MANAGEMENT APPROACHES

13



The Internal Control System (ICS) of TVEL Fuel Company is an integrated set of organizational structures, processes and rules for their execution, as well as control system characteristics, which occasionally or continuously performs the internal control function and ensures the achievement of internal control goals.

**Risk management in TVEL Fuel Company is based on continuous monitoring of the external and internal environment, and comprehensive analysis of threats and opportunities that affect the achievement of both economic and social goals of the Company.**

**The main purpose of the risk management system (RMS) is to identify, assess and mitigate the threats that could affect the Company's performance.**

## 13.1. KEY RISKS OF THE DIVISION

Risks	Risk management mechanisms
Risk of a decrease in the sales of NFC products/services	<ul style="list-style-type: none"> <li>Improving the technical and economic characteristics of fuel; introducing new types of fuel;</li> <li>Promoting products in new market segments.</li> </ul>
Risk of a failure by external counterparties (suppliers and buyers) to meet their contractual obligations in full and on schedule	<ul style="list-style-type: none"> <li>Stipulating payment methods and/or types of collateral in contracts to reduce credit risks;</li> <li>Monitoring the counterparties' financial position in order to detect any changes in the financial position of the counterparty entailing a change in the credit risk level and (or) the nature of credit risk management measures;</li> <li>Qualification of counterparties using non-financial parameters;</li> </ul>

Risks	Risk management mechanisms
Risk of an increase in the cost of fabrication, enrichment and conversion services	<ul style="list-style-type: none"> <li>Cooperation with suppliers based on the principles of the Uniform Industrial Procurement Standard of ROSATOM;</li> <li>Implementation of the ROSATOM Production System;</li> <li>Implementation of long-term programmes and investment projects aimed at optimizing the technology and production processes;</li> <li>Development and implementation of performance improvement programmes in all enterprises of the Company;</li> <li>Implementation of the cost control framework in order to appoint persons responsible for various costs;</li> <li>Long-term forecasting of the balance between the needs and capacities of the enterprises (jointly with ROSATOM and related Divisions of ROSATOM);</li> <li>Inventory optimization and faster inventory turnover;</li> </ul>
Nuclear and radiation safety risks	<ul style="list-style-type: none"> <li>Upgrading and automating the facilities and ensuring their safe operation;</li> <li>Decommissioning of facilities of TVEL Fuel Company posing nuclear and radiation hazards and addressing the 'nuclear legacy' using funds allocated under the FTP NRS 2 programme and industry reserves;</li> <li>Personnel training and development;</li> <li>Continuous monitoring of nuclear and radiation safety;</li> <li>Setting and achieving the goals and objectives, developing measures to reduce nuclear and radiation safety risks;</li> <li>Comprehensive reviews and inspections.</li> </ul>

# 14. ADDITIONAL INFORMATION

14

The background features a series of parallel diagonal stripes in various shades of blue, red, and dark blue. A thin vertical line runs down the center of the page. In the top right corner, there is a grey trapezoidal shape containing the number '14' in white.

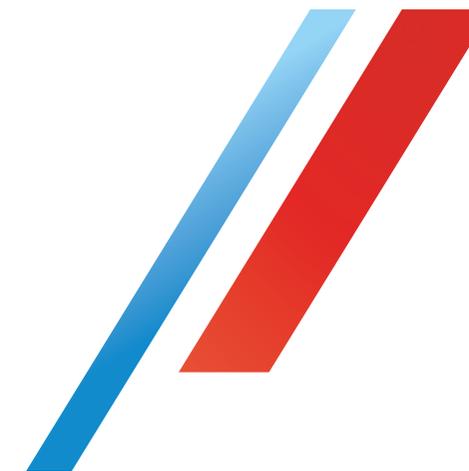
GRI Content Index for the Core 'in accordance' option of the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards).

GRI Standard	Indicator	Chapter in the reporting materials
<b>GRI 102: General Disclosures 2016</b>		
	102-1 Name of the organization	Chapter 2.
	102-2 Activities, brands, products and services	Chapter 2.
	102-3 Location of headquarters	Chapter 2.
	102-4 Location of operations	<a href="http://www.tvel.ru/wps/wcm/connect/tvel/tvelsite/about/structure/">http://www.tvel.ru/wps/wcm/connect/tvel/tvelsite/about/structure/</a>
	102-5 Ownership and legal form	Chapter 2.
	102-6 Markets served	Chapter 2.
	102-7 Scale of the organization	Chapter 3.
	102-8 Information on employees and other workers	Chapter 9.
	102-11 Precautionary Principle or approach	TVEL Fuel Company follows the precautionary principle by forecasting and assessing environmental risks, which enables it to avoid, reduce or control the discharge or emission of any types of pollutants or waste generation, and prevent or minimize the impact of its operations on the environment, personnel and the population of the Company's regions of operation.
	102-13 Membership of associations	<a href="https://www.tvel.ru/about-company/">https://www.tvel.ru/about-company/</a>
	102-14 Statement from the most senior decision-maker of the organization	Chapter 1.
	102-15 Key impacts, risks and opportunities	Chapter 11.
	102-16 Values, principles, standards, and norms of behaviour	Chapter 2.
	102-18 Governance structure	<a href="https://www.tvel.ru/about-company/corporate-governance/">https://www.tvel.ru/about-company/corporate-governance/</a>
	102-22 Composition of the highest governance body and its committees	<a href="https://www.tvel.ru/about-company/corporate-governance/">https://www.tvel.ru/about-company/corporate-governance/</a>
	102-23 Chair of the highest governance body	<a href="https://www.tvel.ru/about-company/corporate-governance/">https://www.tvel.ru/about-company/corporate-governance/</a>
	102-24 Nominating and selecting the highest governance body	<a href="https://www.tvel.ru/about-company/corporate-governance/">https://www.tvel.ru/about-company/corporate-governance/</a>
	102-25 Conflicts of interest	If a person simultaneously serves on the governance bodies of other companies (cross-board membership), such a member of the Board of Directors shall not vote on matters related to the approval of a transaction between these companies, provided that this person is considered to be interested in the transaction (or does not qualify as independent) pursuant to the Federal Law on Joint-Stock Companies.  The list of affiliated individuals is disclosed on the Internet at: <a href="http://www.e-disclosure.ru/portal/company.aspx?id=400">http://www.e-disclosure.ru/portal/company.aspx?id=400</a>

GRI Standard	Indicator	Chapter in the reporting materials
	102-33 Communicating critical concerns	Meetings of the Board of Directors are convened by the Chairman on an as-needed basis. The agenda of the meeting is prepared by the Chairman of the Board of Directors.
	102-41 Collective bargaining agreements	All subsidiaries of TVEL Fuel Company (except TVEL JSC and Industrial Innovation JSC) have signed collective agreements that cover 100% of employees of these subsidiaries (97% of the average headcount of TVEL Fuel Company).
	102-45 Entities included in the consolidated financial statements	The financial indicators disclosed in this Report have been calculated based on the managerial accounting data of the following companies: TVEL JSC, JSC United Company ESC, AECF JSC, SCP JSC, JSC UEIP, JSC PA ECP, JSC EC RGC, JSC KMP, LLC RME Centrotech, Vladimir Tochmash Production Association JSC, PJSC MSZ, Chepetsk Mechanical Plant JSC, Moscow Polymetal Plant JSC, NCCP PJSC, JSC VNIINM, LLC Ecoalliance, Industrial Innovation JSC and LLC Iskra.
	102-54 Claims of reporting in accordance with the GRI Standards	Chapter 14.
	102-55 GRI Content Index	Chapter 14.
	103-1 Explanation of the material topic and its Boundary	Chapters 5, 7, 8, 9, 10, 12, 13.
	103-2 The management approach and its components	Chapters 5, 7, 8, 9, 10, 12, 13.
	103-3 Evaluation of the management approach	Chapter 14.
<b>GRI 201: Economic Performance</b>		
	201-3 Defined benefit plan obligations and other retirement plans	Chapter 9. TVEL Fuel Company has in place defined benefit pension plans. All pension plans are unfunded.
	201-4 Financial assistance received from the government	TVEL JSC received no financial assistance from the government, as defined in the relevant accounting standards.
<b>GRI 302: Energy 2016</b>		
	302-1 Energy consumption within the organization	Chapter 13.
	302-4 Reduction of energy consumption	Chapter 13.
<b>GRI 305: Emissions 2016</b>		
	305-1 Direct (Scope 1) GHG emissions	Chapter 13.
	305-6 Emissions of ozone-depleting substances (ODS)	Chapter 13.
<b>GRI 306: Effluents and Waste 2016</b>		
	306-1 Water discharge by quality and destination	Chapter 13.
	306-3 Significant spills	There were no significant spills.
	306-4 Transport of hazardous waste	The Company's enterprises are not involved in cross-border waste transportation. The Company does not transport, process or transfer for processing any waste produced in the enterprises of the Fuel Company and classified as hazardous in accordance with the Basel Convention.

GRI Standard	Indicator	Chapter in the reporting materials
	306-5 Water bodies affected by water discharges and/or runoff	Wastewater discharges do not have a significant impact on the biodiversity of water bodies and related habitats.
<b>GRI 307: Environmental compliance 2016</b>		
	307-1 Compliance with environmental laws and regulations	Chapter 12.
<b>GRI 401: Employment 2016</b>		
	401-1 New employee hires and employee turnover	Chapter 9.
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Part-time employees are provided with the same benefits as full-time employees, provided that the Company is their main place of employment.
<b>GRI 402: Labour/Management Relations 2016</b>		
	402-1 Minimum notice periods regarding operational changes	In the event of significant operational changes in the Company, employees are to be notified of such changes no later than in two months in advance, as stipulated in employment laws of the Russian Federation and the Collective Agreement concluded by each subsidiary of the Company.
<b>GRI 403: Occupational Health and Safety 2016</b>		
	403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	Chapter 9.
<b>GRI 404: Training and Education 2016</b>		
	404-1 Average hours of training per year per employee	Chapter 9.
	404-2 Programmes for upgrading employee skills	Chapter 9.
<b>GRI 413: Local Communities 2016</b>		
	413-2 Operations with significant actual and potential negative impacts on local communities	There are no significant negative impacts.
<b>GRI 419: Socioeconomic Compliance 2016</b>		
	419-1 Compliance with laws and regulations in the social and economic area	There were no significant violations of the law and, accordingly, no fines or non-financial sanctions imposed on TVEL or its subsidiaries in 2019.
<b>Position on global markets</b>		
	Share on the nuclear fuel fabrication market	Chapter 2.
	Overseas revenue	Chapter 3.
<b>New businesses</b>		
	Revenue from general industrial operations	Chapter 3.

GRI Standard	Indicator	Chapter in the reporting materials
<b>Environmental protection</b>		
	Environmental costs	Chapter 5.
	Implementation of measures stipulated by Federal Target Programmes	Chapter 12.
<b>Innovative development</b>		
	Outcomes of innovative activities	Chapter 7.
<b>Remuneration</b>		
	Average salary	Chapter 9.
<b>Investments</b>		
	Investment plans	Chapter 3.



# 15. INFORMATION ON THE REPORTING PROCESS

15

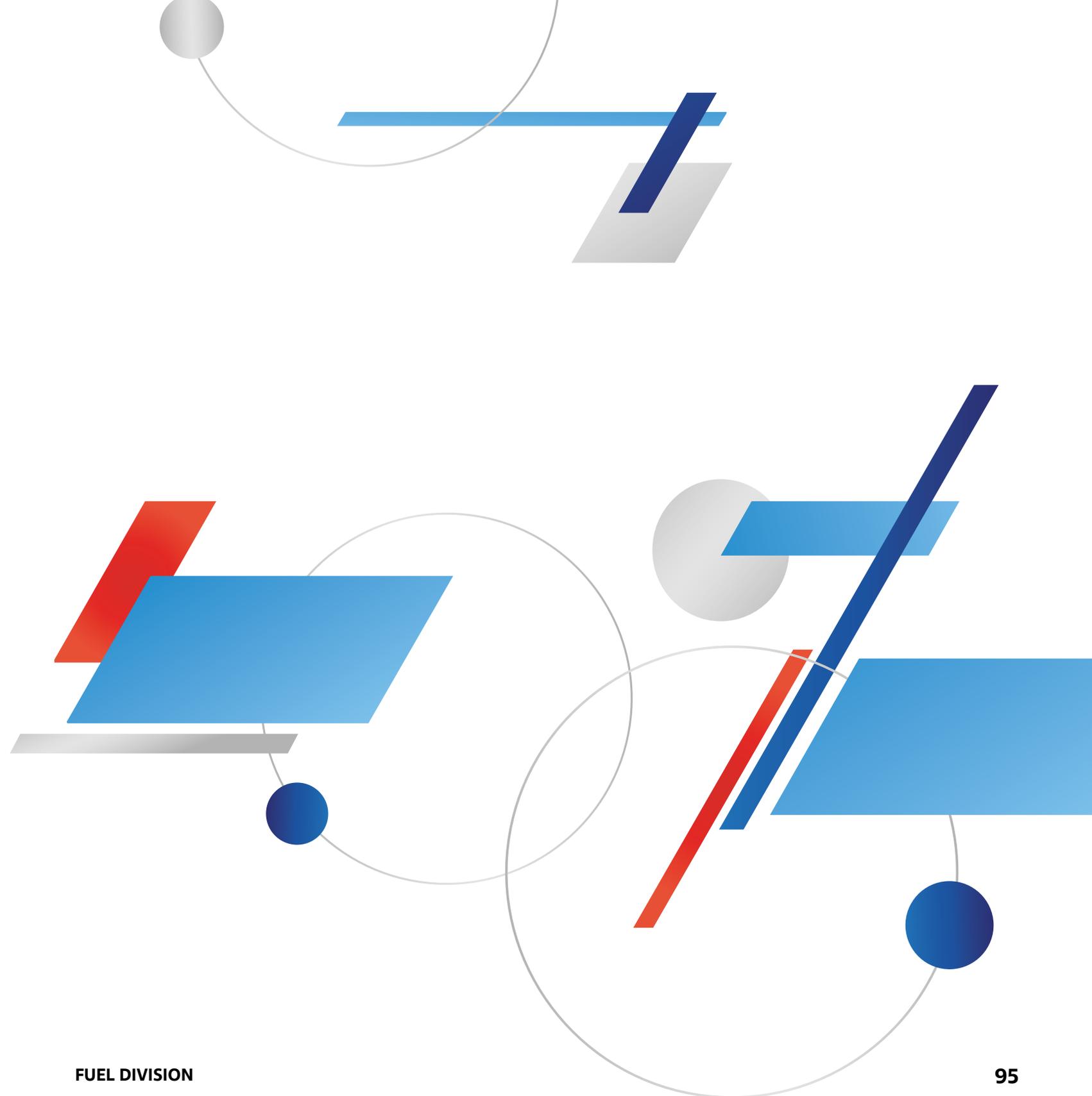
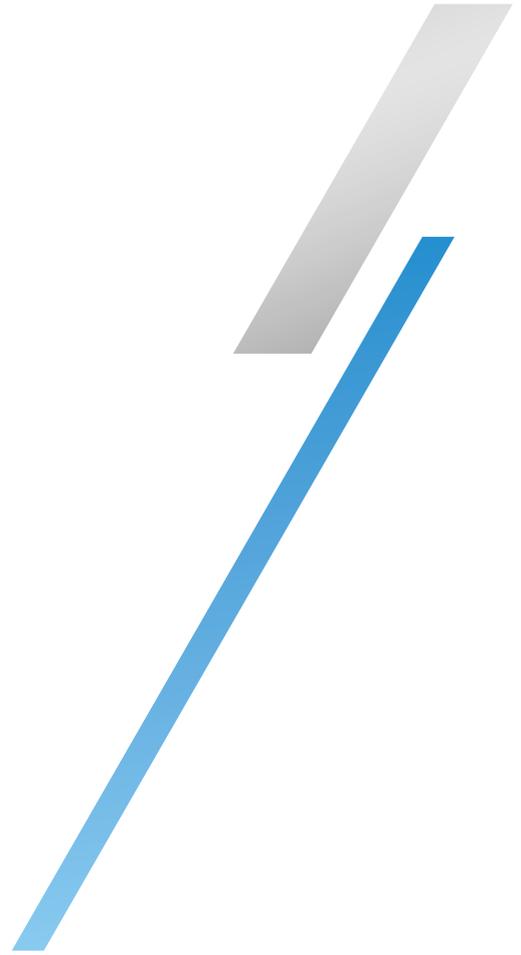
The background features a series of overlapping, diagonal stripes in various shades of blue and red, creating a sense of movement and depth. A thin, vertical black line runs down the center of the page, bisecting the design. The overall aesthetic is modern and corporate.

The reporting process involved a review of the Company's operations in 2019. Sustainable development in the nuclear industry remains a prioritized topic for the Fuel Company. The report has been prepared in accordance with the Core option of the Global Reporting Initiative Sustainability Reporting Standards (GRI Standards).

The reporting materials include information on the operating results of TVEL JSC and its subsidiaries (for a number of indicators, information disclosed in the report includes second-tier subsidiaries).

**The report discloses the main performance indicators of TVEL Fuel Company for the period from January 1, 2019 through December 31, 2019 and long-term development areas, as well as information on measures providing a framework for long-term sustainable development.**

As part of the preparation of the reporting materials, the Company held public consultations with stakeholders (in a remote format), and their comments and suggestions were incorporated into the final version of the document.



# 15.1. CONTACT DETAILS

## **TVEL, JOINT-STOCK COMPANY**

### **TVEL JSC**

Location: 49 Kashirskoye Highway, Moscow, 115409

Registered office: 24 Bolshaya Ordynka Street, Moscow, 119017, Russia

Phone number: +7 (495) 988-82-82

E-mail: [info@tvel.ru](mailto:info@tvel.ru)

Corporate website: [www.tvel.ru](http://www.tvel.ru)

