THE POWER OF GENERATIONS

ANNUAL REPORT 2018

JSC ATOMREDMETZOLOTO – MINING DIVISION OF ROSATOM
INTEGRATED
ANNUAL REPORT
JSC ATOMREDMETZOLOTO
2018

THE POWER OF GENERATIONS
Dear readers!
Before you is the Annual report of JSC Atomredmetzoloto, the Mining Division of the ROSATOM, setting forth the most important production, social, financial and economic performance in 2018. Within the reporting period, the Mining Division successfully completed the tasks set by ROSATOM, providing the nuclear industry with natural uranium in the amount of 2.9 thousand tonnes and implementing a set of measures to ensure stable supplies in the future. The ARMZ team once again demonstrated professional and well-coordinated work and focused on improving competitiveness and introducing innovations to the technological process. The focus of the Company is the development of its own innovative technologies. Nowadays, ARMZ tests a pilot project “Smart Mine”. For this purpose, the most promising site of the Holding Company in JSC Khiagda was chosen. In case of successful testing, the experience of creating a new-generation digital enterprise will be applied in other ARMZ uranium mining assets.

Construction of a new uranium mine No. 6 of PJSC PIMCU in the Trans-Baikal Territory, which began in the reporting period, is the most important event for the development of uranium production in Russia. Commissioning of the mine will contribute to meeting the needs of ROSATOM in uranium by replenishing the existing mineral resource base and ensure profitable operation of the enterprise for many years. I want to draw attention to the portfolio of new business projects of the Division. In the reporting year, we managed to get additional revenue from the sale of sized coal of PJSC PIMCU. The “Scandium” project, which is being implemented at JSC Dalur, has serious prospects. ARMZ patented a unique technology for the associated recovery of this rare-earth metal in demand on the world market and has already received confirmation of interest from buyers. Also, the company plans to use its vast experience and competences in the field of solid mineral production in non-nuclear projects - “Titan”, “Lithium”, etc., which are at different stages of implementation at the moment. It should be noted that the Division is constantly working to improve its efficiency, thanks to which social and charitable programmes are implemented in the operation areas. An important component of the long-term success strategy of ROSATOM and the Mining Division is their significant contribution to the achievement of the Sustainable Development Goals, approved by the United Nations.

In conclusion, I would like to add that the Holding Company has impressive scientific, industrial, technological and, of course, human resources necessary for the development of both core and non-nuclear competencies. I wish the Company success and effectiveness in this difficult task!

Address of the Chairman of the Board of Directors Alexander Lokshin

Chairman of the Board of Directors of JSC Atomredmetzoloto, First Deputy Director General for Operational Management of ROSATOM Alexander Lokshin

50 Accomplishments of PJSC PIMCU

1968
1. FEBRUARY 20
A Resolution of the Council of Ministers of the USSR No. 108-31 dated 20.02.1968 on the establishment of the Priargunsky Mining and Chemical Works for the industrial development of uranium and uranium-molybdenum deposits based on uranium deposits of the Streletsovsky ore district in Trans-Baikal Territory discovered in 1963 was issued (considered to be the founding date of the PMCW).
2. JANUARY 20
The first section of the residential building No. 102 in Krasnokamensk was delivered.

1969
3. JUNE 19
A task for the CHPP design was received.
4. SEPTEMBER
Mine No. 1 was established. N.N. Demchenko was appointed the Head of it.
5. DECEMBER 11
The formation of the PCMW mountain rescue service began.
6. JANUARY
A Mine No. 3 was formed at the Tulukui uranium deposit.
7. APRIL
Receipt of the first BelAZ. Excavator operator A.P. Chertopiyatov at the Tulukui quarry extracted the first bucket of rock from the ground.
8. NOVEMBER 27
The first boiler house was commissioned to supply heat to the facilities under construction in Krasnokamensk.
9. NOVEMBER
Despite the difficult conditions, the Mine No. 1, yield the first tonne of uranium ore.
10. NOVEMBER 10
Central Laboratory of Instrumentation and Automation (CLIA) is established.
11. NOVEMBER 20
The 150 km long railway to the station of Kharanor was commissioned.

1970
12. JANUARY
A computer centre with punched card equipment has been established at the PMCW (later Cluster Computer Centre - CCC).
13. AUGUST
The first tonne of uranium-molybdenum ore was produced at the Tulukui deposit.
14. AUGUST
Railway shop (RWS) was established in Krasnokamensk.
15. SEPTEMBER
At Mine No. 3, underground work at the Novogodnee, Yableysya and Venisee deposits began from the shaft of the 4P mine, on the basis of which Mine No. 4 was formed subsequently.

1971
16. JANUARY
Mine Construction Department (MCD) was established.
17. JANUARY
The construction of facilities for the ore-processing complex (each and sulfuric acid plants) was started.
18. DECEMBER
The launching of the Krasnokamensk combined heat and power plant.
19. JANUARY
The first stage of the Tulukui open-pit mine was commissioned, and stripping work began in the second phase circuit.
20. JUNE 6
The Central Research Laboratory (CRL) was organized as part of the PMCW.

1972
21. FEBRUARY 13
The first passenger train from the station Uralyungui to Krasnokamensk began to run.
22. JANUARY
Rated production capacity was achieved at the Tulukui open-pit mine — 600 thousand tonnes of ore per year.

1973
23. FEBRUARY
First tonne of sulfuric acid was produced.
Address of the Director General
Vladimir Verkhovtsev

Dear readers!

I present to you the 11th integrated report of the Holding Company, in which we tried to speak as openly as possible about the activities of our company in 2018.

By decree of the Presidium of the Supreme Soviet of the USSR, the Priargunsky Mining and Chemical Works was awarded the Order of Lenin, and its Director, S.S. Pokrovsky, was awarded the title Hero of Socialist Labour. PMCW was awarded the Order of Lenin, and its Director, S.S. Pokrovsky, was awarded the title Hero of Socialist Labour. PMCW was awarded the Order of Lenin, and its Director, S.S. Pokrovsky, was awarded the title Hero of Socialist Labour.

The specialists of JSC Dalur have developed and patented a unique technology for the associated recovery of scandium, a product that is in demand in the domestic and world markets.

In 2019, we plan to confirm the effectiveness of the project and will transmit best practices to our other enterprises. The “Smart Mine” elements were also introduced in JSC Dalur. For the first time in the world, computer-aided environmental modeling was used at the uranium mining enterprise, which makes it possible to predict the environmental impact of the deposit operation with maximum accuracy.

The maximum project in the diversification portfolio of the Holding Company for the sized coal production in the Trans-Baikal Territory demonstrates stable indicators. In 2018, the Urtuysky coal mine (part of PJSC E.P. Slavsky PIMCU) produced 3.028 million tonnes of coal.

The specialists of JSC Dalur have developed and patented a unique technology for the associated recovery of scandium, a product that is in demand in the domestic and world markets.

In 2018, public hearings were held on the materials of the environmental impact assessment project during pilot works at the Dobrovolnaya deposit, following which local residents supported the deposit development using the DISL method. The infrastructure of the new uranium Mine No. 6 is under construction in Krasnokamensk.

In 2018, we managed to restrain the growth of the total uranium production cost – by the end of the year, this figure was reduced by 2% relative to the planned. Lower prices in the uranium market still put pressure on the economy of our enterprises, but even in these extremely difficult conditions, the ARMZ team manages to work on improving competitiveness.

I would like to note that the revival of the market, which we observed in the second half of 2018, was a good signal for development of the industry as a whole.

As part of the implementation of RISATOM’s unified digital strategy, “Smart Mine” – smart production, including the technologies of the IV industrial revolution – was commissioned on the basis of JSC Khiaigda. In 2019, we plan to confirm the effectiveness of the project and will transmit best practices to our other enterprises.

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Address of the Nuclear Energy and Industry Veteran Valery Litvinenko

Half a century is behind, even more – ahead!

In 2018, the 50th anniversary of the Priargunsky Industrial Mining and Chemical Union (PJSC E.P. Slavsky PIMCU). Over the years, it has written many glorious pages in the history of the domestic nuclear industry. On account of the team numerous production achievements, famous records. In 1963, a large uranium ore facility, deserving serious attention, was opened in southeastern Trans-Baikal Territory.

In November 1967, the Minister of Medium Machine Building of the USSR, E.P. Slavsky issued an order to transform the Western Mining and Processing Plant into the Priargunsky Mining and Chemical Works (PMCW) on the basis of the Streltsovsky ore field. This laid the foundation for a new uranium production company. Stat. Sergeyevich Pokrovsky was appointed the first Director (held the office from 1968 to 1997). Legends are already made on how the enterprise and simultaneously the second largest city of Trans-Baikal Territory Krasnokamensk were built and developed. The industrial giant literally grew up in the uninhabited Priargunsky steppe within just a few years.

Facility after facility, business unit after business unit – the union increased its production capacity. From 1968 to 1993, more than 20 business units were included in the enterprise: mines, mine construction department, leach plant, combined heat and power plant, repair and mechanical plant, etc. An energy base has been created: the enterprise was fully supplied with heat and electric energy from the CHPP operating on coal from the Company’s own Urtuysky brown coal deposit, and fuel resources from the mined brown coal. Also, the city of Krasnokamensk was built.

The PMCW increased its production capacities until the early 1990s. The team did not allow the enterprise to stop, although employees sometimes did not receive salaries for half a year. The crisis has been overcome, and since 2000 the enterprise has stabilized. Production worked steadily, with good technical and economic indicators. In 2007, PMCW entered the structure of ARMZ Uranium Holding Co. of ROSATOM. Already a year later, the construction of the sulfuric acid plant was completed, the acid warehouse was commissioned, the construction of the second stage of the X-ray radiometric thickening plant was started, and also active technical re-equipment of the mining equipment has began.

After a major accident at the NPP Fukushima-1 in Japan, prices for natural uranium drastically decreased. This adversely affected the PMCW position, led to an outflow of specialists.

Nowadays, PJSC PIMCU knows exactly which direction to go. In 2018, the implementation of the largest project of federal importance – the development of the Argun and Zherlovoye deposits of the Streltsovsky ore field, the construction of the Mine No. 6. The implementation of the investment project will allow to stably provide the nuclear industry with strategic raw materials, the largest uranium mining company in the country to work for many years and develop the second largest city in Trans-Baikal Territory Krasnokamensk. The main thing is to believe in your own strength and the unity of the team, which, as well as half a century ago, is the main asset of the company.
2018 Key Events

JANUARY
- Implementation of the project for the construction of a fiber-optic communication line in the Republic of Buryatia

FEBRUARY
- Start of topographic and geodetic works for the preparation of the construction site of a new uranium Mine No. 6 in PJSC PIMCU

MARCH
- Assignment of the status of the priority project of the Arkhangelsk region to the project of development of the Pavlovskoye deposit on Novaya Zemlya
- Start of construction and installation work on the construction of a new uranium Mine No. 6
- JSC Khiagda and Bauntovskiy Evenki district of the Republic of Buryatia signed the Agreement on Social and Economic Partnership

APRIL
- JSC Khiagda achieved the status of leader in the ROSATOM Production System

MAY
- Start of the preparation of JSC Khiagda for the development of the Kolichikan and Dybryn deposits of the Khiagda ore field

JUNE
- Start of pilot testing of the JSC Khiagda yellowcake processing scheme at the leach plant of PJSC PIMCU
- JSC The First Ore Mining Company began engineering surveys for the construction of facilities of the port complex in the water area of the Novaya Zemlya archipelago Bezymyannaya Bay

JULY
- The transition of JSC VNIPromtechnologii to the BIM-technology design

AUGUST
- Celebration of 20 years of work of JSC RUSBURMASH
- PJSC PIMCU was assigned the name of E.P. Slavsky, celebration of the 50th anniversary of PJSC PIMCU, awarding PJSC PIMCU with the “Efrim Pavlovich Slavsky” sign

SEPTEMBER
- The annual regional forum of nuclear industry suppliers ATOMEX REGION-2018
- Participation in the V Anniversary Forum NDexpo 2018 and presentation of the innovative Smart Mine project

OCTOBER
- V grant competition aimed at the implementation of social projects in Krasnokamensk (Trans-Baikal Territory)

NOVEMBER
- The celebration of the 120th anniversary of the Minister of Medium Machine Building of the USSR, E.P. Slavsky. Publication of the book “E.P. Slavsky. Uranium mining enterprises of the domestic nuclear industry”

DECEMBER
- Start of “digital” uranium production by ARMZ Uranium Holding Co.
- Implementation of the Ready Site project at the Vershinny deposit by JSC RUSBURMASH

2018 Key indicators

Uranium production and mineral resource base

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium production, tonnes</td>
<td>3,005</td>
<td>2,917</td>
<td>2,904</td>
</tr>
<tr>
<td>Uranium resources (Russian assets), ktonnes</td>
<td>517.1</td>
<td>523.9</td>
<td>520.7</td>
</tr>
</tbody>
</table>

The place of ROSATOM among the world’s largest uranium-mining companies by production volume*


The place of ROSATOM and ARMZ among world’s largest uranium-mining companies by mineral resource base*

2016: 2, 2017: 2, 2018: 2

Occupational and industrial safety

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal Injury Frequency Rate (FIFR)</td>
<td>0.00</td>
<td>0.00</td>
<td>0.075</td>
</tr>
<tr>
<td>Lost Time Injury Frequency Rate (LTIFR)</td>
<td>0.44</td>
<td>0.28</td>
<td>0.22</td>
</tr>
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</table>

Environmental operations

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental protection costs, million RUB</td>
<td>520.0**</td>
<td>411.5</td>
<td>265.0</td>
</tr>
</tbody>
</table>

Social and economic sphere

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxes paid by key enterprises of ARMZ Uranium Holding Co. to regional budgets, million RUB***</td>
<td>1,921</td>
<td>2,159</td>
<td>2,784</td>
</tr>
</tbody>
</table>

* Taking into account the companies of JSC Uranium One Group.
** Data for 2016 are recalculated taking into account the information on investments in fixed assets aimed at environmental protection and improvement of labor protection measures at enterprises of the uranium mining industry.
*** Taking into account payments of income tax as part of the consolidated group of taxpayers (2017).
1.1. About the Company

1.1.1. General Information

Main activities

JSC Atomredmetzoloto (ARMZ, ARMZ Uranium Holding Co., Company, Association, Holding Company) heads the Mining Division of ROSATOM. Our company implements a number of uranium and non-uranium projects at different stages of development – from geological exploration to intensive commercial operation. The core business of ARMZ is the production of natural uranium. Russian uranium production is of strategic importance. Having our own production of natural uranium in the Russian Federation allows us to solve the following key problems:

- Reliability of supplies
- Long-term safety of raw material supply
- Ensuring the competitive cost of uranium products

Our company has unique competences in the field of uranium production: the Holding Company has more than fifty years of experience in the development of deposits in a wide variety of geoclimatic conditions.

Key laws and regulations governing the Company's activities

In its activities, JSC Atomredmetzoloto is guided by the provisions of the Articles of Association, internal documents, valid legislation, including the following regulatory acts:

- Decree of the President of the Russian Federation No. 556 dated 27.04.2007 “On Restructuring of the Nuclear Power Generation Complex of the Russian Federation”;

Membership in organizations and associations

JSC Atomredmetzoloto is a member of the World Nuclear Association.

External charters, principles and other initiatives

The activity of the Holding Company takes into account the principles of the Social Charter of the Russian Business.
1.1.2. Holding Structure

Diagram of the JSC Atomredmetzoloto subsidiaries, whose shares (stakes in authorized capital) are owned by JSC Atomredmetzoloto as of December 31, 2018

1.1.3. Mission, Vision and Values

Our mission
To ensure the competitiveness in long-term supply of raw materials for the development of Russian technologies, primarily in the nuclear power industry.

Our vision
The status of a national manufacturer that guarantees the provision of the raw material needs of the main shareholder - ROSATOM - at a competitive cost and without geopolitical risks.

Our basic competitive advantages are:
- Resource base of natural and technogenic origin with the possibility of complex processing and cost-effective extraction of valuable components;
- High-tech production assets, modern scientific potential and a qualified team with vast experience in the mining industry;
- Full range of competencies for managing the life cycle of the deposit development and operation, particularly in difficult climatic conditions.

1.2. Global Reach

Fig. 3. Map of JSC Atomredmetzoloto assets in Russia

For more information on the main activities and operation areas, see the annual report of JSC Atomredmetzoloto for 2017, as well as the "Strategy and Markets" section of this Report.
1.3. Role in ROSATOM’s Production Cycle

In this regard, the Holding Company continuously monitors the implementation of agreements with producers of uranium raw materials and synchronization of schedules for its purchase and sale, as well as due to the availability of carry-over uranium residues at the consignee’s (JSC SCW) warehouse.

One of the priorities in the work of JSC Atomredmetzoloto is to ensure satisfaction of customers, the supply of uranium raw materials to which is carried out both under long-term JSC TENEX, JSC TVEL and under one-time (JSC Uranium One Group) contracts.

In this regard, the Holding Company continuously monitors the implementation of agreements with customers, and also responds promptly to their requests and expectations.

Customer service

Quality assurance and timely sale of uranium products to customers is carried out by:

- monitoring of its compliance with technical conditions (TIS);
- observance of raw material shipping schedules by the Holding Company’s production companies;
- optimization of finished product storage and transportation systems.

In 2018, JSC Atomredmetzoloto worked on improvement of the quality of uranium products supplied to Russian customers.

Also, the Company together with the consignee (JSC SCW) and the freight forwarding companies consistently works on optimization of the finished product containerization and transportation, as well as the timely provision of uranium raw material producers with empty returnable containers.

In the reporting year, JSC Atomredmetzoloto delivered uranium oxide concentrate produced by PJSC PIMCU to JSC Uranium One Group for further export of Russian raw materials to the People’s Republic of China and its sale.

Also, in 2018, the Company formed up a marketing policy for a new product – scandium oxide, produced by JSC Dalur. The Company conducted a study of the scandium product consumption market, carried out trial deliveries of products to potential customers and launched the production of higher quality scandium oxide, corresponding to the customers’ needs. A groundwork was made for transition to long-term and regular deliveries of scandium products to Russian and foreign customers from 2019.

1.4. Supply Chain

Reliable and uninterrupted supply of uranium raw materials to Russian customers is ensured by JSC Atomredmetzoloto through long-term contracts with producers of uranium raw materials and synchronization of schedules for its purchase and sale, as well as due to the availability of carry-over uranium residues at the consignee’s (JSC SCW) warehouse.

According to the results of 2018, all contractual obligations of JSC Atomredmetzoloto for the product supply to JSC TENEX, JSC TVEL and JSC Uranium One Group were fulfilled in full and strictly on time (in accordance with the schedules).
1.5. Value Chain and Business Model

1.5.1. Value Chain

High efficiency and presence in all links of the value chain – from geological exploration to final product sales to key customers – allow us to create value for a wide range of stakeholders. We produce demanded products, we are a major employer and taxpayer in the operation areas, we invest in social projects.

Financial
We develop responsible financing practices, using our own tangible and intangible assets and attracting borrowed funds to finance core activities and make new products for continuous value creation.

Social
We actively investing in the professional development and training of more than 5,000 of our employees for the effective development of business and asset management.

Productions
We are constantly improving production facilities in order to transform natural raw materials into strategically important products.

Human
We are actively investing in the professional development and training of more than 5,000 of our employees for the effective development of business and asset management.

Intellectual
We develop breakthrough, compulsory environmental protection and industrial safety technologies in order to strengthen our competitiveness.

Natural
Our business is based on the rational use of natural resources in the field of subsoil use and environmental impact minimization.

Capitals
Gross resources (reserves) of tangible and intangible assets that the company uses in its activities. Part of the capital is shared with other stakeholders.

1.5.2. Business Model

A business model is a system that provides value creation in the short, medium and long term and is aimed at achieving strategic goals.

Our business model is based on a mission and a long-term strategy. The strategic vision ensures the sustainable development of the Company and the efficient use of capitals in the long term, taking into account risks and opportunities.

At the same time, we support all the UN sustainable development goals and strive to contribute to the goals most relevant to the specifics of our Company’s activities.

The business model includes:

- resources available in the internal and external environment - capitals (for details see Chapter 3. Capital Management Performance)
- corporate governance system aimed at the most efficient transformation of these available capitals (for details see section 2.2. Governance Performance)
- value creation activities based on the available capital transformation (the main activity of the Holding Company);
- results of value creation activities are the Holding Company main products.

The integration of the JSC Atomredmetzoloto business model into the value chain of ROSATOM, the largest vertically integrated company of the global nuclear industry, ensures its sustainable development and also allows to use the accumulated experience and technologies corresponding to the advanced world and Russian levels at all stages of value creation.

We understand that the value created by ARMZ is not only in obtaining the main final product – a strategically important natural raw material - but also in the diversity of economic, social and environmental impacts on the operation areas. On the one hand, the Company seeks to simultaneously increase the positive effect of its activities, and on the other – to minimize the environmental impact.

We develop responsible financing practices, using our own tangible and intangible assets and attracting borrowed funds to finance core activities and make new products for continuous value creation.

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Business Model of JSC Atomredmetzoloto

**Key results**

<table>
<thead>
<tr>
<th>Resource</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uranium production, tonnes</td>
<td>2,917</td>
<td>2,904</td>
</tr>
<tr>
<td>Coal production, million tonnes</td>
<td>3.31</td>
<td>3.03</td>
</tr>
<tr>
<td>Number of employees, people</td>
<td>7,347</td>
<td>7,396</td>
</tr>
<tr>
<td>Average monthly salary, RUB</td>
<td>61,992</td>
<td>62,924</td>
</tr>
<tr>
<td>Environmental protection expenses, million RUB</td>
<td>411.5</td>
<td>255.0</td>
</tr>
<tr>
<td>Uranium mineral resource base (Russian assets), ktonnes</td>
<td>523.9</td>
<td>520.7</td>
</tr>
<tr>
<td>Capital expenditures, billion RUB</td>
<td>4.9</td>
<td>5.4</td>
</tr>
<tr>
<td>Revenue, billion RUB</td>
<td>17.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Social payments to employees, million RUB</td>
<td>212.9</td>
<td>212.7</td>
</tr>
<tr>
<td>Charity spending, million RUB</td>
<td>7.0</td>
<td>7.0</td>
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<tr>
<td>Innovation projects spending, million RUB</td>
<td>209</td>
<td>51.2</td>
</tr>
<tr>
<td>Intangible assets, billion RUB</td>
<td>6.4</td>
<td>6.5</td>
</tr>
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</table>

**Change in capitals**

<table>
<thead>
<tr>
<th>Resource</th>
<th>2017</th>
<th>2018</th>
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</thead>
<tbody>
<tr>
<td>Production capital</td>
<td>2,917</td>
<td>2,904</td>
</tr>
<tr>
<td>Social capital</td>
<td>212.9</td>
<td>212.7</td>
</tr>
<tr>
<td>Financial capital</td>
<td>17.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Intellectual capital</td>
<td>209</td>
<td>51.2</td>
</tr>
</tbody>
</table>

**Resources**

- **Production capital**
- **Human capital**
- **Natural capital**
- **Financial capital**
- **Social capital**
- **Intellectual capital**

**Value Chain**

**Activities**

- Prospecting works
- Obtaining subsoil use rights
- Geological exploration
- Pre-design engineering
- Design of production facilities
- Construction of production facilities
- Operation of production facilities, uranium mining and processing
- Reclamation and decommissioning
- Non-uranium businesses
- R&D, innovations
- Manufacturing of mine machinery

**Products**

- Uranium concentrate
- Thermal energy
- Sulphuric acid
- Coal (thermal)
- Electric power
- Manufacturing of mine machinery

**Change in capitals**

- **Production capital**
- **Human capital**
- **Natural capital**
- **Financial capital**
- **Social capital**
- **Intellectual capital**

**Contribution to the achievement of the UN Sustainable Development Goals**

- **Clean water and sanitation**
- **Affordable and clean energy**
- **Industry innovation and infrastructure**
- **Decent work and economic growth**
- **Sustainable cities and communities**
- **Responsible consumption and production**
- **Life below water**
- **Peace, justice and strong institutions**

**Integral indicator**

- 115%

**Total cost reduction**

- 3%

**Employee engagement rate**

- 68%

**Reduction of cash cost for in-situ leaching uranium mining (JSC Dalur, JSC Khiagda)**

- 5%

**Balance of neutral positive and negative publications in the mass media**

- 99%
2.1. Strategic Vision and Targets

In the reporting year, the Mining Division made a significant contribution to strengthening the Russian nuclear industry market position and reliable provision of raw materials for its needs.

The development of uranium assets was accompanied by further work on the development of new uranium deposits. In 2018, work was carried out at the JSC Khiagda site to prepare for the Kolichikan and Dybryn deposit development. As part of the “Digitization” direction development, an intelligent mining management system, Smart Mine, has been launched at the Istochny deposit site, which will increase the efficiency of uranium extraction from the subsoil and reduce the production cost. In 2018, JSC Dalur carried out design and exploration work at the Dobrovoinoye deposit.

The largest production site of the division, PJSC PIMCU, fully implemented the Mine No. 6 project infrastructure construction programme for 2018.

In the reporting year, the Holding Company continued to work on the development of projects for new business areas. In 2018, the first commercial deliveries of scandium oxide produced by JSC Dalur were carried out. The company continued active development of partnership projects in the mining sector (“Pavlovskoye”, “Lithium”, “Titan”, etc.) and promising business initiatives. Consistent and persistent work in these areas has helped to form the conditions for further sustainable development of the Company’s business.

See details in Section 4.1.3. Business Diversification.

The Company’s strategic goals

In pursuing its long-term strategy, ARMZ focuses on the strategic goals and priorities identified by ROSATOM. Their reflection in the activities of our Company determines its strategic goals.

2.2. Contribution to the Achievement of ROSATOM’s Strategic Goals

<table>
<thead>
<tr>
<th>Division strategic goals</th>
<th>Contribution to the achievement of ROSATOM’s Strategic Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guaranteed satisfaction of ROSATOM’s need for Russian uranium</td>
<td>Reduction of unit cost of uranium production</td>
</tr>
<tr>
<td>Maintaining competitive production cost of uranium</td>
<td>Launch of the Smart Mine uranium mining management system</td>
</tr>
<tr>
<td>Stable development of the division, including by business diversification</td>
<td>New products for the Russian and international markets</td>
</tr>
<tr>
<td></td>
<td>Start of commercial supply of scandium oxide produced by JSC Dalur</td>
</tr>
<tr>
<td></td>
<td>Implementation of non-uranium high-tech projects for the production of marketable products from ores, solutions and secondary sources</td>
</tr>
<tr>
<td></td>
<td>Increasing the share in international markets</td>
</tr>
<tr>
<td></td>
<td>Increasing the sales of coal produced by PJSC PIMCU to China</td>
</tr>
<tr>
<td></td>
<td>Overseas revenue growth</td>
</tr>
</tbody>
</table>
The main areas of development in uranium production in Russia are still as follows:

- construction and commissioning in 2023 of the Mine No. 6 at PJSC PIMCU to replace withdrawn volumes of uranium production at existing mines;
- further increase of the cost-effective and environmentally safe uranium production via drillhole in-situ leaching (at JSC Khiagda and JSC Dalur).

Uranium production will continue to be the JSC Atomredmetzoloto key activity. Work on the development of existing enterprises will be complemented by the implementation of new projects in the mining industry and related areas, ensuring the growth of the Company’s business and increasing its social and financial sustainability.

**Plans for the medium and the long term:**

Our Company’s basic priority in the medium term is to increase the uranium production efficiency, particularly through the development of new deposits, and the active development of new business areas.

PJSC PIMCU is constructing a new Mine No. 6 on the basis of Argunskoye and Zherlovoye uranium deposits. The mine commissioning will make it possible to replenish the withdrawn uranium production volumes related to the conservation of existing mines after the active reserve development and will provide a competitive level of uranium cost.

At the in-situ leaching enterprises, JSC Dalur and JSC Khiagda, a balanced increase in uranium production will be continued. JSC Khiagda, having significant potential for the competitive uranium production development, will continue the development of the JSC Dalur’s objectives to maintain the current level of uranium production and develop the Dobrovolnoye deposit.

**50 years of PJSC PIMCU: new prospects for strategic development**

In the reporting year, the 50th anniversary was celebrated by the Priargunsky Industrial Mining and Chemical Union (PJSC PIMCU) established in 1968 – the largest uranium production company in Russia and one of the five largest companies in the world producing uranium by underground mining. The first tonnes of uranium ore at the enterprise were produced in 1970. In total, for the entire period of work, PJSC PIMCU produced more than 120 thousand tonnes of uranium.

At the present stage of development, due to the gradual deterioration of the mineral resource base of existing mines and the prolonged fall in uranium prices after the accident at the NPP Fukushima-1, PJSC PIMCU conducted a socially responsible restructuring followed by uranium production break-even in 2016 and preservation of the groundwork for further development of the enterprise and diversification of its activities.

**ARMZ will continue assessing the prospects and engineering solutions of the Elkon Project (JSC Elkon MMP).** Its commissioning is expected in the long term (tentatively after 2035) upon the recovery of the uranium market and increase in market prices, providing the required economic efficiency indicators.

As part of the new business area development, further expansion of the Company’s product portfolio is envisaged. Service companies of the Division will continue to promote services based on existing competencies in new markets. The mining project implementation on partnership principles and the organization of strategic raw material processing with the involvement of adjacent divisions and external partners will allow the division to make a significant contribution to the increase in new business revenues for the whole ROSATOM.

**2.3. Sustainable Development Management**

We pay considerable attention to approaches to an integrated and balanced solution of sustainable development issues and the role of business in its achievement.

Developing the mineral resource base, expanding production capacities, commissioning new production facilities, we have an impact on the social and economic development of the operation areas through financing regional social development projects, creating new jobs and paying taxes to local budgets.

We support all the sustainable development goals identified at the UN summit in 2015 and strive to make a significant contribution to the achievement of the goals that most closely correspond to the specifics of the ROSATOM’s Mining Division.

**Tab. 1. ARMZ Impact on Sustainable Development**

**Product quality control**

<table>
<thead>
<tr>
<th>Strategic goals</th>
<th>Key events</th>
<th>2018 performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>strengthening the Russian nuclear industry competitiveness</td>
<td>product quality compliance confirmation</td>
<td>the planned level of improved quality uranium raw material production has been achieved by processing at PJSC PIMCU ammonium polyuranate produced by JSC Khiagda to high quality uranium oxide concentrate; successful completion of two observational audits</td>
</tr>
</tbody>
</table>

**Participation in maintaining the sustainability of the global uranium market, national and regional economies, the balance of reasonable stakeholder expectations and ratings**

**Strategic goals**

<table>
<thead>
<tr>
<th>Key events</th>
<th>2018 performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>maintaining the uranium production competitiveness</td>
<td>retaining the production cost growth</td>
</tr>
<tr>
<td>sustainable development of the Division, business diversification</td>
<td>revenue for new products above 1.2 billion RUB</td>
</tr>
</tbody>
</table>

*Information on the key results of 2018 in the field of sustainable development is given in the main sections of this Report and is indicated by pictograms.*
Environmental protection

Strategic goals
- gradual reduction of pollutant emissions into the atmosphere
- preservation of biological diversity in the production operation areas
- compliance with ash dust removal efficiency indicators at PJSC PIMCU
- improvement of the coal physical and chemical properties
- replacement of gas consumption with recycled heat from the Energy Centre
- implementation of a set of measures aimed at improving the efficiency of the Holding Company enterprises
- creation of favorable social and living conditions for employees of the Holding Company enterprises
- maintenance of the environmental management system functioning in accordance with the requirements of ISO 14001:2015 and ISO 14001:2015
- integrated management system development and stable operation provision in accordance with the requirements of ISO 9001:2015 and ISO 14001:2015
- provision of employees with favorable conditions for successful work, professional growth and creative activity
- development of a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company;
- development of the new project “Construction of sewage treatment facilities with a capacity of 40 thousand m³ per day in Krasnoyarsk” and placing it on the newly formed land plot, which is related to the inexpediency of the reconstruction of the 1st stage of sewage treatment facilities due to the high degree of wear of sewage treatment facilities (STP).
- preparation of employees for environmental protection was 255 million RUB
- emission reduction at PJSC PIMCU
- reduction of wastewater discharge at PJSC PIMCU from 11.039 million m³ in 2017 to 10.74 m³ in 2018
- drastic decrease in emissions at JSC Dalur: Total amount of emissions for 2018 is 2.809 tonnes, which is 10% of the permitted emissions (28.643 tonnes)
- total amount of the Holding Company expenses for environmental protection was 255 million RUB
- provision of employees with favorable conditions for successful work, professional growth and creative activity;
- development of a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company;
- development and maintenance of a culture of energy saving and energy efficiency (daily submission of the forecast for deep-mined electric energy consumption; equipment operation performance and balancing supervision, replacement of low-efficiency light sources with energy-saving ones; reconstruction of the lighting system, supply and exhaust ventilation systems at production sites);
- creation of a system for dispatching and accounting of consumed energy resources;
- implementation of measures to reduce the energy purchasing cost.

Production energy efficiency improvement

Strategic goals
- reduction of electric energy and power consumption
- reduction of the number of fatal industrial accidents
- absence of accidents investigated in accordance with federal rules and regulations
- creation of favorable social and living conditions for employees of the Holding Company enterprises
- implementation of a set of measures to improve social and living conditions for employees of the Holding Company enterprises
- emission reduction at PJSC PIMCU
- further work to improve the radiation situation in the mine workings at PJSC PIMCU
- implementation at PJSC PIMCU of a safety culture development project launched in 2012.
- no accidents investigated in accordance with federal rules and regulations occurred in 2018
- sharp decline in the rate of occupational diseases from 0.56 in 2017 to 0.14 in 2018
- implementation of an incentive system to reduce electric energy consumption, equipment operation performance and balancing supervision, replacement of low-efficiency light sources with energy-saving ones, reconstruction of the lighting system, supply and exhaust ventilation systems at production sites;
- creation of a system for dispatching and accounting of consumed energy resources;
- implementation of measures to reduce the energy purchasing cost.

Occupational and industrial safety

Strategic goals
- reduction of the number of fatal industrial accidents
- absence of accidents investigated in accordance with federal rules and regulations
- creation of favorable social and living conditions for employees of the Holding Company enterprises
- implementation of a set of measures to improve social and living conditions for employees of the Holding Company enterprises
- promotion of employees with favorable conditions for successful work, professional growth and creative activity;
- development of a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company;
- further work to improve the radiation situation in the mine workings at PJSC PIMCU
- implementation at PJSC PIMCU of a safety culture development project launched in 2012.
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- creation of a system for dispatching and accounting of consumed energy resources;
- implementation of measures to reduce the energy purchasing cost.

Staff development

Strategic goals
- development of a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company;
- promotion of employees with favorable conditions for successful work, professional growth and creative activity;
- staff development and professional development of employees;
- formation of a corporate culture through sports events and the sanitation for employees and their families;
- support for children’s programmes and youth;
- support for veterans.
- 12 trainers who trained more than 600 people are certified;
- more than 1,700 people were trained on the basis of the PJSC PIMCU training centre;
- the Holding Company staff turnover decreased from 21.8% (2017) to 17.5% (2018);
- the Holding Company employee engagement rate is kept at a consistently high level – 68%.
- 3.5% (2018).
• strengthening the ARMZ image as a socially responsible company and formation of a positive public opinion about the nuclear industry

• increase of the ARMZ HR-brand attractiveness

• increase of staff motivation

• implementation of a set of measures to provide employees with favorable conditions for successful work, professional growth and creative activity;

• improvement of the ARMZ HR-brand attractiveness

• maintenance of a competitive salary

• implementation of business initiatives as part of horizontal and vertical diversification processes, the result of which is the commercially beneficial provision of primarily Russian technological development sectors with competitive raw material resources

• formation of staff reserve

• development of incentive programmes

• implementation of programmes aimed at improving performance indicators

• formation of staff reserve

• maintenance of a competitive salary

• implementation of corporate social responsibility projects, charitable initiatives in the Holding Company’s operation areas

• preparation for the start of industrial development of deposits in the Kurgan region and the Republic of Buryatia

• “Scandium” project – a “clean room” was created – a complex of equipment, which made it possible to increase the purity of scandium oxide to 99.9% and higher.

• “Pyrite cinder processing” project – the initial design data were corrected taking into account the refinements of the technology parameters; a pilot work (PW) programme for the ferralloy production has been developed; process regulations (procedure) for conducting PW have been prepared.

• “Lithium” project – the project technical and economic efficiency parameters were obtained, the requirements for the infrastructure necessary for created production facilities were determined, a preliminary implementation plan was developed to create lithium carbonate production facilities based on the Zavitinsk deposit area, etc.

Social development in the operation areas

Strategic goals

- strengthening the ARMZ image as a socially responsible company and formation of a positive public opinion about the nuclear industry

- implementation of corporate social responsibility projects, charitable initiatives in the Holding Company’s operation areas

- development of incentive programmes

- formation of staff reserve

Key events

2018 performance

- in 2018, the balance of positive and negative opinions on nuclear power development programmes by the population of the Russian Federation was 57%

- 100% implementation of actions as part of the CSR programme implementation;

- expenses for the implementation of charitable initiatives amounted to 7 million RUB

- the programmes for the development of a managerial personnel reserve “ROSATOM’s Assets”, “ROSATOM’s Capital” and “ROSATOM’s Talents” were implemented

- formation of a positive balance of positive and negative opinions on nuclear power development programmes by the population of the Russian Federation

- the 2nd divisional professional skills competition ARMZSkills was held under the WorldSkills methodology.

- ROSATOM’s III industry championship of professional skill – AtomSkills 2018 was held in Yekaterinburg;

- WorldSkills Hi-Tech 2018;

- the ROSATOM’s Person of the Year 2018 contest was held in Moscow.

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Primary documents in the field of sustainable development:

• Environmental Policy

• Industrial Safety Policy

• Energy Conservation and Energy Efficiency Programme

• ROSATOM Investment Policy

• Code of Business Conduct

• JSC Atomredmetzoloto Public Annual Reporting Standard

• Regulations on the JSC Atomredmetzoloto Charitable Activities

• The Mining Division Regulations on the Media and Public Relations, etc.

Areas of functional responsibility in the field of sustainable development

Due to the implementation of activities in various areas, sustainable development issues are regulated separately for each area and distributed between the core business units:

• social responsibility – Deputy Director General for Strategy and HR Director;

• environmental impact – Chief Safety Inspector;

• economic responsibility – Deputy Director for Economy and Finances.

Business diversification, production capacity capacity expansion

Strategic goals

- guaranteed meeting the ROSATOM’s requirements for Russian uranium and reliable provision of raw materials for its needs.

- implementation of a set of measures for stable future supplies in the volumes required by the nuclear industry

- implementation of diversification projects in the following mining industry sectors:

- production of energy minerals;

- production and processing of ferrous and alloying metals;

- production and processing of non-ferrous metal ores;

- production of natural industrial raw materials and raw materials for the building material production.

- “Lithium” project – the project technical and economic efficiency parameters were obtained, the requirements for the infrastructure necessary for created production facilities were determined, a preliminary implementation plan was developed to create lithium carbonate production facilities based on the Zavitinsk deposit area, etc.

Key events

2018 performance

- implementation of diversification projects in the following mining industry sectors:

- production of energy minerals;

- production and processing of ferrous and alloying metals;

- production and processing of non-ferrous metal ores;

- production of natural industrial raw materials and raw materials for the building material production.

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2.4. Natural Uranium Market Overview and Outlook

Natural uranium market in 2018

Global uranium demand and supply

Fig. 6. Uranium spot prices in 2016-2018, USD/kg of uranium

Approximately 97% of world uranium production is provided by nine key producing countries. Kazakhstan, Canada and Australia retained their leadership.

Development of existing and promising projects in 2018

In the reporting year, the largest uranium producers continued to reduce and optimize production, responding to the persistence of unfavorable market conditions. A number of mining assets were put on care and maintenance; at some enterprises, production was significantly reduced.

Fig. 8. Uranium Production by the Largest Companies in 2016–2018, ktonnes

In the long run, growth in uranium demand is expected to accelerate due to the intensive construction of new NPPs. According to the baseline forecast of the World Nuclear Association (WNA), by 2035, global reactor requirements may reach 94 ktonnes. Natural uranium production will grow in line with the demand for it. The volume of supply from secondary sources in 2035 will be about 6–7 ktonnes of uranium.

Uranium market outlook

Fig. 9. Electricity generation

In terms of uranium production, Russia ranks 6th among the leading countries, (with 5% share in global production).

Global Nuclear power generation

At the end of 2018, nuclear power generation ranks fourth in the world in terms of power generation. In the reporting year, the world nuclear generation for the first time reached the level at which it was before the accident at the NPP Fukushima-I.

Sources: JSC Atomredmetzoloto assessment according to press releases and company reports, UxC, Production volume is accounted for in proportion to the ownership shares.
Chapter 3
GOVERNANCE PERFORMANCE

3.1. Corporate Governance System

3.1.1. Corporate Governance

Corporate governance approach
Maintaining a high level of corporate governance and transparency is considered as one of the most important areas in the Company’s strategy implementation, the overall goal of which is to maximize the mining business value for shareholders.

The priority tasks in this area are:
- compliance with international and Russian corporate governance standards;
- protection of the rights and interests of minority shareholders;
- improvement of the governing body efficiency;
- increased transparency for investment and industry communities, business partners, employees and other stakeholders.

In its activities, JSC Atomredmetzoloto complies with the Russian Federation legislation requirements. The corporate governance system improvement is carried out with due consideration of the best Russian and international practices.

JSC Atomredmetzoloto website [http://www.armz.ru](http://www.armz.ru) contains the Company’s Articles of Association and internal documents governing the activities of governance bodies, and regularly provides essential information and data on events occurring in the ARMZ Uranium Holding Co. activities.

Information on compliance with the Corporate Governance Code principles and recommendations
Separate norms of the Corporate Governance Code, recommended by the letter of the Bank of Russia No. 06-52/2463 dated 10.04.2014 are applied by JSC Atomredmetzoloto in practice, taking into account the specifics of the ROSATOM legal status stipulated by regulatory legal acts of the Russian Federation, and are presented in a number of local regulations.

ARMZ Uranium Holding Co. authorized capital and shareholders
As of December 31, 2018:
- JSC Atomredmetzoloto authorized capital (including shares placed during the Company’s additional issue, the additional issue registration number 1-01-03912-A-007D dated 24.08.2017) amounted to 28,282,192,775 RUB;
- The company placed ordinary registered shares in the amount of 28,282,192,775 pieces with nominal value of 1.00 RUB each (the issue registration number 1-01-03912-A; the additional issue registration number 1-01-03912-A-007D dated 24.08.2017);
- total number of entities registered in the shareholder register is three (ROSATOM, JSC Atomenergoprom, JSC TVEL).

Fig. 10. Shareholder Structure as of December 31, 2018

Tab. 2. Shareholder Composition Dynamics for 2016-2018, %

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>JSC Atomenergoprom</td>
<td>82.574</td>
<td>83.220</td>
<td>84.515</td>
</tr>
<tr>
<td>JSC TVEL</td>
<td>16.137</td>
<td>15.539</td>
<td>14.340</td>
</tr>
<tr>
<td>ROSATOM</td>
<td>1.289</td>
<td>1.241</td>
<td>1.145</td>
</tr>
</tbody>
</table>
Management and control system

Fig.11. Structure of JSC Atomredmetzoloto Corporate Governance and Control Bodies

Shareholder Meeting

Board of Directors

Auditor

Director General

Management and control bodies

The corporate governance system as a fundamental element on which the Holding Company’s activities are based is formed on several levels.

General meeting of shareholders

The JSC Atomredmetzoloto’s Board of Directors is elected at the annual General Meeting of Shareholders (GMS). The competence, the procedure for convening and holding the GMS is determined by the provisions of the Company’s Articles of Association, as well as the Russian Federation regulatory acts.

The company shall timely inform the shareholders of both the GMS date and the voting results at the meetings. Relevant messages are posted on the Company’s official website.

In 2018, three GMSs were held, at which decisions were made on the Company’s management, including:

- Formation of the Company’s governance bodies: election of the Company’s sole executive body, election of members of the Company’s Board of Directors;
- distribution of the Company’s profits and losses for the 2017 reporting year;
- approval of the Company’s Articles of Association new edition.

The Holding Company does not apply special measures to develop additional competencies and increase the knowledge of members of the Board of Directors regarding economic, environmental and social issues.

In 2018, the Board of Directors elected at the annual General Meetings of Shareholders of the Company (Minutes of the Annual General Meeting of Shareholders No. 29 dated 27.06.2017, Minutes of the Annual General Meeting of Shareholders No. 31 dated 27.06.2017) operated with the following members:

- Oleg Barabanov
- Vladimir Verkhovtsev
- Vladimir Vyssotsky
- Vladislav Korogodin

2017 ARMZ Annual Report was approved by the Board of Directors decision dd. May 25, 2018

Board of Directors

The Board of Directors carries out the general management of the Company’s activities, plays a key role in strategic management. In accordance with the Company’s Articles of Association, the quantitative composition of the Board of Directors is determined by the General Meeting of Shareholders, but there cannot be less than five people. The Chairman of the Board of Directors and the Director General functions are separated.

Link to the Regulation on the Board of Directors: http://armz.ru/aktsioneram-i-investoram/raskrytie-informatsii/i-vnutrennie-dokumenty

This regulation is valid in the part that does not contradict the Russian Federation legislation and the Company’s Articles of Association.

The competence of the Board of Directors is determined by the provisions of the Company’s Articles of Association, as well as the Russian Federation regulatory acts.

Members of the Board of Directors do not own shares of JSC Atomredmetzoloto. In the reporting period, no transaction on the acquisition or alienation of the Company’s shares by members of the Board of Directors and the Director General was made.

Nomination of candidates to the Board of Directors is carried out in accordance with the requirements of Art. 53 of the Federal Law “On Joint Stock Companies”. Independent members on the Board of Directors, as understood by the Corporate Governance Code recommended for use by the Bank of Russia, are not present in JSC Atomredmetzoloto.

The JSC Atomredmetzoloto’s Board of Directors is convened as necessary by the Chairman of the Board of Directors on his own initiative, at the request of a member of the Board of Directors, Director General, an auditor.

Alexander Lokshin
Chairman of the Board of Directors

Oleg Barabanov
Deputy Director General, Deputy Director General – Head of the Directorate for the Nuclear Power Centre, First Deputy Director General for Operations-Management of the ROSATOM

Vladimir Verkhovtsev
Deputy Director General, Deputy Director General – Head of the Directorate for the Nuclear Power Centre, First Deputy Director General for Operations-Management of the ROSATOM

Vladimir Vyssotsky
Deputy Director General – Head of the Directorate for the Nuclear Power Centre, First Deputy Director General for Operations-Management of the ROSATOM

Vladislav Korogodin
Deputy Director General, Deputy Director General – Head of the Directorate for the Nuclear Power Centre, First Deputy Director General for Operations-Management of the ROSATOM

The main provisions of the policy in the field of remuneration and/or reimbursement of expenses, information about remuneration and/or reimbursement of expenses.

Remuneration may be paid to members of the Board of Directors for participation in the work of the Board of Directors (depending on the financial and economic performance of the Company). The amount of remuneration is set by the GMS.

All members of the Board of Directors receive salary at the main job.

Evaluation of the Company’s achievements as a whole, as well as managers and individual specialists, is carried out using the personnel performance management system based on key performance indicators (KPI). The KPI system is a strategic and operational management tool that allows to plan performance at all organizational levels.

May 25, 2018

1. Alexander Lokshin - Chairman of the Board of Directors
2. Oleg Barabanov
3. Vladimir Verkhovtsev
4. Vladimir Vyssotsky
5. Vladislav Korogodin

Biographical Information of Members of the Board of Directors JSC Atomredmetzoloto

Alexander Lokshin
Member of the Board of Directors from 30.06.2014, Chairman from 01.07.2014
06.2008 - present
Deputy Director General, Deputy Director General – Head of the Directorate for the Nuclear Power Centre, First Deputy Director General for Operations-Management of the ROSATOM

Oleg Barabanov
Member of the Board of Directors from 27.06.2017
Born in 1971, place of birth - Moscow, graduated from the S. Ordzhonikidze Moscow Geological Prospecting Academy, PhD (Econ.)

Vladimir Verkhovtsev
Member of the Board of Directors from 30.06.2014
Born in 1955, birthplace - Lyal-Mikar, Dzharkurgan district, Surxondaryo region, Uzbek SSR, graduated from the F.E. Dzerzhinsky Military Academy, Military Academy of the General Staff of the Armed Forces of Russia, PhD (Eng.)

Vladimir Vyssotsky
Member of the Board of Directors from 10.12.2014
Born in 1964, birthplace - Komarno, Gorodok district, Lviv region, Ukrainian SSR, graduated from the Military Academy of the General Staff of the Armed Forces of Russia

Vladislav Korogodin
Member of the Board of Directors from 07.09.2007
Born in 1969, birthplace - Moscow, graduated from Moscow Institute of Physics and Technology

Biographical Information is presented in the Board of Directors section.

*Biographical information is presented in the Board of Directors section.

The holding company does not apply special measures to develop additional competencies and increase the knowledge of members of the Board of Directors regarding economic, environmental and social issues. In 2018, the Board of Directors elected at the annual General Meetings of Shareholders of the Company (Minutes of the Annual General Meeting of Shareholders No. 29 dated 27.06.2017, Minutes of the Annual General Meeting of Shareholders No. 31 dated 27.06.2017) operated with the following members:

- Oleg Barabanov
- Vladimir Verkhovtsev
- Vladimir Vyssotsky
- Vladislav Korogodin

2017 ARMZ Annual Report was approved by the Board of Directors decision dd. May 25, 2018

Director General

Management of the Company’s current activities is carried out by the sole executive body – Director General.

Director General of JSC Atomredmetzoloto Vladimir Verkhovtsev was first elected to the position by the decision of the extraordinary General Meeting of Shareholders (Minutes No. 15 dated 27.05.2013). By the decision of the extraordinary General Meeting of Shareholders of the Company (Minutes No. 30 dated 24.05.2018) Vladimir Verkhovtsev re-elected as Director General for a period of three years.

Vladimir Verkhovtsev does not own shares of JSC Atomredmetzoloto.

In accordance with the requirements of Art. 69 of the Federal Law “On Joint Stock Companies”, Art. 15 of the ARMZ’s Articles of Association, the Director General organizes the implementation of decisions of the General Meeting of Shareholders and the Company’s Board of Directors.

The main provisions of the policy in the field of remuneration and/or reimbursement of expenses, information about remuneration and/of reimbursement of expenses.

Remuneration may be paid to members of the Board of Directors for participation in the work of the Board of Directors (depending on the financial and economic performance of the Company). The amount of remuneration is set by the GMS.

All members of the Board of Directors receive salary at the main job.

Evaluation of the Company’s achievements as a whole, as well as managers and individual specialists, is carried out using the personnel performance management system based on key performance indicators (KPI). The KPI system is a strategic and operational management tool that allows to plan performance at all organizational levels.
Management

The company makes decisions on the approval and updating the Holding Company’s strategic goal formulations, values and mission, as well as tasks regarding production, economic, environmental and social impacts. Prior to appropriate decisions, issues are agreed between JSC Atomredmetzoloto and core business units of ROSATOM. The decisions are obligatory for execution by the JSC Atomredmetzoloto management.

JSC Atomredmetzoloto Management as of 31.12.2018

Vladimir Verkhovtsev
Director General

Victor Svyatetskiy
First Deputy Director General – Chief Operating Officer

Oleg Barabanov
First Deputy Director General for Strategy

Alexander Burutin
Deputy Director General for Strategy

Vladimir Vysotsky
Deputy Director General for Special Projects

Viktor Zakharov
Deputy Director General for Financial and Economic Activities

Ilya Korolev
Deputy Director General for Administration

Vladimir Morgun
Deputy Director General for Safety

Stanislav Anikeev
HR Director

Vera Sorokina
Chief Accountant

Vsevolod Galinov
Chief Inspector for Safety Control

Ilya Yaroshevich
Director for Legal Affairs, Corporate and Property Management

In the Holding Company, the management of various aspects of financial and economic activities, including the strategic raw material production, radiation and environmental safety issues, work with personnel and the operating area development, is implemented by the JSC Atomredmetzoloto functional divisions and subsidiaries within their competencies.

JSC Atomredmetzoloto Committees

RISK COMMITTEE
Results of 2018
16 meetings in absentia of the JSC Atomredmetzoloto Risk Committee (hereinafter the Committee) were held, as part of which:

• the intragroup borrowing rates when issuing and attracting loans by the Mining Division organizations (interest risk management) were approved/adjusted;
• monthly limits for intragroup crediting of the Mining Division organizations (credit risk management) were approved/adjusted;
• the currency risk management strategy and the currency and commodity (uranium) risk management programme of the Mining Division were approved.

Chairman of the Committee – First Deputy Director General - Chief Operating Officer Victor Svyatetskiy.

See details in section 4.2.1. Risk Management.

CHARITY COMMITTEE
Results of 2018
Two meetings of the Committee were held (in person). The Chairman of the Committee is the Deputy Director General for Strategy and Business Development M.I. Liborakina (until 11.07.2018); Deputy Director General for Strategy Alexander Burutin.

The priority areas of charitable activities for 2018 are the development and implementation of volunteer projects and the support of the Company’s operation areas, as well as:

• holding the V Annual Social Project Competition for Urban Locality “Krasnoyarsk City”;
• a programme to support educational institutions in the Kurgan region;
• elimination of the consequences of the current emergency situation in the Trans-Baikal Territory and the provision of operational assistance to the population in the event of a possible deterioration of the flood situation.


INVESTMENT COMMITTEE
Results of 2018
11 meetings of the JSC Atomredmetzoloto Investment Committee (hereinafter the Committee) were held, as part of which:

• component investment limits for 2019 were approved;
• the division reserve for 2018 was formed;
• changes to the data sheets of the projects “Comprehensive improvement of the uranium production efficiency” by PJSC PIMCU, PJSC PIMCU R&D, “Reconstruction of PJSC PIMCU hydraulic structures”, “Dalur” were approved;
• key project parameters were updated: “Reconstruction of PJSC PIMCU hydraulic structures”, “Construction of the Urrusky open-pit mine drainage canal” by PJSC PIMCU (Canar), PJSC PIMCU R&D, “Coal”, “Uranium. Maintaining the production infrastructure of PIMCU, PJSC (Uranium maintenance CAPEX);”

• a decision point (DP) for the project “Comprehensive improvement of the uranium production efficiency” (Uranium KPI) was passed.

A total of 12 issues were considered and 32 investment decisions were made.

During the year, the Committee membership was updated. The Committee included representatives of JSC Atomredmetzoloto, ROSATOM and its subsidiaries (PJSC PIMCU, JSC Khigada, JSC Dalur). Chairman of the Committee - Director General of JSC Atomredmetzoloto Vladimir Verkhovtsev.

See details in Section 4.2.1. Investment activities.

Report on the payment of declared (accrued) dividends on the Company’s shares
The JSC Atomredmetzoloto dividend policy is determined by the governance bodies with due consideration of the investments necessary in accordance with the Company’s strategy.

For the period from 2015 to 2018 the dividends were not accrued and paid. Declared and unpaid dividends are absent. Payment of dividends for 2018 is not planned.

Major transactions and interested-party transactions
In 2018, the Company did not complete any major and interested-party transactions requiring approval by the governance bodies in accordance with the Federal Law “On Joint-Stock Companies”.

Company registrar information

• Registrar full name: Independent Registrar Company R.O.S.T. Joint-Stock Company Abbreviated corporate name of the company: JSC IRC R.O.S.T.;
• Registrar details: PSRN 1027739216757, TIN 7726320446;
• Registrar address and location: Moscow, Stromynka Street, 18, bld. 13.
• License number of a professional participant in the securities market for the registered securities holders register maintenance: No. 045-13976-00001;
• Date of the license issue: 03.12.2002.
• License validity period: unlimited validity period.
• Licensing body: Federal Securities Commission of Russia.
In 2018, JSC Atomredmetzoloto successfully confirmed the compliance of its activities with the international standards ISO 9001:2008 by assessing and managing risks that may affect the Company's result and performance indicators. The risk management system is integrated into the planning and management processes. The risk management system is based on the cyclical process of identifying, evaluating, and controlling the impact of potential risks. As part of a unified approach, JSC Atomredmetzoloto together with ROSATOM has formed a risk management system (RMS) for the Company.

### 3.2.1. Risk Management System

As part of a unified approach, JSC Atomredmetzoloto together with ROSATOM has formed a risk management system (RMS) integrated into the planning and management processes. The risk management system is based on the cyclical process of identifying, assessing, and managing risks that may affect the Company's result and performance indicators. In 2018, JSC Atomredmetzoloto successfully confirmed the compliance of its activities with the international standards ISO 9001:2008 and ISO 14001:2015, including risk management.

### 3.2.2. Key Risks and Their Management Results

<table>
<thead>
<tr>
<th>Key Risk Management Results in 2018</th>
<th>Risk Dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk, Its Number on the Radar and the Main Risk Factor</strong></td>
<td><strong>Risk Dynamics</strong></td>
</tr>
<tr>
<td><strong>1. Currency Risk</strong></td>
<td>The process of managing currency risk and the degree of its influence/distribution on the annual financial performance of the Division is based on the principles of natural hedging. The application of financial hedging tools is performed in accordance with the established currency risk management policy at the level of ROSATOM, while considering the optimal distribution of risk on an inter-divisional basis.</td>
</tr>
<tr>
<td><strong>2. Tax Risk</strong></td>
<td>Result: the optimal ratio of assets and liabilities represented in one currency was ensured in 2018.</td>
</tr>
<tr>
<td><strong>3. Interest Risk</strong></td>
<td>Dynamics: the influence of currency risk on the financial performance of the Division is currently reduced.</td>
</tr>
<tr>
<td><strong>4. Loan Risk</strong></td>
<td>Adverse changes in the pricing environment and demand in natural uranium markets are leveled by the agreed pricing mechanism specified in the Division’s contracts on an inter-divisional basis. In the medium term, the influence of commodity risk on the financial performance remains significant.</td>
</tr>
<tr>
<td><strong>5. Commodity Risk (Uranium)</strong></td>
<td>Result: a reduction in the negative influence of pricing environment and the demand in natural uranium markets on the financial performance was achieved in 2018.</td>
</tr>
<tr>
<td><strong>6. Production Asset Loss Risk</strong></td>
<td>Dynamics: the risk dynamics are expected to remain unchanged, while an increase in quotations for uranium is possible in the case of the creation of a favorable environment.</td>
</tr>
<tr>
<td><strong>7. Industrial Safety Risk</strong></td>
<td>This risk is due to the following factors:</td>
</tr>
<tr>
<td><strong>8. Environmental Risk</strong></td>
<td>• Concerns of the residents of Krasnokamensk related to the prospects for the production activity of PJSC PMCU in accordance with the planned completion of mining at developed deposits;</td>
</tr>
<tr>
<td><strong>9. Change of Law Risk</strong></td>
<td>• Civil unrest against the development of the Dobrovolnoye uranium deposit in the Kurgan region.</td>
</tr>
<tr>
<td><strong>10. Reputational Risk (change in the perception of the reliability and attractiveness of the Division by interested parties)</strong></td>
<td>The following activities were performed to manage such risk:</td>
</tr>
<tr>
<td><strong>11. Staff Risk</strong></td>
<td>• Provision of interested parties (in order to change the public opinion) with the information about the plans and dates for the construction of new mines and the continuation of the activities of the mass media, including through the press service of the Government of the Trans-Baikal Territory, with the involvement of opinion leaders and the Governor of the Region;</td>
</tr>
<tr>
<td><strong>12. Occupational Safety Risk</strong></td>
<td>• Provision of the employees of PJSC PMCU and the residents of Krasnokamensk with the information about the schedule of works on the construction of the mine No. 6 on the relevant days and by using social networks;</td>
</tr>
<tr>
<td><strong>13. Social and Political Risk in Operation Regions</strong></td>
<td>• Meetings forming a positive public attitude towards the development of nuclear energy by increasing the information transparency through organizing the activities of information centers and providing the information about the activities of mining companies in the local mass media with the involvement of opinion leaders, including the results of the environmental monitoring, on a monthly basis;</td>
</tr>
<tr>
<td><strong>14. Investment Project Risk (Uranium)</strong></td>
<td>• Public hearings on the issue of mining with the participation of experts and scientists.</td>
</tr>
<tr>
<td><strong>15. New Investment Project Risk</strong></td>
<td>Result: Uranium projects are being supported by the state authorities at both the regional and federal levels. The relevant support for various development projects related to the development of new uranium deposits is ensured by the population of uranium cities and districts.</td>
</tr>
<tr>
<td><strong>16. Compliance Risks</strong></td>
<td>Performance of the activities concerning the implementation of the Development of the Anguryoye and Zhertvevoye Deposits project. The construction of the mine No. 6 is located in the Trans-Baikal Territory with the support of regional and federal authorities allowed to reduce all concerns of local residents and maintain social calmness in the region.</td>
</tr>
<tr>
<td><strong>Risk Dynamics</strong></td>
<td>Dynamics: the risk is decreased due to the awareness of interested parties about the prospects for the development of uranium production.</td>
</tr>
</tbody>
</table>

---

Fig. 12. Atomredmetzoloto Key Risk "Radar" for 2016-2018

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Table 3. Key Risks and Ways to Manage Them in 2018. Critical Risks Are Presented with a Score of 5 or More

<table>
<thead>
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<th>Risk Management Actions</th>
</tr>
</thead>
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</tr>
<tr>
<td><strong>Risk Dynamics</strong></td>
<td>Dynamics: the risk is decreased due to the awareness of interested parties about the prospects for the development of uranium production.</td>
</tr>
</tbody>
</table>
In accordance with the JSC Atomredmetzoloto Risk Management Policy, during the project initiation and implementation, a project risk analysis, an assessment of the project impact and potential consequences with the qualified expertise assistance are carried out. When significant risks are identified, measures are being developed to reduce them, up to a decision to abandon the project. During the state expert review, design and survey documentation for all projects implemented by the Company is subject to mandatory assessment for compliance with current legislation.

### 3.3. Internal Control System and Assets Protection

#### Internal control system

The Company internal control and audit function is implemented by the Internal Control Directorate (ICD), which reports directly to the Director General. The Directorate carries out its activities in accordance with the International Professional Standards for internal audit and is guided by the following principles:

- independence/objectivity;
- competence;
- professionalism.

For the ICD activity implementation, a Control Measure Plan for the year is formed, including information on the inspection periods and the number of days provided for each control measure.

#### Key performance indicators of ICD activities

- Conclusion of construction contracts with the contractors having a strong engineering potential, high quality services and successful experience in implementing similar projects,
- introduction of banking support procedures,
- Choice of large and reliable suppliers of equipment and materials,
- Strict and constant control over the quality of construction and installation works at all stages,
- Risk insurance.

**Result:** The efficiency of the Division's portfolio of uranium mining projects is at a consistently positive level.

**Implementation of projects concerning new non-uranium businesses is associated with greater uncertainty, therefore, when developing such projects, special attention shall be paid to the analysis of risks that can adjust the course of their implementation.**

**Result:** The key risks are monitored (assessment of their likelihood and exposure) and the relevant adjustments to the measures related to their management are taken during the promotion of the projects. The data of risk analysis are taken into account when choosing alternative solutions and making adjustments for successful implementation of the projects.

**Dynamics:** no changes are expected.

#### Safety management system

In the Mining Division, a set of measures is being implemented to protect assets, prevent and counter offenses of a corruption nature. To achieve these goals, an internal control system has been established, the procurement procedures have been modernized, counterparties are being checked and other safety measures are being taken.

##### Results of 2018:

- Preventive measures were taken to prevent corruption offenses and loss of assets. In this regard, measures were taken to identify personal interest and conflict of interest, including analytical processing and study of data on income and property obligations, personnel procedures, on work with receivables and payables. During the reporting year, the risks for all of the Company's divisions were assessed, also the business processes themselves (procurement and contractual activities, participation in the flagship project implementation (including the federal budget disbursements), charity, the sale of non-core assets, etc.) were assessed.
- Service checks were initiated on information about possible facts of asset loss, including those received via ROSATOM hotline. In some cases, the results of such inspections were transmitted to law enforcement agencies for their legal assessment.
- Work to improve the local regulatory framework in the field of corruption prevention is organized. New and updated existing local regulations aimed at the implementation of measures to prevent corruption are developed.
- The “Joint-Stock Company Atomredmetzoloto Anti-Corruption Plan for 2018 - 2020” has been developed (in order to increase the corruption prevention efficiency).
- An update of the JSC Atomredmetzoloto local regulatory framework in terms of the restricted access information protection was carried out taking into account the requirements of the Uniform Policy for Protection of Commercial and Official Secrets in the Nuclear Industry.

**Resource use efficiency during control actions**

The essence of this key performance indicator is to determine the ICD performance, based on the percentage of efficient control measures and checks with a “zero” result. Checks with a “0” result are checks without digitized violations and/or recommendations issued (drawn up in the Director General’s instructions).

To obtain data on the resource efficiency level, it is necessary to divide the number of checks without a result (“zero”) by the total number of checks in the plan and multiply by 100%.

**Results of 2018:**

- all the planned measures were taken to verify the financial and economic activities of the subsidiaries and the most risky processes;
- two RPS projects to improve the control measure efficiency were developed and implemented;

#### Table 4. Control measure dynamics in 2016-2018

<table>
<thead>
<tr>
<th>Item</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of control measures, including by type, pcs.</td>
<td>34</td>
<td>50</td>
<td>59</td>
</tr>
<tr>
<td>- control and auditing activities</td>
<td>6</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>- expert and analytical event</td>
<td>24</td>
<td>36</td>
<td>53</td>
</tr>
<tr>
<td>- internal audit</td>
<td>4</td>
<td>8</td>
<td>19</td>
</tr>
<tr>
<td>Number of detected deviations, pcs.</td>
<td>73</td>
<td>103</td>
<td>139</td>
</tr>
<tr>
<td>Number of corrective actions taken</td>
<td>111</td>
<td>90</td>
<td>145</td>
</tr>
<tr>
<td>Number of employees brought to disciplinary responsibility following the control measures</td>
<td>30</td>
<td>28</td>
<td>49</td>
</tr>
</tbody>
</table>

**Over 100 million RUB — total economic benefit for 2018 due to the asset protection activities of the divisions**
The coordinates of a unified “hotline” for prevention of corruption and theft in the nuclear industry:

ROSSATOM e-mail: 0707@rosatom.ru
tel.: +7 (800) 100-07-07 (multichannel, round the clock, free of charge from anywhere in the country)
Details on the ROSATOM website www.rosatom.ru
JSC Atomredmetzoloto Tel.: +7 (495) 508-88-08, Ext. 512
Details are on the JSC Atomredmetzoloto website www.armz.ru

Anti-corruption regulatory legal acts and local documents of JSC Atomredmetzoloto are presented on the Company’s corporate website http://www.armz.ru/programma-po-borbe-s-khishcheniyami

Ensuring physical protection of nuclear facilities

Under the heightened risks of a radical and extremist nature, a special role is given to ensuring the safety and anti-terrorist sustainability of the ARMZ Uranium Holding Co. enterprises. The integrated “Safety” strategic task solution allowed to increase the Holding Co. enterprises. The integrated “Safety” and anti-terrorist sustainability of the ARMZ Uranium Holding Co. in 2018, the effect extends to all the Holding Company subsidiaries. 100% of employees, including governing bodies are informed about the anti-corruption policies and methods.

Cases of unauthorized entry of unauthorized persons into the protected areas of the Holding Company nuclear facilities in 2018 are absent.

Following the measures taken, the physical protection state inspections, conducted in 2018 by state, law enforcement and departmental structures were successfully completed.

Information safety

Planned work is carried out to improve the Holding Company information safety, prevent and neutralize possible cyber attacks on the Holding Company information resources. Approximately 20 million RUB were invested in the project. The priority corporate project was implemented on time.

3.4. Procurement Management

The Company adheres to the principles of openness and transparency in procurement management. 99.9% of competitive procurement procedures are carried out on electronic platforms of LLC Fabrikant, JSC United Electronic Trading Platform and JSC Centre for Economic Development, which allows saving labour and financial resources.

In 2013, JSC Atomredmetzoloto fell under the effect of the Federal Law No. 223-ФЗ dated 18.07.2011 “On the procurement of goods, works, services by certain types of legal entities”. Therefore, the openness of procurement activities has increased; publication of the annual procurement plan, procurement procedures, data on the concluded contracts and their execution on the official website.

Every year since 2013, in order to develop a competitive environment, attract more suppliers, ensure informational openness and transparency of procurement activities, ARMZ Uranium Holding Co., together with the ANO ROSATOM Corporate Academy, conduct regional ATOMEX REGION forums in the operation areas.

Tab. 5. Holding Company Procurement Structure

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>The share of purchases made by organizing public open competitive procedures under the Uniform Industry Procurement Standard, %</td>
<td>99</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td>Amount of JSC Atomredmetzoloto purchases, million RUB</td>
<td>317</td>
<td>519</td>
<td>351</td>
</tr>
<tr>
<td>Total amount of the Holding Company purchases, million RUB</td>
<td>17,242</td>
<td>12,670</td>
<td>20,599</td>
</tr>
<tr>
<td>JSC Atomredmetzoloto savings, million RUB</td>
<td>5</td>
<td>6</td>
<td>9.6</td>
</tr>
<tr>
<td>Total Holding Company savings as a result of procurement procedures on an open competitive basis, million RUB</td>
<td>770</td>
<td>896</td>
<td>1,768</td>
</tr>
</tbody>
</table>

Increase in the purchase volume in comparison to 2017 was due to the start of Mine No. 6 construction at PJSC PIMCU.

Tab. 6. Procurement Structure by Cost Criterion, %

<table>
<thead>
<tr>
<th>Purchase amount</th>
<th>Purchase share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 million RUB</td>
<td>1.6</td>
</tr>
<tr>
<td>Up to 10 million RUB</td>
<td>10.6</td>
</tr>
<tr>
<td>10-50 million RUB</td>
<td>19.8</td>
</tr>
<tr>
<td>50-100 million RUB</td>
<td>15.6</td>
</tr>
<tr>
<td>Above 100 million RUB</td>
<td>52.4</td>
</tr>
</tbody>
</table>

The largest groups in terms of product/service purchases are:
- products and services purchased from nuclear enterprises;
- power supply.

The main groups of products/services among competitive procurement procedures:
- materials and equipment;
- construction and installation works;
- equipment repair and maintenance.

ARMZ Uranium Holding Co., in accordance with the ROSATOM procurement policy does not have the right to set preferences for suppliers on a territorial basis. Local suppliers participate in competitive procedures on a general basis, special approaches in work with local suppliers do not apply. The company does not keep special records of such supplier costs; the procurement budget for use in significant operation areas and for local suppliers has not been allocated.

Results of 2018:
- 1,265 competitive procurement procedures were conducted for the needs of ARMZ Uranium Holding Co. enterprises;
- total competitive procurement procedures were conducted to the amount of 14.2 billion RUB;
- the economic benefit (the difference between the initial purchase price and the winner’s bid cost) based on the competitive procurement procedure results was 1.77 billion rubles;
- in September of the reporting period, together with the ANO ROSATOM Corporate Academy, an annual regional forum ATOMEX REGION-2018 was organized in Inkustak.
Chapter 4

CAPITAL MANAGEMENT

RESULTS

4.1. Production Capital

4.1.1. Mineral Raw Materials Base Development

The JSC Atomredmetzoloto mineral resource base (MRB) of uranium is 520.7 ktonnes. In terms of its volume, the Holding Company ranks second among the largest uranium production companies in the world.

Tab. 7. ARMZ Uranium Holding Co. Russian Enterprise Reserves and Resources as of 31.12.2018, ktonnes*

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Reserves</th>
<th>R1 Resources</th>
<th>Total MRB</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJSC PIMCU</td>
<td>99.2</td>
<td>-</td>
<td>99.2</td>
</tr>
<tr>
<td>JSC &quot;Dalur&quot;</td>
<td>14.2</td>
<td>8.1</td>
<td>22.2</td>
</tr>
<tr>
<td>JSC Khiagda</td>
<td>36.1</td>
<td>1.4</td>
<td>37.4</td>
</tr>
<tr>
<td>JSC Elkon MMP</td>
<td>357.1</td>
<td>-</td>
<td>357.1</td>
</tr>
<tr>
<td>JSC UMC Sorone</td>
<td>4.6</td>
<td>-</td>
<td>4.6</td>
</tr>
<tr>
<td>Total:</td>
<td>511.2</td>
<td>9.5</td>
<td>520.7</td>
</tr>
</tbody>
</table>

*Due to the indicator rounding, the summary data in the lines and columns may not coincide

Geological exploration works in Russia

Tab. 8. Volumes of Exploration Drilling and Financing in 2018

<table>
<thead>
<tr>
<th>Work Types</th>
<th>Drilling volume, thousand linear metres</th>
<th>Financing Volume, million RUB</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first stage of geoenvironmental research as part of geological exploration at the Dobrovolnoye deposit (JSC Dalur)</td>
<td>-</td>
<td>5.7</td>
</tr>
<tr>
<td>Geological exploration work on the assessment of gold mineralization in the upper oxidized part of the Severnoe gold-uranium deposit (JSC Elkon MMP)</td>
<td>6.3</td>
<td>92.7</td>
</tr>
<tr>
<td>Total:</td>
<td>6.3</td>
<td>98.4</td>
</tr>
</tbody>
</table>

In 2018, geological exploration work was carried out at the Dobrovolnoye deposit (JSC Dalur, Kurgan region) and the Severnoe deposit (JSC Elkon MMP, Republic of Sakha (Yakutia)). The total investment in geological exploration work amounted to 98.4 million RUB.

2018 key events and performance:

- the area of license for the use of Khiagda deposit subsoil has been increased, allowing JSC Khiagda to engage in commercial development of the X-1 and X1.1 deposit reserves and the X1a and X-2 deposit resources;
- a positive expert opinion was received from FSI Rosgeolexpertiza on the Dobrovolnoye deposit geological exploration project;
- the first stage of geoenvironmental research as part of geological exploration at the Dobrovolnoye deposit was completed;
- geological exploration work on the assessment of gold mineralization in the upper oxidized part of the Severnoe gold-uranium deposit were started.
4.1.2. Production Capital Management

### PJSC PIMCU  Uranium production

**Tab. 9. Uranium Production and Reserves in 2016–2018**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production Volume, tonnes</th>
<th>Uranium reserves, ktonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>1,873</td>
<td>591.7</td>
</tr>
<tr>
<td>2017</td>
<td>1,631</td>
<td>592.0</td>
</tr>
<tr>
<td>2018</td>
<td>1,456</td>
<td>590.0</td>
</tr>
</tbody>
</table>

**Volume of production, tonnes**

<table>
<thead>
<tr>
<th>Year</th>
<th>2016 — 1,873</th>
<th>2017 — 1,631</th>
<th>2018 — 1,456</th>
</tr>
</thead>
</table>

**Uranium reserves, ktonnes**

<table>
<thead>
<tr>
<th>Year</th>
<th>2016 — 102.5</th>
<th>2017 — 100.8</th>
<th>2018 — 99.2</th>
</tr>
</thead>
</table>

#### Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of 1,450 tonnes of uranium.</td>
<td>The 2018 uranium production programme has been completed in full, 1,456 tonnes of uranium have been produced.</td>
</tr>
<tr>
<td>Celebration of the PJSC PIMCU 50th anniversary.</td>
<td>Completed. The company celebrated its 50th anniversary.</td>
</tr>
<tr>
<td>Commissioning of the Company’s own granular explosive production plant.</td>
<td>Completed. PJSC PIMCU fully switched to using its own explosives in underground mining.</td>
</tr>
<tr>
<td>Commissioning of the Self-Supporting Association Srednee reconstruction 2nd stage.</td>
<td>Completed. The SSA Srednee 2nd stage was commissioned for commercial operation.</td>
</tr>
<tr>
<td>Commissioning of the Urutsky open-pit mine drainage canal.</td>
<td>Completed. The drainage channel construction is completed.</td>
</tr>
</tbody>
</table>
| Start of the Mine No. 6 construction.                                                             | Completed. Mine No. 6 infrastructure facilities are under construction: • 100% federal budget fund disbursement in the amount of 999 million RUB was provided;  
  • a contracting programme has been implemented for the supply of works, services and equipment;  
  • the infrastructure facility construction programme for 2018 is implemented;  
  • the exploration and production mine (EPM) shaft survey was completed in order to switch to mining and capital operations. As part of pilot works, the processing of yellow cake produced by JSC Rhiagla into uranium oxide concentrate is started. |

Established in 1968, the Priargunsky Industrial Mining and Chemical Union (PJSC PIMCU) is now the largest uranium production enterprise in Russia. In 2018, the company celebrated its 50th anniversary.

### JSC Dalur  Uranium production

**Tab. 10. Uranium Production and Reserves in 2016–2018**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production Volume, tonnes</th>
<th>Uranium Reserves, ktonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>591.7</td>
<td>7.7</td>
</tr>
<tr>
<td>2017</td>
<td>592.0</td>
<td>14.8*</td>
</tr>
<tr>
<td>2018</td>
<td>590.0</td>
<td>14.2</td>
</tr>
</tbody>
</table>

* due to the Dobrovolnoye deposit licensing

#### Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of 591 tonnes of uranium.</td>
<td>Completed. The 2018 uranium production programme has been completed in full.</td>
</tr>
<tr>
<td>Engineering surveys and development of design documentation for L-MU-2 and the railroad base at the Khokhlovskoye deposit.</td>
<td>Completed. An engineering survey report is prepared. Design documentation for the Khokhlovskoye deposit railroad base has been developed.</td>
</tr>
<tr>
<td>Engineering surveys and development of design documentation for the Dobrovolskoye deposit PP.</td>
<td>Completed. Design and exploration work at the Dobrovolskoye deposit are carried out.</td>
</tr>
<tr>
<td>Renewal of the license for the right to use the Dalmatovskoye deposit subsol.</td>
<td>Completed. The license for the right to use the Dalmatovskoye deposit subsol has been extended to 31.12.2027.</td>
</tr>
<tr>
<td>The aluminum-scandium ligature pilot production facility construction has begun.</td>
<td>Completed. Due to the changing market conditions, the pilot production facility has been reoriented to the scandium oxide production and quality improvement; a “clean room” has been created, which made it possible to raise the purity of the resulting scandium oxide to 99.9% and higher.</td>
</tr>
</tbody>
</table>

Results of 2018 and plans for the coming years:

- federal budget subsidy for the mine infrastructure facility construction was received and fully used;
- the access road construction was completed;
- the main stage of the main step-down substation site construction was completed;
- the mine water treatment plant site (10 buildings and structures, a pipe rack) construction has begun.

The project implementation will fully compensate for the PJSC PIMCU resource base depletion, support domestic natural uranium production, ensuring the ROSSATOM need in the long term, as well as save jobs and production infrastructure in the single-industry town of Krasnokamensk, Trans-Baikal Territory.

#### MINE NO. 6 PROJECT

**The bottom line**

Is the construction of the uranium production Mine No. 6 at PJSC PIMCU (Krasnokamensk, Trans-Baikal Territory) with a total capacity of 850 ktonnes of ore. The project is included in the list of activities for the social and economic development of the Trans-Baikal Territory to be implemented in 2018–2025 as a priority, approved by the decree of the Government of the Russian Federation No. 849-p dated 03.05.2018.

**Goals, objectives**

- ensuring strategic independence of Russia, fulfillment of the state order, ensuring national security;
- meeting the ROSSATOM needs for natural uranium by replenishing the existing uranium mineral resource base after withdrawal;
- maintaining the PJSC PIMCU industrial infrastructure, the technical personnel competences, the Krasnokamensk social stability.
The Mining Division continues the active development of uranium production using the most efficient in-situ leaching method with the JSC Khiagda modern uranium production enterprise. The share of uranium produced by the in-situ leaching method in 2018 increased by 6 percentage points and amounted to 50%.

### JSC Elkon Mining and Metallurgical Plant (JSC Elkon MMP)

JSC Elkon MMP is engaged in carrying out geophysical work, exploration, mining and processing of uranium ores. By the ROSATOM decision, the "sleep" mode was extended to December 2019.

### LLC United Uranium Plants (hereinafter – UUP)

Results of 2018

In accordance with the decisions made by the ROSATOM, LLC United Uranium Plants undergoes a voluntary liquidation procedure. A commercial directorate established in ARMZ. Contracts with customers, as well as contracts related to the sale of uranium raw materials to customers, were transferred to ARMZ.

### Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of 827 tonnes of uranium (+133 tonnes to the data of 2017).</td>
<td>Completed. The 2018 uranium production programme has been completed in full.</td>
</tr>
<tr>
<td>Istochnaya deposit commissioning</td>
<td>Completed. Permission was obtained for the Istochnaya deposit ore in-situ leaching site commissioning.</td>
</tr>
<tr>
<td>Beginning of the Kolichkan deposit design documentation development.</td>
<td>Completed. Preparation work for the Khiagda ore field Kolichkan and Dybyryn deposit development are in progress, engineering surveys have been carried out in full.</td>
</tr>
<tr>
<td>Ensuring the development of competencies and the introduction of new methods for repair and recovery activities (RRA)</td>
<td>Completed. Additional equipment was purchased and commissioned to improve the efficiency of repair and recovery activities. New technologies and methods for carrying out repair and recovery activities and restoring the process well productivity are being developed.</td>
</tr>
<tr>
<td>Commissioning of Dzhilinda 110/10 kV substation (SSL)</td>
<td>Completed. Equipment construction, installation and commissioning are performed in full.</td>
</tr>
<tr>
<td>The Smart Mine project implementation.</td>
<td>Completed. The Smart Mine pilot project at the Istochnaya deposit is completed. It is a hardware and software complex that allows to maximally automate the process operation management at production sites, provide automated acquisition, storage and processing of geotechnological indicators, develop recommendations for changing the well operating modes to achieve maximum production and efficiency indicators. The project is commissioned, the pilot block operation is being monitored.</td>
</tr>
</tbody>
</table>

### JSC RUSBurmash

JSC RUSBurmash is a comprehensive service company that provides drilling, construction and geological exploration on behalf of JSC Atomredmetzoloto, as well as the construction of all types of wells in solid mineral deposits.

In 2018, JSC RUSBurmash carried out drilling, construction and geological exploration work for the Holding Company’s uranium production enterprises: JSC Dalur, JSC Khiagda and JSC PIMCU, as well as for external customers, such as JSC FCSHT SNPO Eleron, JSC GIDEK, LLC EuroChem-Volgakalil, LLC Mangazeya Zoloto, etc.

### Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance of 100% of the drilling operation volume:</td>
<td>Completed in the following volumes:</td>
</tr>
<tr>
<td>• PJSC PIMCU - 268.816 thousand linear metres;</td>
<td>• PJSC PIMCU - actual 230.599 thousand linear metres;</td>
</tr>
<tr>
<td>• JSC Khiagda - 49.158 thousand linear metres;</td>
<td>• JSC Khiagda - actual 53.186 thousand linear metres;</td>
</tr>
<tr>
<td>• JSC Dalur - 127.663 thousand linear metres.</td>
<td>• JSC Dalur - actual 128.068 thousand linear metres.</td>
</tr>
<tr>
<td>Carrying out the new process well design implementation programme at JSC Khiagda and JSC Dalur.</td>
<td>Completed. Since 2018, all newly constructed wells have an improved design using casing pipes made of unplasticized polyvinyl chloride (uPVC).</td>
</tr>
<tr>
<td>Introduction of the Ready Site concept into the practice of deploying and eliminating the uranium deposit mining blocks using the in-situ leaching method.</td>
<td>Completed. Work on the Ready Site project at the Verhshinsky deposit JSC Khiagda is completed.</td>
</tr>
<tr>
<td>100% completion of exploration, drilling and construction work at JSC Khiagda and JSC Dalur.</td>
<td>Completed.</td>
</tr>
</tbody>
</table>

### JSC VNIIPromtechnologii

JSC VNIIPromtechnologii is the ARMZ Uranium Holding Co. engineering centre. The main activities: implementation of mining projects in the EPCM format, environmental consulting, modernization of existing industries.

### Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further implementation of measures to reach the break-even through the orientation to the external market (outside the Holding Company and industry), as well as through the JSC VNIIPromtechnologii inventory of competencies, optimization of production processes and increase in the institute labour productivity.</td>
<td>• In progress. In 2018, the key indicators of the enterprise financial recovery were approved in order to reach the break-even.</td>
</tr>
<tr>
<td>• Audit of current expenses and optimized production costs was performed.</td>
<td>• A list of activities has been developed and a competence rebranding has been carried out in order to reorient to external customers.</td>
</tr>
<tr>
<td>• Production increased 1.5 times per person in comparison to the 2017 indicators.</td>
<td>• Production increased 1.5 times per person in comparison to the 2017 indicators.</td>
</tr>
<tr>
<td>An increase in the portfolio of orders and the development of a strategy for entering the external market in order to increase revenue from external counterparties.</td>
<td>• Completed. The book of orders increased 1.5 times, taking into account the external market.</td>
</tr>
<tr>
<td>Complete the transition to 3D design, implement the occupational risk management system, create a chemical analysis laboratory and a laboratory to assay the resin quality.</td>
<td>• A strategy for entering the external market was developed.</td>
</tr>
<tr>
<td>Completed. A radiation safety laboratory has been organized. Development of BIM information modeling technologies continued.</td>
<td>Completed.</td>
</tr>
</tbody>
</table>
FOMC: 
Pavllovskoye project

**The Target**

The creation of a cost-effective industrial complex based on the Pavlovskoye lead-zinc deposit, which includes a mine and an enrichment plant. The project is included in the "Social and Economic Development of the Arctic Zone of the Russian Federation" state programme, approved by the Government of the Russian Federation No. 366 dated 21.04.2014 (as amended by the Government of the Russian Federation No. 1064 dated 31.08.2017).

**Goals, Objectives:**

- Creation of the mining industrial complex on the Novaya Zemlya archipelago for the mining and processing of the Pavlovskoye deposit lead-zinc ores.
- Improve the production processes of the mining and processing works and the port complex construction zone engineering survey results were sent to the Federal State Expertise Center of Russia.
- Design and estimate documentation has been developed for the mining and processing works and the port complex.
- The project to develop the Pavlovskoye deposit on Novaya Zemlya received the Arkhangelsk region priority investment project status.

**Results of 2018 and plans for the coming years:**

- Engineering survey at the Pavlovskoye deposit completed. Due to the change of legislation in 2018, it is planned to add an item on land reclamation to the developed design documentation. In 2019, a positive conclusion of the state examination is expected.
- Work with potential strategic investors and partners continues, following which ROSATOM is expected to be allowed to start financing the enterprise construction.
- Due to the change of legislation in 2018, it is planned to add an item on land reclamation to the developed design documentation. In 2019, a positive conclusion of the state examination is expected.
- Important project implementation to improve the environment.
- The project implementation will have a positive impact on the Arkhangelsk region social and economic indicators through the creation of infrastructure, which is a significant step in the Novaya Zemlya archipelago and the Northern Sea Route development, and also significantly expand the Arctic zone resource base to meet the needs of the Russian Federation.
- The project implementation will allow the business diversification and the increase in the share of ROSATOM participation in international markets.

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LLC ARMZ Service

LLC ARMZ Service is an authorized body for organizing the procurement procedures of ARMZ Uranium Holding Co. enterprises.

**Plan Implementation in 2018**

**Plan announced in the 2017 report**

- Further provision of procurement procedure organizer services to Holding Company enterprises.
- Continuation of project activities as part of the programme for development of new ARMZ Uranium Holding Co. business areas.

**Results**

- Completed: 533 procurement procedures were carried out for the needs of the Holding Company enterprises. The economic benefit of price reduction during competitive procurement procedures amounted to 429.7 million RUB (4.8%) of the budget prices of ARMZ Uranium Holding Co. enterprises.
- Completed: pyramid processing into ferrosilicon, Pilot tests in the repair and mechanical plant (RMP) foundry shop were continued, which was followed by the decision to continue the project; production of molybdenum products at PJSC PIMCU idle production facilities. The production technology for molybdenum and cesium products has been tested.
- Work was also carried out to sell coal and expand its sales market. In 2018, all the coal mined for commercial sale was sold in the amount of 1.4 million tonnes, which enabled PJSC PIMCU to profit from the sale of coal in the amount of 254 million RUB. The main efforts are focused on the selection of buyers for the stable coal sale throughout the year.

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4.1.3. Business Diversification

4.1.3.1. Development of New Businesses

The Mining Division is the centre of responsibility for providing ROSATOM and the Russian Federation with uranium and other strategic metals that are used in the most breakthrough areas of the modern economy: additive technologies, robotics, energy storages, high-temperature and renewable energy, etc. The purpose for ARMZ diversification is the implementation of business initiatives as part of horizontal and vertical diversification processes, the result of which is the commercially beneficial provision of primarily Russian technological development sectors with competitive raw material resources.

**Growth point**

The development of new ARMZ businesses is based on the national company status that guarantees the satisfaction of the industry needs for raw materials.

The JSC Atomredmetzoloto business growth implies development through the implementation of diversification projects in the following mining industries:
- production of energy minerals;
- production and processing of ferrous and alloying metals;
- production and processing of non-ferrous metal ores;
- production of natural industrial raw materials and raw materials for the building material production.

To accomplish these tasks, JSC Atomredmetzoloto systematically studies the possibility for developing other deposits, including geographically close to those already under development. In particular, ARMZ is working on projects for the solid mineral production (gold, antimony, titanium, zinc, nickel) in the Trans-Baikal Territory among others. This will expand the list of produced metals and their compounds, increase the depth of the produced raw material processing (production of metals and alloys, and other high-tech products in the future).

As part of these activities, JSC Atomredmetzoloto implements several projects in various regions of Russia.
4.1.3.2. Project “Production of Associated Scandium at JSC Dalur”

The project is the technology development, production facility design and construction for the associated extraction of scandium from productive solutions obtained for the uranium production, based on the existing infrastructure, formed human resources and technological competencies of JSC Dalur.

Goal — the project implementation increases the depth of the available raw material processing and ensures the production of products in demand in the form of fluoride and scandium oxide and an aluminium-scandium ligature with high added value at a moderate capital expenditures.

In 2017, JSC Dalur began production of high-purity scandium oxide.

In 2018, a “clean room” was created – a complex of equipment, which made it possible to increase the purity of scandium oxide to 99.9% and higher. To organize the aluminium-scandium ligature production, necessary measures have been taken: design documentation has been developed and passed independent expert review, a platform has been prepared for the organization of production, the necessary preparatory work has been carried out and some equipment has been purchased. These types of products are the raw material basis in the ROSATOM and outside for the development of production facilities for the scandium-based upstream operation products:

- production of ultrapure metallic scandium;
- production of aluminium-scandium powders for 3D printing;
- production of ceramics for electrochemical current generators using solid oxide fuel cell technology (SOFC);
- production of special alloys and ceramics.

Over the past year, JSC Atomredmetzoloto and JSC Dalur increased efforts to promote scandium products on the global and Russian markets in preparation for the launch of its production on an industrial scale, and also improved production technology in order to reduce costs and improve the product quality. Contacts and relations were established with interested companies in the energy, metallurgy, aerospace and other industries both in the Russian Federation and abroad, and the requirements for the quality and technological properties of scandium products were specified in order to prepare for its market sale.

Fig. 14. JSC Dalur Pilot Plant (Dalmatovsky deposit Central site)
4.1.3.3. Project “Processing of Pyrite Cinders at PJSC PIMCU”

The project – in order to increase the existing man-made material processing depth in the PJSC PIMCU central research laboratory pilot hydrometallurgical shop, pilot works are continuing on the pyrite cinder processing and obtaining finished products in the form of concentrates of precious and non-ferrous metals, ferroalloys and high-purity iron, pigments and coagulants.

Project goals:
- increase in the man-made raw material processing depth in the amount of 4.5 million tonnes of pyrite cinders;
- revenue diversification;
- solution of environmental problem;
- creation of new jobs in PJSC PIMCU.

Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Designing the gold production industrial plant.</td>
<td>Completed. The initial design data has been adjusted to represent the technology parameter refinement.</td>
</tr>
<tr>
<td>Development of a programme and process regulations for the ferroalloy production from pyrite cinder gold recovery products.</td>
<td>Completed. A pilot works (PW) programme for the ferroalloy production has been developed, process regulations (methods) for PW conducting have been prepared.</td>
</tr>
<tr>
<td>Organization of ferroalloy pilot production at the PJSC PIMCU industrial site.</td>
<td>Completed. On the basis of the mechanical repair plant foundry shop, a ferroalloy pilot production site was prepared.</td>
</tr>
<tr>
<td>Ferroalloy pilot production.</td>
<td>Completed. In August 2018, ferrosilicon pilot production began. First samples were obtained. The sample quality correspond to the FS-65 brand.</td>
</tr>
<tr>
<td>Creation of a joint venture of PJSC PIMCU and a partner in the ferroalloy production.</td>
<td>Negotiations are underway to choose the form of partnerships.</td>
</tr>
<tr>
<td>Starting the ferroalloy production plant design.</td>
<td>Postponed to the end of the pilot work and the source data refinement.</td>
</tr>
<tr>
<td>Development of the iron coagulant semi-industrial testing procedure.</td>
<td>The decision to conduct semi-industrial tests was postponed until all the declared equipment required for experimental work was received.</td>
</tr>
</tbody>
</table>

4.1.3.4. Project “Establishment of Lithium Carbonate Production based on Zavitinsk Deposit Ores”

The project - is the creation of lithium carbonate production.

Project goals:
- ensuring the strategic raw material import substitution and the JSC TVEL needs for the energy storage production facility opening;
- creation of new jobs in PJSC PIMCU.

Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start of design work at the first stage of production (capacity 0.575 million tonnes/year)</td>
<td>Completed. The feasibility for JSC Atomredmetzoloto to become a Tugansk Ore Mining and Processing Enterprise ilmenite shareholder has been approved by the ROSATOM</td>
</tr>
</tbody>
</table>

4.1.3.5. Project “Gold Mining Organization”

The project is the creation of an industrial complex for the extraction and processing of gold-bearing ores with a ligature gold ingot production on the basis of the Severnoe deposit.

Project goals:
- increase the Company’s own raw material base processing depth;
- business growth;
- revenue diversification;
- development of the Elkon gold-uranium ore cluster.

Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration of exploration ditches and trenches.</td>
<td>Completed. Furrow and core samples were taken for laboratory tests to determine the content and gold reserve calculation.</td>
</tr>
<tr>
<td>Drilling of exploration and hydrogeological wells.</td>
<td>Completed. Data on geology, hydrogeology and geomechanics were obtained for the preparation of a temporary condition FS, preparation and approval of a geological report with the reserve calculation.</td>
</tr>
</tbody>
</table>

4.1.3.6. Project “Organization of Titanium and Zirconium Concentrate Production at Tugansk Deposit”

The project implementation is aimed at import substitution of titanium-zirconium concentrate supplies to the territory of the Russian Federation, particularly for consumers included in the ROSATOM and Rostec.

Plan Implementation in 2018

<table>
<thead>
<tr>
<th>Plans announced in the 2017 report</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of the project preliminary feasibility study.</td>
<td>Completed. The project technical and economic efficiency parameters were obtained, the requirements for the infrastructure necessary for created production facilities were determined, a preliminary implementation plan was developed.</td>
</tr>
<tr>
<td>Corporate model formation, obtaining the ROSATOM approval and the joint venture - the project operator - creation.</td>
<td>In progress. The project performance indicators are being optimized as part of the preliminary feasibility study (FS) development.</td>
</tr>
</tbody>
</table>
4.1.3.7. Project “Load-Haul-Dump Machines for Underground Mining Operations”

The project is the organization and development of load-haul-dump (LHD) domestic production at the PJSC PIMCU repair and mechanical plant facilities.

Project goals:
- creation of domestic production of battery and diesel load-haul-dump machines.
- Factory tests of the electric load-haul-dump machine PD-2EE for underground mining are completed. The machine has improved technical characteristics:
  - electric power drive is applied instead of hydromechanical transmission;
  - there is an automatic control system for hydraulic units integrated into one information channel with a traction electric drive control system;
- a device for remote monitoring of equipment condition is installed. The use of these technical solutions has reduced the power consumption by up to 30%.
- Additionally, modern achievements in the field of ergonomics are applied, which ensures comfortable work of the machine operator.
- The machine design is convenient for maintenance and repair, and the layout of all the assemblies allows to later reequip the machine for using lithium-ion batteries as an energy source.

4.1.3.8. Project “Zirconium”

The project is the development of the alluvial Lukoyanovsky titanium-zirconium deposit, which will allow not only to close the current demand for raw materials inside the ROSATOM, but also to receive revenue from foreign customers. Currently, there are no enterprises in the Russian Federation that develop titanium-zircon placers in industrial volumes.

![Image: Carrying Out Pilot Industrial Works on Hydraulic Borehole Mining](image)

Fig. 17. Carrying Out Pilot Industrial Works on Hydraulic Borehole Mining

4.1.4. ROSATOM Production System. Compliance with Product Quality Requirements

Results of 2018:
- due to the implementation of technological solutions, optimization of longwall face extraction processes at PJSC PIMCU, an additional 1,475 tonnes of ore were mined during the implementation of the “Optimization of longwall face extraction during the underground Mine No. 8 reservoir deposit development” project;
- by changing the scheme for rock mass haul-up to the dispensing trunk, organizing a car exchange point on the 5th horizon and a number of technological solutions, it was possible to reduce the lead time (LT) from 120 to 50 minutes, increase the trunk productivity (from 380 cars/day to 568 cars/day) during the implementation of the “Organization of the underground Mine No. 1 dispensing trunk rhythmic operation” project;
- due to the implementation of technological solutions, process optimization during the Ready Site project implementation, JSC RUSBURMASH achieved an economic benefit in the amount of 23 million RUB;
- due to the replication of the of in JSC Dalur work results under the project “Reduction of the lead time at the reserve opening and preparation” to the central production site (CPS) and Sredne-Uksyansk deposit, an economic benefit of 14 million rubles was achieved;
- due to the continuation of work in JSC Dalur on the project “Replacement of ammonium salt with anhydrous ammonia during the commodity desorbate deposition”, an economic benefit of 17 million RUB was achieved.

4.1.4.3. ROSATOM Production System. Compliance with Product Quality Requirements

At the end of 2018

<table>
<thead>
<tr>
<th>Type</th>
<th>People Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>were involved in the implementation of various RPS programmes</td>
<td>900</td>
</tr>
<tr>
<td>were recognized as the RPS leaders</td>
<td>31</td>
</tr>
<tr>
<td>have been trained in the RPS tools and procedures</td>
<td>920</td>
</tr>
</tbody>
</table>

Compliance with product quality requirements


In 2018, there were no complaints about the finished products of the mining enterprises PJSC PIMCU, JSC Dalur and JSC Khiagda from product consumers, all manufactured product batches met the specifications.

For many years of conscientious work, significant success in professional activities, a great personal contribution to the nuclear industry development and due to the 10th anniversary of the ROSATOM Production System, 19 people were awarded distinctions, gratitude from ROSATOM and the RPS Development Director of ROSATOM.

Comprehensive Energy Saving and Efficiency Improvement Programme

For more details on the implementation of the Energy Saving and Efficiency Programme, see the JSC Atomredmetzoloto annual report for 2016 and for 2017.

Energy Saving and Efficiency Programme implementation results in 2018

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>Electric energy</th>
<th>Motor gasoline*</th>
<th>Diesel fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSC Atomredmetzoloto</td>
<td>12.13</td>
<td>4.624</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>0.0</td>
<td>2,772</td>
<td>0.0</td>
</tr>
</tbody>
</table>

During 2018, JSC Atomredmetzoloto spent 61,600 litres of AI-95 gasoline (with an average cost of 45 RUB/litre - 2.772 million RUB). Other types of energy resources (coal, fuel oil, natural gas) are not used by the Company. The Company office is located on the rented area. Under the lease agreement, electricity supply is included in the list of utilities and is paid monthly on the separate account basis. In the reporting period, 904,071 kWh of electricity was consumed for a total of 4,624 million RUB.
Results of 2018:
In the field of incentive system implementation:
- Inclusion in KPIs of top managers and chief specialists, technologists, mechanics, etc. the "energy saving" indicator with a share of at least 10% - for "non-energy sector" and 20% - for "energy sector".

In the field of energy saving and efficiency:

PJSC PIMCU:
- further implementation of measures to reduce electricity and power consumption on the wholesale market during peak hours in the power system of the Trans-Baikal Territory;
- further implementation of measures to reduce the power purchase cost;
- daily submission of the electricity consumption forecast for the day ahead, control over the equipment operation forecast performance and balancing in accordance with the forecast;
- reduction of electricity consumption for heating fire tanks in winter;
- quantitative adjustment of the coolant in the input nodes;
- optimization - reducing the length of the compressed air network surface pipelines.

JSC Dalur:
- further partial replacement of low-efficiency light sources with LED lights;
- further acquisition of submersible pump control stations with variable frequency drives;
- switching of switchgear and control gear (SWCG) relay protection at Rudnya SS to digital technologies.

JSC Khiaoga:
- further lighting system reconstruction;
- preparation of a project for the reconstruction of production site supply and exhaust ventilation systems;
- acquisition of submersible pump control stations with variable frequency drives;
- creation of a dispatching system and accounting of consumed energy resources with the expansion of an automated information and measurement system for technical electric power accounting (AIIS TUE) – the first stage has been completed.

Tab. 13. Energy Savings Compared to the 2015 Base Year in Comparable Conditions for 2016–2018, million RUB, %

<table>
<thead>
<tr>
<th>Enterprise</th>
<th>2015</th>
<th>%</th>
<th>2016 (base 2015)</th>
<th>%</th>
<th>2017 (base 2015)</th>
<th>%</th>
<th>2018 (base 2015)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJSC PIMCU</td>
<td>68,985</td>
<td>9.5</td>
<td>210,278.58</td>
<td>14.45</td>
<td>201,659</td>
<td>13.85</td>
<td>150,788.87</td>
<td>10.36</td>
</tr>
<tr>
<td>JSC Dalur</td>
<td>9,232</td>
<td>14</td>
<td>1,442.72</td>
<td>0.82</td>
<td>2,128</td>
<td>1.20</td>
<td>3,424.92</td>
<td>1.94</td>
</tr>
<tr>
<td>JSC Khiaoga</td>
<td>7,525</td>
<td>24.9</td>
<td>16,385.14</td>
<td>10.63</td>
<td>4,324.8</td>
<td>2.80</td>
<td>8,106</td>
<td>5.26</td>
</tr>
</tbody>
</table>

4.2.2. Financial Management Performance


<table>
<thead>
<tr>
<th>Indicator name</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue from sales</td>
<td>22,182</td>
<td>17,769</td>
<td>18,495</td>
</tr>
<tr>
<td>Profitability of sold products</td>
<td>-16,349**</td>
<td>-15,487**</td>
<td>-15,403**</td>
</tr>
<tr>
<td>Net profit (loss)</td>
<td>8,734**</td>
<td>2,272**</td>
<td>3,092**</td>
</tr>
<tr>
<td>Selling costs</td>
<td>-383</td>
<td>-423</td>
<td>-655</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>-2,729</td>
<td>-2,720</td>
<td>-2,826</td>
</tr>
<tr>
<td>Interest receivable</td>
<td>426</td>
<td>248</td>
<td>222</td>
</tr>
<tr>
<td>Interest payable</td>
<td>-911</td>
<td>-2,116</td>
<td>666</td>
</tr>
<tr>
<td>Other income and expenses</td>
<td>930</td>
<td>-8,809</td>
<td>-1,298</td>
</tr>
<tr>
<td>Profit (loss) before income tax</td>
<td>5,162</td>
<td>-7,660</td>
<td>-3,438</td>
</tr>
<tr>
<td>Income Tax</td>
<td>-557</td>
<td>-226</td>
<td>-671</td>
</tr>
<tr>
<td>Net income (loss)</td>
<td>4,605</td>
<td>-7,876</td>
<td>-4,104</td>
</tr>
</tbody>
</table>

The key impact on the Division indicators had an increase in the sale price of uranium, which compensated for the planned decline in uranium sales and ensured an increase in gross profit. The enterprises producing uranium using the in-situ leaching method have achieved a reduction in the specific cash cost of production of 1 kg of uranium by 5%. The dynamics of management expenses are kept at a level below inflation.

4.2. Financial Capital

4.2.1. Financial Management

Results of 2018:
- the Holding Company’s loan portfolio reduced (as a result of successful equity management) to zero;
- the positive balance (profit) on interest income and expenses is preserved (due to the effective management of the Holding Company working and borrowed capital);
- the federal budget subsidy in the amount of 0.96 billion RUB, aimed at the construction of the mine infrastructural facilities, as part of the investment project "Development of the Argun and Zherlovoye deposits. Construction of PKSC PIMCU Mine No. 6 in Trans-Baikal Territory" is received and used in full.

Financial aspects, as well as other risks and opportunities for the organization to operate associated with climate change, are not assessed at JSC Atomredmetzoloto

The negative balance on other incomes and expenses and the net loss are mainly due to the depreciation of financial investments (mainly in foreign assets) due to the revision of the Mantra Resources Limited production programme and the change in the price forecast for uranium.

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Financial aspects, as well as other risks and opportunities for the organization to operate associated with climate change, are not assessed at JSC Atomredmetzoloto

The key impact on the Division indicators had an increase in the sale price of uranium, which compensated for the planned decline in uranium sales and ensured an increase in gross profit. The enterprises producing uranium using the in-situ leaching method have achieved a reduction in the specific cash cost of production of 1 kg of uranium by 5%. The dynamics of management expenses are kept at a level below inflation.

Revenue increased by +0.7 billion RUB, including:
- +1.7 billion RUB - increase in the natural uranium selling price;
- -1.0 billion RUB - decline in sales of uranium and non-uranium products.

The increase in selling expenses was due to a change in the base of coal supply to key buyers with a simultaneous increase in revenue to compensate these costs.

For details on the principles of preparing financial statements, see JSC Atomredmetzoloto annual report for 2017.
The Holding Company investment activity is aimed at achieving the ROStATOM and the Mining Division strategic goals. Investments in the development and maintenance of existing uranium production enterprises amounted to 4.7 billion RUB and were aimed at: construction and installation work at production, infrastructure and energy facilities; production facility design; carrying out main development and mine preparation work; production modernization and technical re-equipment; information and technology support; design work, R&D; security; acquisition of production and drilling equipment.

### Non-uranium projects

Investments at the end of 2018 in the form of placement Holding Company stocks, as well as short-term financial Company current assets, formed by the growth in the performance is due to the increase in the Holding Company as a financially sustainable company that is able to respond to its obligations in a timely manner. Significant improvement in financial company that is able to respond to its obligations in a timely manner.

#### Tab. 15. Consolidated Report on Financial Position of JSC Atomredmetzoloto and Russian companies in the area of its Management and Consolidation, million RUB

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed assets</td>
<td>131,091</td>
<td>127,180</td>
<td>140,461</td>
</tr>
<tr>
<td>Intangible assets and R&amp;D</td>
<td>6,468</td>
<td>6,432</td>
<td>6,540</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>33,132</td>
<td>32,742</td>
<td>32,999</td>
</tr>
<tr>
<td>Long-term financial investments</td>
<td>86,812</td>
<td>83,111</td>
<td>95,821</td>
</tr>
<tr>
<td>Other non-current Assets</td>
<td>4,678</td>
<td>4,895</td>
<td>5,101</td>
</tr>
<tr>
<td>Reserves</td>
<td>4,357</td>
<td>4,785</td>
<td>5,052</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>2,453</td>
<td>3,255</td>
<td>3,580</td>
</tr>
<tr>
<td>Financial investments</td>
<td>495</td>
<td>0</td>
<td>3,901</td>
</tr>
<tr>
<td>Cash</td>
<td>2,833</td>
<td>2,826</td>
<td>3,052</td>
</tr>
<tr>
<td>Other Current Assets</td>
<td>180</td>
<td>532</td>
<td>232</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td>141,444</td>
<td>136,580</td>
<td>154,745</td>
</tr>
</tbody>
</table>

#### Tab. 16. Dynamics of Key Financial Indicators of JSC Atomredmetzoloto for 2016-2018

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>2016</th>
<th>2017</th>
<th>2018 Change 2018/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of equity in assets</td>
<td>50%</td>
<td>44%</td>
<td>2%</td>
</tr>
<tr>
<td>Current liquidity ratio</td>
<td>1.7</td>
<td>1</td>
<td>+1.7</td>
</tr>
<tr>
<td>Quick ratio</td>
<td>1.0</td>
<td>1.2</td>
<td>+0.2</td>
</tr>
<tr>
<td>Profitability of sales, %</td>
<td>28.0%</td>
<td>3%</td>
<td>+25%</td>
</tr>
</tbody>
</table>

#### Table 15. Consolidated Report on Financial Position of JSC Atomredmetzoloto and Russian companies in the area of its Management and Consolidation, million RUB

| Fixed assets | 131,091 | 127,180 | 140,461 |
| Intangible assets and R&D | 6,468 | 6,432 | 6,540 |
| Fixed assets | 33,132 | 32,742 | 32,999 |
| Long-term financial investments | 86,812 | 83,111 | 95,821 |
| Other non-current Assets | 4,678 | 4,895 | 5,101 |
| Reserves | 4,393 | 2,787 | 1,506 |
| Accounts receivable | 2,453 | 3,255 | 3,580 |
| Financial investments | 495 | 0 | 3,901 |
| Cash | 2,833 | 2,826 | 3,052 |
| Other Current Assets | 180 | 532 | 232 |
| **TOTAL ASSETS** | 141,444 | 136,580 | 154,745 |

Profitability of sales is directly dependent on revenue growth in 2018.

#### Tab. 16. Dynamics of Key Financial Indicators of JSC Atomredmetzoloto for 2016-2018

<table>
<thead>
<tr>
<th>Indicator name</th>
<th>2016</th>
<th>2017</th>
<th>2018 Change 2018/2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of equity in assets</td>
<td>50%</td>
<td>44%</td>
<td>2%</td>
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<td>1.7</td>
<td>1</td>
<td>+1.7</td>
</tr>
<tr>
<td>Quick ratio</td>
<td>1.0</td>
<td>1.2</td>
<td>+0.2</td>
</tr>
<tr>
<td>Profitability of sales, %</td>
<td>28.0%</td>
<td>3%</td>
<td>+25%</td>
</tr>
</tbody>
</table>

The key financial indicators are within the limits of average regulatory values, which characterizes the Holding Company as a financially sustainable company that is able to respond to its obligations in a timely manner. Significant improvement in financial performance is due to the increase in the Holding Company current assets, formed by the growth in the Holding Company stocks, as well as short-term financial investments at the end of 2018 in the form of placement Holding Company stocks, as well as short-term financial Company current assets, formed by the growth in the performance is due to the increase in the Holding Company as a financially sustainable company that is able to respond to its obligations in a timely manner. Significant improvement in financial company that is able to respond to its obligations in a timely manner.

The main investment activities

#### 5.4 billion RUB

The total investment of the Holding Company in 2018 was 5.4 billion RUB. The main investment activities included investments in the development and maintenance of the main uranium production facilities.

#### Fig. 18. Investment Dynamics by Project Groups in 2016-2018

- **Existing uranium production enterprises**
- **Other projects**

The Pavlovskoye project implementation continued, its goal is to create an economically efficient production complex based on the Pavlovskoye lead-zinc deposit in the Novaya Zemlya archipelago; survey works have been completed, survey results have been commissioned to the Glavgeosexpertiza of Russia, and the developed project documentation is planned to be completed with a land reclamation plan. A new project was launched to organize gold production at the Elkon district Severnoe deposit, prospecting and appraisal work was carried out, preparations are underway to calculate and protect reserves.

#### Fig. 19. Investment Project Groups in 2018, %

<table>
<thead>
<tr>
<th>Project Group</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing uranium production enterprises</td>
<td>4%</td>
<td>26%</td>
<td>0%</td>
</tr>
<tr>
<td>Other projects</td>
<td>70%</td>
<td>80%</td>
<td>86%</td>
</tr>
<tr>
<td>Non-uranium projects</td>
<td>16%</td>
<td>12%</td>
<td>20%</td>
</tr>
</tbody>
</table>

In 2018, the total investment of the Holding Company increased by 11% compared with 2017, which is mainly due to the acceleration of the implementation of key uranium projects (including Mine No. 6). In accordance with the approved plans of the Holding Company for 2019, an increase in the investment programme by 58% is provided due to the implementation of measures for the Mine No. 6 construction, acceleration of the development of new deposits at JSC Dalar and JSC Khiagda, increasing the pace of modernization and replacement of obsolete equipment for uranium and the coal business at JSC PMCU, as well as the development of new business areas (‘Titanium’ at the Tugansk deposit, the Pavlovskoye project, gold production at the Severnoe deposit). In 2018, one of the main priorities was the work on business diversification and the development of non-uranium projects.

The main investment objects

- **Development projects of PJSC PMCU (including Mine No. 6 and non-uranium projects), JSC Khiagda, JSC Dalar, JSC The First Ore Mining Company (Pavlovskoye project), as well as investments in maintaining existing production facilities**

The structure of investments in key areas of the Holding Company activities in 2018 did not undergo significant changes: the main part is still held by investments in the development and maintenance of existing uranium mining enterprises of PJSC PMCU, JSC Khiagda, JSC Dalar.

The pool leader is the ROStATOM company, whose accounts accumulate free funds and redistribute them among the Corporation organizations through loan agreements, which are appointed by a decision of the ROStATOM executive bodies.

The structure of investments in key areas of the Holding Company activities in 2018 did not undergo significant changes: the main part is still held by investments in the development and maintenance of existing uranium mining enterprises of PJSC PMCU, JSC Khiagda, JSC Dalar.
The results of the Holding Company investment programme implementation:

**JSC PIMCU** (42% of the Holding Company investment programme):
- The Mine No. 6 infrastructure construction continues: the main step-down substation (equipment supply and construction work are 96% complete); roads (work are 100% complete); MWTP (zero cycle work is underway);
- the 2nd stage of the Srednee tailing dump was commissioned for commercial operation;
- an own granulated explosive production plant was commissioned;
- the survey of the 19 RESH, 13K mine shafts was completed with a view to transition to main development;
- the Urtuysky open-pit mine drainage canal construction was completed, which will ensure coal mining for the next decade.

**JSC Khiagda** (31% of the Holding Company investment programme):
- permission to commission the Istochnye deposit obtained;
- preparation work for the Khiagda ore field Kolichkan and Dybryn deposit development are began, engineering surveys have been carried out in full;
- additional equipment was commissioned to improve the efficiency of repair and recovery activities, new technologies and methods for carrying out repair and recovery activities and restoring the process well productivity were developed;
- construction and installation work on installation and commissioning of equipment at the Dzhilinda 110/10 kV substation were performed;
- the Smart Mine project pilot operation was launched. See details in Section 4.3.3 Digital Economy Performance.

**JSC Dalur** (19% of the Holding Company investment programme):
- an engineering survey report has been prepared, design documentation for the Khokhlovskoye deposit railroad base has been developed;
- design and exploration work at the Dobrovolnoye deposit has begun;
- the license for the right to use the Dalmatovskoye deposit subsidi has been extended to 31.12.2027.

**JSC The First Ore Mining Company** (Pavlovskoye project – 4% of the Holding Company investment programme):
- survey work on the MPW and the port complex have been completed, project documentation has been developed;
- the engineering survey results are handed over to GGE.

Results of 2018 in the field of the Holding Company investment and project activity management:

- optimized investment costs of uranium projects (JSC Khiagda, JSC Dalur) by 1,424 million RUB without prejudice to the production programme implementation;
- reduced the "Coal" project capital costs by 24% due to optimization of the need for mining and transportation equipment;
- work continued on the development of the industry information system for investment projects Sirius, the ARMZ investment service took part in the system improvements, in particular, the introduction of a new "post-investment monitoring" unit, testing of the system integration results with the Microsoft Project Professional client application;
- the work was carried out on the implementation of the programme approach: a joint on-site conference was held with ROSATOM representatives to share experience as part of the project management system; linear-normative acts of the Holding Company were tailored to the programme approach specifics; the first programme for the Holding Company (Khiagda programme) was approved at the ROSATOM Investment Committee;
- as part of the business diversification development, the Governing Board powers in the areas of traditional and new business are divided, which will ensure a greater differentiation of competencies when considering investment decisions and increase their efficiency;
- a set of measures was implemented to increase the Holding Company project management maturity:
  - a pilot assessment was made of the current Division maturity level based on the Government of the Russian Federation methodology; in 2019, the ambitious task is to reach the next level of project management maturity;
  - participation in the industry conference with a report on the project management features in ARMZ;
  - training of key subsidiary staff involved in project activities in the Project Management School was conducted;
  - the Holding Company has summed up the results of the competition for the title of the best investment service and the best employee of the investment service in three nominations.

Measures to improve the efficiency of investment activities and optimize the investment process in the Division made it possible to increase profitability rates, reduce the amount of equity funds and own sources of funding allocated for the current maintenance of industrial site equipment and infrastructure, strengthen the responsibility of the Division’s enterprise employees for implementing investment activities and achieving the target financial indicators by projects. The integral indicator of investment activity is fulfilled by 106.6%.
4.3. Intellectual Capital

4.3.1. Intellectual Capital Management

In 2018, the costs of the Holding Company innovative activity amounted to $1.53 million RUB. At the same time, financing orders in universities - $13.31 million RUB, and in small and medium-sized businesses - $16.17 million RUB.

The main reasons for a significant reduction in funding for innovation were the following factors: suspension of the "Lithium" project implementation, postponement of the aluminium-scandium-ligature production plant construction, reformulating of the project for the pyrite cinder processing at PJSC PIMCU.

4.3.2. Innovative Development Programme

The ARMZ Innovation Development Programme is an integral part of the ROSATOM Innovation Development and Technological Modernization Programme for the period up to 2030. The key objectives of the ARMZ Innovation Development Programme up to 2030 are:

- improving the uranium production efficiency at existing uranium production enterprises;
- break-even of existing uranium production enterprises;
- production diversification.

The ARMZ innovative development programme consists of two key projects:

Key project No. 1
Scientific and technical support of the development of uranium deposits by the underground mining method (UMM)

- In 2018, PJSC PIMCU continued research on the parameters of hardening and paste laying of the developed mountain space based on ore processing tailings. Works on paste thickening of carbonate ore processing tailings were performed. The implementation of the project "Development of technology for deep radioactive waste thickening from the processing of uranium ores for surface and underground disposal", funded from the targeted funds of ROSATOM, has been launched. Geological exploration wells were drilled with core samples taken from the surface of the PJSC PIMCU Mine No. 6 to extract dolomite ores. In 2019, this material will be used for the development of process regulations for the processing of uranium ores from the Mine No. 6.
- Laboratory studies on the agglomeration of fine fractions of ore raw materials for further processing by heap leaching (HL) are completed. The developed technology efficiency was confirmed uranium extraction is on average 10% higher than by leaching non-agglomerated raw materials. An agglomerator and a staker were purchased for pilot works, which will begin in April 2019.
- In 2017, work began on the complete elimination or replacement of pyrolusite in the hydrometallurgical ore raw material processing with cheaper oxidizers. In 2018, a technology was developed to produce an oxidizing agent, the raw material for which can be pyrite cinder. The technology of using sodium nitrite as an oxidizing agent alternative to pyrolusite has also been developed. Completion of works is planned in 2019 after conducting semi-industrial tests.
- Studies on the topic "Development of water treatment technology for the East-Uralsyurt underground water deposit" were carried out. In 2019, pilot works are planned for this topic.
- Recommendations have been developed for the introduction and further optimization of ore flows with a low uranium content in the ores supplied for processing at the PJSC PIMCU LP and the HL section, in order to reduce the uranium cost.
- Laboratory tests have been initiated to intensify the process of heap leaching of uranium from off-balance sheet and low-balance ores using aerobic bacteria.

Key project No. 2
Scientific and technical support of the development of uranium deposits by the drillhole in-situ leaching method (DISL)

JSC Dalur
- The introduction of innovative mining and geological computer technologies and software continued. The application of the created software and information complex is the basis for the development of the "Smart Mine DISL" system and makes it possible to improve the accuracy of reserves calculation, the quality of operational block design and the mining efficiency of Dalmatovo and Khokhlovsky uranium deposits.
- The introduction of this complex, the intellectual rights to which belong to JSC Dalur, allowed to attribute the JSC Dalur products as innovative.
- In 2018, continued pilot work on the development of new process well designs. Since 2018, all newly constructed wells have an improved design using casing pipes made of uPVC. The work on further improvement of the well construction and equipment will be continued in 2019.
- In 2018, the development of a project for exploration at the Dobrovolnye deposit was completed with the inclusion of integrated logging wells using the LFN and PNNL methods in the geophysical survey. Work on the Dobrovolnye deposit is planned to be carried out in the period of 2019–2020.
- The pilot works on the associated extraction of scandium from uranium production mother liquors were continued, the production of high-purity (99.9%) scandium oxide was launched.
- Work was done to determine the processing technology for productive solutions in the pilot work production at the Dobrovolnye deposit.

JSC Khiagda
- The development of new computer programmes designed to monitor the subsoil geological and geochemical state in existing technological units based on mathematical modeling and to develop long-term technical and economic models of enterprise development with the aim of improving planning has been completed.
- Additional equipment was purchased and commissioned to improve the efficiency of repair and recovery activities. New technologies and methods for carrying out repair and recovery activities and restoring the process well productivity are being developed.
- New designs of technological wells using new materials for casing, filters and behind-the-casing waterproofing have been developed and introduced.
- The Smart Mine pilot project at the Istochnye deposit is completed. It is a hardware and software complex that allows to maximally automate the process operation management at production sites, provide automated acquisition, storage and processing of geotechnological indicators, develop recommendations for changing the well operating modes to achieve maximum production and efficiency indicators. The project is commissioned, the pilot block operation monitoring is organized.
- In 2018, work was continued on the implementation of integrated logging using LFN and PNNL methods with LFN drilling rate measuring apparatus at JSC Khiagda sites. Based on the results of the work performed, it was recommended to use the LFN method in all process wells in the course of mine preparation work to reliably determine the parameters of ore intervals and reserves, as well as during test drilling and when the process well network is thickened in existing and redeemable sections of deposits developed by drillhole in-situ leaching method.

Areas and results of innovative and scientific and technical activities for 2018 JSC VNIPIMPROMTECHNOLOGI:
- Development of technology for the spent chamber paste backfilling based on uranium ore processing tailings. Deep thickening of tailings with the addition of cement made it possible to obtain a high-strength material (1.6-2.5 MPa) and low radon emission (up to 500 mBq/m2). It is determined that the paste backfilling emits radon from near-surface layers and can be used as an additional protection during storage of air-conditioned class 3 and 4 radioactive waste. Conducted tests of various measures to suppress radon emission allowed us to identify the most effective ones for development systems with a layered notch and chamber. The methods of spraying insulating geomembranes onto the surface of mine workings before filling with paste are studied. The most effective options for the possible arrangement of paste backfilling in the spent chambers of the Mine Number 6, in the preserved mines, PJSC PIMCU quaries of Tulukui and Krasy Kamen, have been established.
- Assessment of the state of sites for underground nuclear explosions and the development of measures for their rehabilitation.
- Development of technical solutions for the disposal of solid radioactive waste and assessment of the status and prospects for industrial liquid and radioactive waste injection point operation.
**Results of intellectual activity (RIA)**

**Results of 2018**

**OBTAINED:**
- four patents for inventions (JSC Dalur, JSC VNIIPromtechnologii).

**REGISTERED:**
- eight know-hows (JSC VNIIPromtechnologii).

**APPLICATIONS FOR STATE REGISTRATION OF INTELLECTUAL ACTIVITY RESULTS HAVE BEEN SUBMITTED:**
- three – for a certificate on PC (JSC Khiagda);
- two – for an invention patent (JSC VNIIPromtechnologii).

**OBTAINED:**
- four patents for inventions (JSC Dalur, JSC VNIIPromtechnologii).

**REGISTERED:**
- eight know-hows (JSC VNIIPromtechnologii).

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**Knowledge management system**

- A link (https://nti.rosatom.ru/) to a full-text copy of the anniversary issue of the Mining Journal No. 7 for 2018, dedicated to the 50th anniversary of PJSC PIMCU (http://rudmet.ru/catalog/journals/1/1744/) is placed on the STI portal of ROSATOM.

- More than 9,500 documents from the archives of scientific and technical information (engineering surveys and design estimates) were digitized in VNIIPromtechnologii.

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**Published in publications and reports at conferences in the field of atomic energy:**
- 2016 - 4 articles and 18 reports;
- 2017 - 11 articles and 25 reports;
- 2018 - 16 articles and 21 reports;
- During the work of the JSC VNIIPromtechnologii Young Specialist School:
  - 6 meetings were held;
  - 7 lecturers delivered speeches.

**The International Scientific and Technical Conference “Modern Innovative Technologies in Mining and Mineral Processing” was organized and held at JSC VNIIPromtechnologii.**

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**Obtained:**

**Registered:**

**APPLICATIONS FOR STATE REGISTRATION OF INTELLECTUAL ACTIVITY RESULTS HAVE BEEN SUBMITTED:**

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
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</thead>
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<tr>
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<td>6</td>
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<tr>
<td>Utility model patent</td>
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<td>9</td>
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<td>-</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Know-How</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>8</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>7</td>
<td>7</td>
<td>13</td>
<td>9</td>
<td>16</td>
<td>67</td>
<td>41 (61.2%)</td>
<td></td>
</tr>
</tbody>
</table>

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**4.3.3. Digital Economy Performance**

**SMART MINE PROJECT**

The bottom line is an innovative project, in which intellectual digital methods are developed for the extraction of uranium and other solid minerals.

**Goals, objectives:**
The reserve production life cycle digitalization and the mining complex optimization. Using embedded geological and mathematical methods, modern video surveillance tools, intelligent sensors and robotic mechanisms, based on real-time data, the system models and maintains the optimal operating conditions for the mining complex.

**Results of 2018 and plans for the coming years:**

- An intelligent technological solution Smart Site (part of the Smart Mine project) has been put into pilot operation in JSC Khiagda (Republic of Buryatia), which provides for the digitalization of the uranium mining life cycle by the method of drillhole in-situ leaching. The main Smart Site solution options include:
  - visualization of the dynamics of changes in the structure of the extracted ore body, the movement of underground solutions, the identification of inefficient areas and forecasting of mining processes (digital 2D / 3D twins for reserves and mining processes);
  - automatic support of the optimal operation mode of well equipment in permafrost conditions without visiting the site by personnel;
  - smart video surveillance of the site operation in 24x7 mode;
  - automatic synchronization with enterprise data storage.

For the first time in the world, an uranium production enterprise used digital modeling to assess the state and forecast the changes in the environmental situation in the area of direct man-made impact on aquifers. With the “smart” technologies of modeling and 3D-visualization, it is possible to see how technological solutions are moving underground during the mining. This ensures safe production and the ecosystem preservation.

In 2019, it is planned to confirm the project efficiency and transmit the experience to other enterprises. Elements of the Smart Site solution are also planned to be implemented at JSC Dalur (Kurgan region).

**Importance of project implementation to improve the people life quality and/or preserve the environment**
The transition to the smart management of mining technological processes on the basis of digital technologies makes it possible to make domestic uranium mining less costly and more environmentally friendly.

We share the goals of UN sustainable development and the Social Charter of Russian Business, and strive to ensure high standards of environmental protection and industrial safety.
4.4. Natural Capital

4.4.1. Natural Capital Management. Environmental Policy

The JSC Atomredmetzoloto environmental policy has been in effect since 2013 and ensures the implementation of the main provisions of the Constitution of the Russian Federation and the Russian Federation legislation, the international standard ISO 14001 and the Environmental Policy of ROSATOM. The goal of the JSC Atomredmetzoloto environmental policy is to ensure the Company’s environmentally oriented development while maintaining a high level of environmental safety and reducing environmental risks.

4.4.2. Natural Capital Management Performance

4.4.2.1. Protection of Land Resources and Biodiversity

In 2018, 43.77 ha of land were disturbed at JSC Khiagda, including:
- 29.37 ha - the area of disturbed land in the development of mineral deposits at the Khiagda ore field Vershiny deposit;
- 14.4 ha - the disturbed land area during construction works at the Khiagda ore field Istochny deposit.

JSC Dalur performed the following work related to the violation of the fertile soil layer integrity:
- preparation of construction sites (in the form of 0.15-0.2 m thick soil stripping) for construction and installation work on the Dalmatovskoye deposit operational blocks;
- soil stripping was carried out mechanically and is 31.167 thousand m³ (on an area of 183,452 m²);
- the soil stripping works were performed in accordance with the approved documentation developed by JSC VNIPigromettechnologii.

The stripped vegetative fertile layer was fully used at the final stage of construction, while improving the territory of the erected facilities. Part of the vegetable ground and topsoil, stripped previously (in previous years) at other construction sites in the amount of 6.837 thousand m³, continues to be stored in the dump.

4.4.2.2. Protection of water resources

Water intake

Water supply of PJSC PIMCU industrial facilities and the population of Krasnokamensk, including hot water supply, is centralized, mainly from the groundwater of the East Urulyungui basin (20,529.62 thousand m³).

Additional water supply sources for technical needs, including for ensuring the production cycle at the LP and CHPP (maintaining the required water level in the reservoir) are:
- Argun River surface waters ~ 5296.42 thousand m³;
- Urtuysky open-pit mine drainage waters ~ 3563.34 thousand m³;
- uranium mining production mine waters - 5879.61 thousand m³.

JSC PIMCU carries out water use exclusively under the current legislation, including the following regular measures to reduce water consumption: elimination of leaks in pipelines and the use of a water intake metering system. However, the main item of water saving is the full use of Urtuysky open-pit mine drainage waters and the uranium mining production mine waters in technical water supply. Increased water use is related to water demand.

Water supply at JSC Khiagda is carried out via drinking water supply wells. The reduction in water consumption is associated with measures to improve the efficiency of production processes, as well as with the reduction of water losses, the introduction of the 1st and 2nd water elevation station equipment remote monitoring and the elimination of overflow and water leakage.

At JSC Dalur, water intake indicators in 2018 compared to 2017 did not change.

Wastewater Discharge

Regional authorities of the Trans-Baikal Territory with the participation of the urban settlement “Krasnokamensk City” administration representatives, PJSC PIMCU, branch of JSC OTEK in Krasnokamensk are working on the issue of developing a new project “Construction of sewage treatment facilities with a capacity of 40 thousand m³ per day in Krasnokamensk” and introducing it on the newly formed land plot, which is related to the inexpediency of the reconstruction of the 1st stage of sewage treatment facilities due to the high degree of wear of sewage treatment facilities (STF).
JSC Khiagda
Wastewater discharges into water bodies are not carried out, as:
- technological solutions circulate in a closed cycle;
- domestic wastewater is received at a complete biological treatment station, where treatment and decontamination are carried out. The treated and disinfected wastewater is discharged into storage tanks for use in the process.

JSC Dalur
Due to the closed technological cycle, the discharge of wastewater containing hazardous chemicals and radionuclides is not performed.
Discharges of domestic wastewater from the sewerage system are taken out to the treatment facilities of the specialized enterprise under the contract.

4.4.2.3. Atmospheric Air Protection
In 2018, the 2-TF form (air) reports were provided if the volume of authorized pollutant emissions by negative impact facilities (NIF) exceeded 10 tonnes per year or the volumes of authorized pollutant emissions by NIF ranged from 5 to 10 tonnes per year inclusive in the presence of 1 and/or 2 hazard class substances in pollutant emissions into the atmosphere.

Tab. 20. Pollutant Emissions into the Atmosphere in 2016–2018, PJSC PIMCU, tonnes
<table>
<thead>
<tr>
<th>Year/Pollutant</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon oxide</td>
<td>1006.318</td>
<td>894.113</td>
<td>306.845</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>5248.446</td>
<td>6021.38</td>
<td>4870.216</td>
</tr>
<tr>
<td>Nitrogen oxides (in terms of NO2)</td>
<td>1796.751</td>
<td>1666.098</td>
<td>1560.732</td>
</tr>
<tr>
<td>Specific pollutants*</td>
<td>8137.66</td>
<td>7033.061</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>16,427.59</td>
<td>17,270.316</td>
<td>14,588.58</td>
</tr>
</tbody>
</table>


JSC PIMCU in 2018 noted a decrease in emissions of:
- carbon monoxide due to the optimization of coal combustion regimes, the carrying out of routine repair and overhaul of CHPP boiler units, the introduction of modern analytical equipment to control CO emissions.
- inorganic dust due to the improvement of the physical and chemical properties of coal supplied to CHPP.
- sulfur dioxide due to decrease in the sulfur content in coal supplied to CHPP.

Tab. 22. Pollutant Emissions into the Atmosphere in 2015–2017, PJSC PIMCU, tonnes
<table>
<thead>
<tr>
<th>Year/Pollutant</th>
<th>PJSC PIMCU</th>
<th>JSC Dalur</th>
<th>JSC Khiagda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard class I</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>27.76</td>
<td>0.199</td>
<td>0.029</td>
</tr>
<tr>
<td>Hazard class II</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
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<tr>
<td></td>
<td>3.534</td>
<td>0.105</td>
<td>0.063</td>
</tr>
<tr>
<td>Hazard class III</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>6.031</td>
<td>0.22</td>
<td>0.554</td>
</tr>
<tr>
<td>Hazard class IV</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>104.79</td>
<td>1.038</td>
<td>2.5</td>
</tr>
<tr>
<td>Hazard class V</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>122.42</td>
<td>1.604</td>
<td>5.769</td>
</tr>
<tr>
<td>Hazard class VI</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>96.06</td>
<td>1.770</td>
<td>1.865</td>
</tr>
<tr>
<td>Total</td>
<td>1504.72</td>
<td>17.270.316</td>
<td>14,588.58</td>
</tr>
</tbody>
</table>

4.4.2.4. Waste management
Tab. 23. All Hazard Class Waste Generation in 2016–2018, tonnes
<table>
<thead>
<tr>
<th>Year/Hazard Class</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard class I</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>24,286.078</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hazard class II</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>8,979.67</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hazard class III</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>17,969.493</td>
<td>21.198</td>
<td>352.08</td>
</tr>
<tr>
<td>Hazard class IV</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>24,287.844</td>
<td>65.809</td>
<td>371.57</td>
</tr>
<tr>
<td>Total</td>
<td>2016</td>
<td>2017</td>
<td>2018</td>
</tr>
<tr>
<td></td>
<td>5211.099</td>
<td>62.670</td>
<td>546.513</td>
</tr>
</tbody>
</table>

* Due to the optimization of waste disposal in 2017, they were transferred to specialized contractors.
At PJSC PIMCU:
- increase in the hazard class I waste generation (mercury lamps) by 0.995 tonnes due to replacement of mercury lamps with LED ones;
- increase in the hazard class II waste generation (spent lead batteries) by 0.995 tonnes due to their replacement with environmental-friendly ones;
- reduction in the generation of hazardous waste (spent lead-in batteries with electrolyte) by 0.995 tonnes due to replacement with lead-free alternatives;
- reduction in the amount of hazardous waste due to repair work at the JSC OTEK CHPP.

At JSC Dalur, an increase in the IV class waste generation is associated with the inclusion of waste from residential premises leased to new employees of the organization. All waste generated in 2018 was transferred to specialized organizations for neutralization, use or disposal.

At JSC Khiagda:
- reduction of the actual hazard class I waste generation volume by 0.08 tonnes due to the reconstruction of the lighting system for production facilities with the transition to LED lighting sources;
- increase in the hazard class II waste generation volume is associated with an increase in the production need for lead batteries;
- decrease in the hazard class III waste generation volume by 3,904 tonnes is due to the absence of the catalyst formation for vanadium production of sulfuric acid.

In 2018, there were no abnormal situations and incidents at the Mining Division enterprises, including significant spills that have a negative impact on the environment.

4.4.2.5. Environmental protection costs

<table>
<thead>
<tr>
<th>Measures</th>
<th>PJSC PIMCU</th>
<th>JSC Dalur</th>
<th>JSC Khiagda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric air protection</td>
<td>94,721.108</td>
<td>273.81</td>
<td>707.52</td>
</tr>
<tr>
<td>Protection of water resources</td>
<td>59,941.291</td>
<td>653</td>
<td>4,242.76</td>
</tr>
<tr>
<td>Waste management</td>
<td>36,659.536</td>
<td>1,882.88</td>
<td></td>
</tr>
<tr>
<td>Land management, protection and rehabilitation</td>
<td>79,061</td>
<td>3747</td>
<td>11,308.41</td>
</tr>
<tr>
<td>Fee for the negative impact on the environment</td>
<td>14,924.00</td>
<td>27.655</td>
<td>233.9</td>
</tr>
<tr>
<td>Total</td>
<td>231,182.935</td>
<td>5603.655</td>
<td>18,289.663</td>
</tr>
</tbody>
</table>

Tab. 25. Total Amount of the Holding Company Environmental Protection Costs in 2016-2018, million RUB

<table>
<thead>
<tr>
<th>Year/Costs</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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</thead>
<tbody>
<tr>
<td>Total costs</td>
<td>520.0</td>
<td>411.5</td>
<td>255.0</td>
</tr>
</tbody>
</table>

4.4.2.6. Community Relation in Environmental Protection

The environmental safety of the Holding Company’s enterprises is, in its significance, placed on a par with the issues of improving the uranium production efficiency. The priority is to comply with legal requirements for environmental protection and radiation safety of the population.

As part of this, all current annual environmental activities are carried out:
- development and provision for stable functioning of integrated management system in accordance with the requirements of ISO 9001:2015 and ISO 14001:2015;
- constant maintenance of the required level of environmental education for environmental safety decision-makers;
- carry out radiation and environmental monitoring of the industrial site and the sanitary protection zone;
- replacement of the mercury-containing lamps with LED lamps;

JSC Dalur

Much attention is paid to the issues of the younger generation environmental education, particularly, as part of the annual participation in the Green Spring promotion.

From April 21 to May 21, 2018, JSC Dalur, together with students of Peschano-Koledino Sec-ondary School, took part in the All-Russian Ecological Community Work Day “Green Spring - 2018”.

As part of the monthly environmental events marathon under the sign of the All-Russian Ecological Community Work Day “Green Spring” the following events were held:
- cleaning from garbage and grass of the territory of the enterprise, residential village on the Lesnaya street of Uksyansoke settlement and Peschano-Koledino settlement school lane with a lot of participants and attention;
- waste paper collection and handing it to a specialized enterprise for further disposal and use (in the amount of 750 kg).

Also, the company employees together with children and teenagers took part in competitions on environmental topics:
- in the video competition on environmental issues - the “Green Spring-2018” video;
- in the competition for the best song lyrics about the “Green Spring” action - the lyrics were written for the ecological “Green Spring” rap song.

The Holding Company employees traditionally take an active part in environmental protection measures, preserve valuable natural objects and restore forests. In Krasnokamensk, more than 600 employees of PJSC PIMCU and their family members took part in spring environmental community work days, cleaning the territory and planting greenery;

University and college students in Chita and Ulan-Ude annually apply to JSC Khiagda to undergo environmental work experience internship.
Coverage of the enterprise environmental issues is carried out in the production information publication – the “Vestnik Khiragdy” newspaper, as well as on the enterprise website.

The JSC Dalur team together with the Uksyanskoe administration as part of the All-Russian Ecological Community Work Day “Green Spring” planted about 400 pine seedlings; 266 ornamental shrubs were purchased and planted on the territory of the enterprise, Uksyanskoe and Peschano-Koledino secondary schools; 11 information posters were made for installation in places of territory contamination with garbage; several events and actions were carried out on the improvement and gardening of nearby settlements, production areas and recreation areas:
- from April 24 to May 2 – environmental community work day “Ecology and We”;
- May 17 - the “Throw nature a lifeline!” action;
- from June 5 to August 5 - photo exhibitions on the “My Village” and “My City” topics with the aim of popularizing the national, spiritual and natural values of the native village and city.

JSC Dalur is the winner of the “Ecological Culture. Peace and harmony” project in the category “Ecological culture in industry and energy”.

4.4.3. Occupational and industrial safety

Radiation safety

During 2018, at the Holding Company enterprises, the individual effective dose did not exceed 20 mSv in any working person. The facts of exceeding the individual dose of 100 mSv in the period from 2013 to 2018 were not recorded.

The following measures have been taken to ensure safe working conditions:
- P.JSC PIMCU continued the safety culture development project implementation, launched in 2012.
- During the year, internal trainers trained 550 workers and 50 line managers. Line managers conducted 12,533 behavioural safety audits and identified 11,276 potentially dangerous situations. Over the past four years, the number of detected dangerous situations has been reduced four times.
- New approaches to personnel training have been introduced, examiner terminal units are installed at the departments to monitor the level of worker knowledge in the field of occupational safety, and employees are tested for the occupational safety requirements, safe work methods and techniques.
- As part of the exchange of experience on the best practice implementation in the safe work organization, a workshop was conducted on the basis of PJSC PIMCU on behavioural safety audits.

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- During the year, internal trainers trained 550 workers and 50 line managers. Line managers conducted 12,533 behavioural safety audits and identified 11,276 potentially dangerous situations. Over the past four years, the number of detected dangerous situations has been reduced four times.
- New approaches to personnel training have been introduced, examiner terminal units are installed at the departments to monitor the level of worker knowledge in the field of occupational safety, and employees are tested for the occupational safety requirements, safe work methods and techniques.
- As part of the exchange of experience on the best practice implementation in the safe work organization, a workshop was conducted on the basis of PJSC PIMCU on behavioural safety audits.

The following measures have been taken to ensure safe working conditions:
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- As part of the exchange of experience on the best practice implementation in the safe work organization, a workshop was conducted on the basis of PJSC PIMCU on behavioural safety audits.

Occupational safety

Injury rate

Results of 2018

No accidents investigated in accordance with federal rules and regulations occurred in 2018 at JSC Atomredmetzoloto facilities.

Tab. 27. Fatal Injury Frequency Rate (FIFR)

<table>
<thead>
<tr>
<th>Year</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>0.75</td>
<td>0.93</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Overall, the LDR and ODR indicators improved in 2018 due to a significant reduction in occupational diseases caused by improved social, living and working conditions.
4.5. Human Capital

4.5.1. HR Policy Management System

The primary goal of JSC Atomredmetzoloto HR policy is development of a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company: We understand the employee engagement in the implementation of the corporate strategy, their professionalism and responsibility determine its long-term competitiveness. Our Company, for its part, seeks to provide favorable conditions for the successful work of employees, their professional growth and creative activity and guarantees the social orientation of our HR policy.

4.5.2. HR Policy Management Performance

4.5.2.1. Human Capital Features

Number of employees

<table>
<thead>
<tr>
<th>Category</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office staff</td>
<td>31</td>
<td>37</td>
<td>42</td>
</tr>
<tr>
<td>Specialists</td>
<td>1,426</td>
<td>1,283</td>
<td>1,293</td>
</tr>
<tr>
<td>Managers</td>
<td>997</td>
<td>981</td>
<td>1,009</td>
</tr>
<tr>
<td>Total</td>
<td>7,275</td>
<td>6,657</td>
<td>7,232</td>
</tr>
</tbody>
</table>

Due to the transfer in October 2017 of more than 1,000 employees of working professions from JSC Alliancetransatom to PJSC PIMCU, the share of workers in the Holding Company total average staff number increased from 65.4% (2017) to 67.6% (2018).

Number of employees by employment type

In the staff distribution by employment type, the share of employees working under a fixed-term employment contract increased from 5.3% (2017) to 5.6% (2018), most of which (75%) accounted for JSC RUSBURMASH.

The share of part-time employees in the total staff number at the end of the reporting period halved from 1.2% (2017) to 0.6% (2018) due to changes in JSC VNIIPromtechnologii.

The dynamics of the changes in the number of employees in the operation areas is characterized by its increase in the Trans-Baikal Territory (+567 people)

- in JSC Atomredmetzoloto (+49 people) due to the staffing of vacant posts and the transfer of LLC UIUP, which is in the process of liquidation, functions to it;
- in JSC Dalur (+537 people) due to the transfer of 1,109 people from JSC Alliancetransatom from 01.10.2017;
- in JSC Khiagda (+21 persons) due to commencement of work at the new deposit production facilities;
- in JSC Dalur (+9 people) due to creation of production facility for associated scandium production on the enterprise industrial site (as part of the “Scandum” project);
- in JSC RUSBURMASH (+49 people) due to increase in the drilling and geological exploration volumes at the Holding Company mining enterprises and formation of a construction site for JSC Khiagda;
- in LLC ARMZ Service (+7 people) due to a change in the organizational structure caused by the new business area development.

At the same time, in the JSC VNIIPromtechnologii the number of employees decreased by 58 people as a result of organizational measures taken at the end of 2017, aimed at increasing the institute productivity and reducing the cost of engineering services.

Some increase in the staff number in 2018 is associated with the development of new businesses by the Holding Company.

The main changes in the average number of personnel occurred in the reporting year at the following enterprises:

- in JSC Khiagda (-1 people));
- in JSC Dalur (+25 people), Irkutsk Region (+21 persons) due to commencement of work at the new deposit production facilities;
- in JSC Dalur (+49 people) due to increase of production facility for associated scandium production on the enterprise industrial site (as part of the “Scandum” project);
- in JSC RUSBURMASH (+49 people) due to increase in the drilling and geological exploration volumes at the Holding Company mining enterprises and formation of a construction site for JSC Khiagda;
- in LLC ARMZ Service (+7 people) due to a change in the organizational structure caused by the new business area development.

At the same time, in the JSC VNIIPromtechnologii the number of employees decreased by 58 people as a result of organizational measures taken at the end of 2017, aimed at increasing the institute productivity and reducing the cost of engineering services.

The primary goal of JSC Atomredmetzoloto HR policy is to develop a staff management system aimed at improving the efficiency of the Holding Company, whose key assets are people working for the Company: We understand the employee engagement in the implementation of the corporate strategy, their professionalism and responsibility determine its long-term competitiveness. Our Company, for its part, seeks to provide favorable conditions for the successful work of employees, their professional growth and creative activity and guarantees the social orientation of our HR policy.
Staff age and gender composition

Tab. 35. Staff Distribution by Gender in 2016-2018, people

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Amount</td>
<td>4,878</td>
<td>5,472</td>
<td>5,538</td>
</tr>
<tr>
<td>% of the total</td>
<td>70.1%</td>
<td>74.5%</td>
<td>74.9%</td>
</tr>
<tr>
<td>Female Amount</td>
<td>2,079</td>
<td>1,875</td>
<td>1,858</td>
</tr>
<tr>
<td>% of the total</td>
<td>29.9%</td>
<td>25.5%</td>
<td>25.1%</td>
</tr>
</tbody>
</table>

Tab. 36. Staff Distribution by Age in 2015–2017, people

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 35 years</td>
<td>2,615</td>
<td>2,480</td>
<td>2,333</td>
</tr>
<tr>
<td>% of the total</td>
<td>37.5%</td>
<td>33.8%</td>
<td>31.5%</td>
</tr>
<tr>
<td>36 years to 50 years</td>
<td>2,688</td>
<td>1,970</td>
<td>3,179</td>
</tr>
<tr>
<td>% of the total</td>
<td>38.6%</td>
<td>40.4%</td>
<td>43.0%</td>
</tr>
<tr>
<td>Over 50 years old</td>
<td>1,654</td>
<td>1,897</td>
<td>1,884</td>
</tr>
<tr>
<td>% of the total</td>
<td>23.8%</td>
<td>25.8%</td>
<td>25.5%</td>
</tr>
</tbody>
</table>

Staff turnover

The overall increase in the number of employees led to a decrease in the Holding Company staff turnover from 21.8% (2017) to 17.5% (2018). At the same time, in JSC Khiagda and JSC RUSBURMASH the total staff turnover level increased compared with 2017 and amounted to 20.6% and 69.2%, respectively.

Compliance with the current labour legislation of the Russian Federation in the field of labour relations is one of the JSC Atomredmetzoloto key priorities in the field of personnel management. In accordance with the current labour legislation of the Russian Federation, employees shall receive notifications about a significant change in working conditions at least 2 months before the event. No violations of the labour legislation regarding meeting the staff notification deadlines for the reporting period have been identified.

Tab. 37. Staff Turnover in 2016–2018, people

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSC Atomredmetzoloto</td>
<td>20.2</td>
<td>8.6</td>
<td>15.0</td>
</tr>
<tr>
<td>PJSC PIMCU</td>
<td>18.5</td>
<td>18.1</td>
<td>12.7</td>
</tr>
<tr>
<td>JSC Khiagda</td>
<td>14.3</td>
<td>16.9</td>
<td>20.6</td>
</tr>
<tr>
<td>JSC Dalur</td>
<td>12.0</td>
<td>9.4</td>
<td>6.8</td>
</tr>
<tr>
<td>JSC RUSBURMASH</td>
<td>58.0</td>
<td>63.7</td>
<td>69.2</td>
</tr>
<tr>
<td>JSC VNPPromtechnologiy</td>
<td>27.5</td>
<td>54.7</td>
<td>28.9</td>
</tr>
<tr>
<td>LLC ARM Service</td>
<td>28.9</td>
<td>25.2</td>
<td>18.9</td>
</tr>
<tr>
<td>Total</td>
<td>21.7</td>
<td>21.8</td>
<td>19.8</td>
</tr>
</tbody>
</table>

GRI 401-1

GRI 402-1

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Tab. 38. Staff Turnover by Gender in 2016–2018, people

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Number dismissed for any reason, people</td>
<td>1,045</td>
<td>1,023</td>
<td>981</td>
</tr>
<tr>
<td>% of total average staff number</td>
<td>16.0%</td>
<td>13.9%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Female Number dismissed for any reason, people</td>
<td>531</td>
<td>428</td>
<td>276</td>
</tr>
<tr>
<td>% of total average staff number</td>
<td>7.6%</td>
<td>5.8%</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

4.5.2.2. Remuneration System

In the face of declining uranium prices and production volumes at PJSC PIMCU, as well as staff growth in 2017-2018, due to the transfer from 01.10.2017 to PJSC PIMCU from JSC Alliancetransatom of 1,110 people, the share of labour costs in the total revenue increased from 30.4% (2016) to 38.5% (2018), particularly due to that the constant (guaranteed) part of the employee remuneration is more than 75%.

The remuneration of employees is based on the Unified Harmonized Remuneration System in the ROSATOM organizations (UHRS), which provides a unified approach to the formation of wages in the Holding Company and a stable income of employees regardless of the employee gender, nationality, religion, age or being a minority.

Fig. 27. Labour Costs Share in Revenue in 2016–2018, million RUB

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll costs</td>
<td>6,737</td>
<td>7,128</td>
<td>7,128</td>
</tr>
<tr>
<td>Payroll budget</td>
<td>59.9</td>
<td>56.1</td>
<td>60.5</td>
</tr>
<tr>
<td>Accrual of vacation provision</td>
<td>10.0</td>
<td>9.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Accrual of annual bonus provision</td>
<td>6.2</td>
<td>6.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Remuneration of persons working under independent contractor agreement</td>
<td>1.0</td>
<td>6.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Taxes (insurance premiums) on wages</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Other costs in total revenue</td>
<td>15,443</td>
<td>11,324</td>
<td>11,368</td>
</tr>
<tr>
<td>Total</td>
<td>21,000</td>
<td>22,459</td>
<td>22,555</td>
</tr>
</tbody>
</table>

Fig. 28. Structure of Expenses Associated with Wages in 2016–2018, %

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll costs</td>
<td>59.9</td>
<td>56.1</td>
<td>60.5</td>
</tr>
<tr>
<td>Payroll budget</td>
<td>10.0</td>
<td>9.9</td>
<td>9.9</td>
</tr>
<tr>
<td>Accrual of vacation provision</td>
<td>6.2</td>
<td>6.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Accrual of annual bonus provision</td>
<td>1.0</td>
<td>6.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Remuneration of persons working under independent contractor agreement</td>
<td>0.7</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Taxes (insurance premiums) on wages</td>
<td>59.9</td>
<td>56.1</td>
<td>60.5</td>
</tr>
<tr>
<td>Other costs in total revenue</td>
<td>40.1</td>
<td>43.9</td>
<td>39.5</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
The structure of expenses related to wages remained almost unchanged and maintained the proportions of 2017. At the same time, due to the growth in the number of employees of PJSC PIMCU, without the right to be payed an annual premium on KPI, the payroll share increased by 0.4%, while the share of reserve accrual on KPI decreased by 0.8%. In addition, in the structure of expenses related to wages, the share of taxes (insurance premiums) increased by 0.4%.

The minimum base salary (the amount that includes the salary set for the employee, the integrated incentive premium (including: accrual of vacation provision, accrual of annual bonus provision, remuneration of persons working under independent contractor agreement, Labour costs and insurance premiums, thousand RUB) increased by 0.4%, while the share of reserve accrual on KPI decreased by 0.8%. In addition, in the structure of expenses related to wages, the share of taxes (insurance premiums) increased by 0.4%.

### 4.5.3. Personnel Professional Development

#### Results of 2018

- 12 employees of the Holding Company enterprises successfully passed the certification in ANO ROSATOM Corporate Academy for the right to conduct the training. Later they trained 835 people under the RPS programmes and 49 people under the Performance Management programme.

#### Over the period of 2018, 100% of the JSC Atomredmetzoloto employees passed a performance assessment, which is done by setting KPIs to employees and evaluating their achievement.

#### ARMZSkills

**In May 2018, the 2nd divisional professional skills competition ARMZSkills was organized and held according to the WorldSkills methodology in following categories: “Chemistry lab technician”, “Welding technologies”, “Dosimetrist”, “Special vehicle driver”, “Occupational safety”, “Network and system administration”, “Engineering design”. The competition was attended by 85 employees and experts of the Holding Company enterprises, (PJSC PIMCU, JSC Khiagda, JSC Dalur, JSC VNIPromtechnologii, JSC RUSBURMASH, LLC ARMZ Service). In the team rating, the 1st place was taken by the team from PJSC PIMCU.**

**AtomSkills**

The divisional competition has traditionally become the qualifying for the formation of the team, which in July took part in the ROSATOM III industry championship of professional skills — AtomSkills 2018 in Yekaterinburg. The Mining Division team took the first place in the “Engineering Design” competence.

**WorldSkills Hi-Tech**

The AtomSkills-2018 winners became members of the main ROSATOM combined team to participate in the National Championship of the through working professions of high-tech industries WorldSkills Hi-Tech 2018, where they subsequently took the first place.

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**Person of the Year**

Traditionally, the Holding Company employees took part in the annual programme of industry nominations “ROSATOM’s Person of the Year 2018”, the purpose of which is to recognize the achievements of the best workers in the industry at the highest level of the ROSATOM management.


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**Personnel reserve**

Implementation of development programmes for managerial personnel reserve “ROSATOM’s Assets”, “Assets. Basic level”, “ROSATOM’s Capital” and “ROSATOM’s Talents”, as well as conducting new qualifying events in order to create a reserve of high-potential senior, middle and junior managers to prepare for work in key positions and projects.

---

### Tab. 40. Labour Remuneration and Insurance Premiums in 2016-2018, thousand RUB

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll, total</td>
<td>5,204,010</td>
<td>4,959,312</td>
<td>5,468,359</td>
</tr>
<tr>
<td>payroll</td>
<td>4,034,232</td>
<td>3,865,782</td>
<td>4,113,640</td>
</tr>
<tr>
<td>accrual of vacation provision</td>
<td>671,341</td>
<td>638,767</td>
<td>704,442</td>
</tr>
<tr>
<td>accrual of annual bonus provision</td>
<td>483,894</td>
<td>447,602</td>
<td>442,395</td>
</tr>
<tr>
<td>remuneration of persons working under independent contractor agreement</td>
<td>14,542</td>
<td>7,161</td>
<td>8,787</td>
</tr>
<tr>
<td>Labour costs and insurance premiums, thousand RUB</td>
<td>1,534,339</td>
<td>1,475,251</td>
<td>1,659,702</td>
</tr>
</tbody>
</table>

### Tab. 41. Average Monthly Salary in 2016-2018, RUB

<table>
<thead>
<tr>
<th>PJSC PIMCU</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>Changes in 2018 in % compared to 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46,316</td>
<td>48,393</td>
<td>49,661</td>
<td>102.6%</td>
</tr>
<tr>
<td>JSC Khiagda</td>
<td>60,919</td>
<td>63,202</td>
<td>64,370</td>
<td>101.8%</td>
</tr>
<tr>
<td>JSC Dalur</td>
<td>40,832</td>
<td>43,309</td>
<td>44,663</td>
<td>102.9%</td>
</tr>
<tr>
<td>JSC RUSBURMASH</td>
<td>70,688</td>
<td>65,799</td>
<td>69,153</td>
<td>105.1%</td>
</tr>
<tr>
<td>JSC VNIPromtechnologii</td>
<td>112,672</td>
<td>118,235</td>
<td>120,186</td>
<td>101.7%</td>
</tr>
</tbody>
</table>

### Tab. 42. Number of Training Hours per Person in breakdown by the Holding Company Enterprises, hour/person

<table>
<thead>
<tr>
<th>Category</th>
<th>PJSC Atomredmetzoloto</th>
<th>JSC PIMCU</th>
<th>JSC Khiagda</th>
<th>JSC Dalur</th>
<th>JSC RUSBURMASH</th>
<th>JSC VNIPIpromtechnologii</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers</td>
<td>14.32</td>
<td>12.8</td>
<td>13.2</td>
<td>15.9</td>
<td>19.25</td>
<td>19.25</td>
</tr>
<tr>
<td>Specialists, workers</td>
<td>18.5</td>
<td>19.75</td>
<td>21.3</td>
<td>19.3</td>
<td>39.25</td>
<td>39.25</td>
</tr>
<tr>
<td>Expert</td>
<td>95</td>
<td>18.66</td>
<td>62.53</td>
<td>58.5</td>
<td>91.5</td>
<td>47.8</td>
</tr>
<tr>
<td>JSC PIMCU</td>
<td>96.3</td>
<td>55.8</td>
<td>41.2</td>
<td>55.8</td>
<td>91.5</td>
<td>47.8</td>
</tr>
<tr>
<td>JSC Atomredmetzoloto</td>
<td>18.5</td>
<td>19.75</td>
<td>21.3</td>
<td>19.3</td>
<td>39.25</td>
<td>39.25</td>
</tr>
<tr>
<td>JSC VNIPromtechnologii</td>
<td>37.65</td>
<td>39.25</td>
<td>62.53</td>
<td>58.5</td>
<td>91.5</td>
<td>47.8</td>
</tr>
<tr>
<td>JSC Dalur</td>
<td>40.1</td>
<td>93.1</td>
<td>81.5</td>
<td>93.1</td>
<td>81.5</td>
<td>93.1</td>
</tr>
<tr>
<td>JSC RUSBURMASH</td>
<td>60</td>
<td>86.17</td>
<td>51.01</td>
<td>86.17</td>
<td>51.01</td>
<td>86.17</td>
</tr>
<tr>
<td>JSC Khiagda</td>
<td>64.3</td>
<td>39.6</td>
<td>31.5</td>
<td>39.6</td>
<td>31.5</td>
<td>39.6</td>
</tr>
</tbody>
</table>

The increase in the number of training hours is due to the increase in the number of completed distance learning programmes, training of employees in modular development programmes (“ROSATOM’s new products. Business workshop”), development programmes for managerial personnel reserve, etc.
4.6. Social Capital

4.6.1. Social Investment Management

The strategic goals facing the Mining Division are aimed at building partnership in the operation areas. We understand that the achievement of social harmony in the operation areas is possible only under the conditions of social and environmental acceptability. The JSC Atomredmetzoloto reputation as the largest reliable supplier of uranium and a socially responsible company directly depends on the level of social tension and economic stability in the operation areas.

ARMZ has developed the following areas of social investment:
- internal social investments are aimed at creating comfortable conditions for work and rest and ensuring social protection of employees, developing their creative potential and corporate culture, supporting employees of pre-retirement age and non-working pensioners, implementing the state youth policy;
- external social investments are aimed at improving the efficiency of social programmes and the social partnership development, interaction with municipal and regional authorities and the formation of social harmony in the ARMZ Uranium Holding Co. operation areas.

4.6.1.1. Internal Social Investments

Work with youth and students

The attraction, support and retention of talented young people, the creation of conditions for the active participation of young people in innovation, the development and improvement of the social and psychological adaptation system for young employees are the priority areas of the Holding Company’s HR psychological adaptation system for young employees.

Youth Boards

In order to implement the state youth policy aimed at the professional development of young professionals, the development of their creative potential and corporate culture, youth organizations created youth boards, bringing together over 200 young employees up to the age of 35 inclusive. As part of the Youth Board at the divisional level, the Holding Company has formed a Change Support Team, which implements the “Year of Values in the Mining Division” project.

Young Specialist School

In 2018, in the JSC VNIIPromtechnologii, for the development of young specialists and with the aim of transferring critical knowledge, the “Young Specialist School” project was successfully launched and is being implemented under the guidance of full member of the Academy of Mining Sciences, full member of the Russian Academy of Natural Sciences, Honored Geologist of the Russian Federation, Dr.-Sci. (Geo.-Min.), Professor Evgeny Nikolayevich Kamnev. As part of the project, six meetings were held to cover more than 50 young professionals, at which eminent institute employees and invited participants, particularly from the Holding Company’s management company, made presentations.

Mining School

In July, the 7th youth scientific and practical forum “Mining School”, the leading communication and educational project for young employees in the mining sector of Russia, was held in the children’s recreation camp “Energetic” (Chita, Trans-Baikal Territory) with PJSC PIMCU as one of the organizers. For four days, approximately 300 young miners competed for the title of the best, representing 18 teams of leading mining companies in the country: JSC SURED, JSC MCC EuroChem, LLC GPK Bystrinsky (JSC MMC Norilsk Nickel), JSC Stoilanmış Mining and Beneficiation Plant (JSC NLMK). The team of PJSC PIMCU with the bright name “URAIN”, consisting of 15 Union employees and participating in the forum for the first time, took the sixth place.

League of KVN

In November, the third season of the KVN League among the Company’s divisions started in PJSC PIMCU, 6 teams took part in it. The combined team of the first League best players vividly presented the Mining Division in the VI industry KVN game, where the team of PJSC PIMCU took second place.

Jumanji

In June, 20 teams representing PJSC PIMCU and Krasnokamensk organizations took part in the Jumanji intellectual quest dedicated to the Union’s 50th anniversary. The game was organized by Palace of Culture “Dauria” together with the city portal “Chita now” and the “World of kvest” company and consisted in the team performance of intellectual tasks that had to be solved while passing through three mysterious rooms. The keys were found by those who quickly read the mysterious signs, unraveled puzzles, collected crystals and were able to negotiate with the spirits. The PJSC PIMCU team in a bitter struggle lost to the Krasnokamensk team and took the second prize.

Smart Boys and Girls

In September, members on the combined teams of JSC Khiagda, JSC RUSBURMASH and JSC VNIIPromtechnologii took part in the intellectual game “Smart Boys and Girls” dedicated to the Nuclear Industry Employee Day. The game was held in the In-situ Leaching Shop rotation camp (Bauntauovsky-Eastern District, Republic of Buryatia), and the winner was the team of JSC Khiagda.

Events attended by the Youth Board representatives:
- conference dedicated to the 120th anniversary of E.P. Slavsky;
- the industry historical marathon “Be like Slavsky”, bringing together participants from 55 industry organizations;
- 2nd industry meeting of change leaders;
- divisional debates on the topic “Are Leaders Born or Made?”, etc.

Literary Club

In 2017, the Literary Club began to work at ARMZ as a venue where everyone can become a speaker, a place for sharing knowledge and developing public speaking skills. As part of the Literary Club work, presentations of the book “Creation and Development of the Domestic Nuclear Industry Mineral and Raw Material Base”, monograph “Uranium Geotechnology” and others took place.

“What? Where? When?”

In September, the final game of the divisional season of “What? Where? When?” was held among the seven teams of the Holding Company organizations (JSC Atomredmetzoloto, JSC PIMCU, JSC Khiagda, JSC Dalur; JSC RUSBURMASH; JSC VNIIPromtechnologii and LLC ARMZ Service) dedicated to the 50th anniversary of PJSC PIMCU. The winner of the game was the team of JSC Khiagda, which for the second time in a row won the main prize - Golden Owl.

Plans for 2019:

- It is planned to hold the first divisional meeting of youth, as well as the participation of the management company and the Holding Company enterprise youth movement representatives in industry events: II Youth Congress of ROSATOM; 3rd Industry Meeting of Change Leaders; 2nd Industry Conference of Young Scientists: Youth Day at Atomexpo 2019.

Implementation of children’s programmes

NUCKIDS-2018

The Holding Company supported the production of the “Lomonosov Scroll” musical prepared by the participants of the ROSATOM international children’s creative project Nuclear Kids. In 2018, for the first time, children whose parents work at JSC Dalur participated in the selection. Oksana Bezukhova (15 years) from with Uzkanskyoe (Kurgan region) reached the final and took part in the project.
The industry programme “ROSATOM’s Schoolchild” continues to evolve. In 2018, the programme anthem appeared, which was first performed by the children of the Holding Company employees in Zaryadye Park.

On the first day of summer, in the city of Krasnokamensk, a solemn award ceremony was held for the winners of the industry competition “ROSATOM’s Schoolchild: Collect a Bag of “Excellent” Scores” A Bag of “Excellent” Scores was gathered by 114 schoolchildren of different ages, who ended the school year with excellent scores.

In the JSC “Khiagda” for the successful completion of the school year, 22 children were awarded with valuable gifts - pupils in classes 1-11.

As part of the “ROSATOM’s Schoolchild” programme implementation in May, JSC Dalur organized and conducted a thematic tour of the enterprise “The main stages of uranium production” for pupils in classes 1-11 of Ukьяnsk secondary school.

In 2018, 15.9 million RUB were spent to support non-working pensioners, including 15.2 million RUB for regular pension supplements and 0.7 million RUB to provide material assistance and partial compensation for the cost of vouchers to health resort institutions.

At the same time, the share of expenditures on support of non-working pensioners in the total social expenditures (SE) decreased from 9.3% (2017) to 7.5% (2018) due to a decrease in the number of non-working pensioners registered in the Holding Company organizations.

The main reason for the decline in the number of non-working pensioners is the deregistration of PJSC PIMCU pensioners due to their departure from Krasnokamensk to other regions of Russia.

currently, the Holding Company has three collective agreements (PJSC PIMCU, JSC VNIPIpromtecheknologii, JSC Dalur) and two trade union organizations (PJSC PIMCU, JSC VNIPIpromtecheknologii). In JSC Dalur, the employee interests are represented by the Work Collective Council, which takes an active part in the interaction with the employer.

The share of the trade union organization members in the total list of the Holding Company employees as of December 31, 2017 was more than 34%.

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Support for veterans and pensioners

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The share of the trade union organization members in the total list of the Holding Company employees as of December 31, 2017 was more than 34%.
Non-state pension provision

Non-state pension programmes are implemented in PJSC PIMCU and JSC Dalur through JSC Non-State Pension Fund Atomgarant (NSPF).

Tab. 46. Types of Non-State Pension Programmes

<table>
<thead>
<tr>
<th>Pension programme No. 1</th>
<th>Employee participation in the programme of state co-financing of pension savings. At the same time, the ROSATOM and the ROSATOM organizations conclude an agreement with the NPF in which they open a personal retirement account to the employee participating in this pension scheme, which is proportional to the employer's contributions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pension programme No. 2</td>
<td>Participation of a ROSATOM employee and/or organization in agreed shares in the process of forming an additional employee pension in the NPF. Employees in shares agreed with these organizations participate in the formation of their pension savings, directing additional contributions to the NPF.</td>
</tr>
</tbody>
</table>

Employees in shares agreed with these organizations participate in the formation of their pension savings, directing contributions from wages to NPFs. As part of the pension programme No. 1, the employee and the organization contributions are the same. As part of the pension programme No. 2, the amount of the employee and the organization contributions, as well as the schemes for calculating pension contributions are different.

Participation in NSPP programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>PJSC PIMCU</th>
<th>JSC Dalur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees - NSPP programme participants according to scheme No. 1</td>
<td>33</td>
<td>7</td>
</tr>
<tr>
<td>Amount of pension contributions transferred by the organization to the NPFs to the personal retirement accounts of employees - participants of the programme No. 1, thousand RUB</td>
<td>257.85</td>
<td>75.6</td>
</tr>
<tr>
<td>Number of employees - NSPP programme participants according to scheme No. 2</td>
<td>473</td>
<td>209</td>
</tr>
<tr>
<td>Amount of pension contributions transferred by the organization to the NPFs to the personal retirement accounts of employees - participants of the programme No. 2, thousand RUB</td>
<td>12,972.7</td>
<td>2,507.51</td>
</tr>
<tr>
<td>Number of retiring employees for whom the organization makes additional payments (other than contributions) to the NPF</td>
<td>54</td>
<td>0</td>
</tr>
<tr>
<td>The amount of additional payments (other than contributions) transferred by the organization to NPFs for retiring employees, thousand RUB</td>
<td>34,973.35</td>
<td>0</td>
</tr>
<tr>
<td>Including the amount of lump-sum payments transferred to NPFs for retiring employees, thousand RUB</td>
<td>5,942.5</td>
<td>0</td>
</tr>
</tbody>
</table>

Social expenses

In the SE structure, the share of voluntary medical insurance of employees increased from 18.2% (2017) to 19.2% (2018), the cost of sports and cultural events increased from 7.2% to 9.1% and the cost of provision of hot meals to shift personnel of JSC Khiagda and JSC RUSBURMASH increased from 7.4% to 9.8%. At the same time, there was a decrease in the share of expenditures on the trade union organization upkeep from 3.1% to 0.6%.

Fig. 29. Structure of Social Expenses in 2018, %

Specific expenses on social payments in the Holding Company as a whole increased from 26.5 thousand RUB per one employee in 2017 to 29 thousand RUB in 2018.

Employee voluntary health insurance
Voluntary insurance of employees against accidents and diseases
Sanatorium treatment and rehabilitation
Support for non-working pensioners
Assistance in improvement of housing conditions
Non-state pension provision
Costs of sporting and cultural events
Catering
Employee welfare assistance
Payment of travel to the place of rest, treatment, to the assembly point for departure to the place of rotational shiftwork
Costs of the functioning of trade union organizations

Tab. 47. Engagement Rate Dynamics in 2016–2018, %

<table>
<thead>
<tr>
<th>Engagement Rate Dynamics in 2016–2018, %</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSC Atomredmetzoloto</td>
<td>85</td>
<td>83</td>
<td>80</td>
</tr>
<tr>
<td>PJSC PIMCU</td>
<td>54</td>
<td>59</td>
<td>66</td>
</tr>
<tr>
<td>JSC Khiagda</td>
<td>-</td>
<td>58</td>
<td>66</td>
</tr>
<tr>
<td>JSC Dalur</td>
<td>-</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>Division total:</td>
<td>62</td>
<td>66</td>
<td>66</td>
</tr>
</tbody>
</table>

Fig. 30. SE Dynamics per One Employee 2016–2018, thousand RUB

In 2018, the Holding Company enterprises took part in the annual study of the engagement rate “Your opinion is important to ROSATOM”. Following the results obtained at the enterprises, plans of measures were developed to increase the employee engagement rate.

Results of 2018:

- increased public loyalty index regarding the nuclear energy acceptability in Russia and abroad;
- new cooperation agreements were concluded in the operation areas;
- work with federal authorities and public organizations is continued;
- a number of charitable projects were implemented in the field of education and social infrastructure support in the operation areas;
- a "V" grant competition was held to support social projects in Krasnokamensk, Trans-Baikal Territory.
### 4.6.1.3. External Social Investments. Contribution to the Development of Operation Areas

We are guided by the principles of sustainable development and strive for economic efficiency, a balance of public interests and natural-ecological potential. We understand that infrastructure investments are an important aspect of our corporate social responsibility, since the Holding Company’s investments are an important aspect of our corporate potential. We understand that infrastructure investments are an important aspect of our corporate social responsibility. We share and support the sustainable development goals set forth in the Sustainable Development Agenda up to 2030, understanding that our business plays an important role and makes a significant contribution to the society well-being. We take into account the possible social and economic consequences of the made decisions and maintain a dialogue with all interested parties through the provision of public reporting and the implementation of social programmes.

**Impact on the local population in the operation areas**

We are convinced that an important part of the ARMZ Uranium Holding Co. strategic goal implementation is the development of the operation areas. Considering the geography of activity, we see one of our main tasks in maintaining stable jobs, strengthening a positive image and public confidence.

#### Financial support received from public authorities

Tab. 49. Subsidies Received by PJSC PIMCU in 2016–2018, million RUB.

<table>
<thead>
<tr>
<th>Name</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsidy of the Ministry, Education, Science and Youth Policy of the Trans-Baikal Territory for reimbursement of the costs of organizing and providing recreation and health for children, according to the decree of the Government of the Trans-Baikal Territory</td>
<td>11.96</td>
<td>5.46</td>
<td>3.22</td>
</tr>
<tr>
<td>Subsidy from the federal budget for reimbursement of expenses for radioactive waste management</td>
<td>-</td>
<td>80.00</td>
<td>103.00</td>
</tr>
<tr>
<td>Subsidy from the federal budget for the Mine No. 6 infrastructure construction</td>
<td>-</td>
<td>-</td>
<td>959.00</td>
</tr>
<tr>
<td>Subsidy from the federal budget for the R&amp;D</td>
<td>-</td>
<td>30.00</td>
<td>70.00</td>
</tr>
</tbody>
</table>

* In 2016, subsidies were received according to the Report on the Targeted Use of Subsidies for 2016 in the amount of 6.43 million RUB and the debts of the Ministry of Education, Science and Youth Policy of the Trans-Baikal Territory on subsidies for 2015 in the amount of 5.13 million RUB was repaid.

#### Tab. 50. Regional Tax Concessions Received by PJSC PIMCU in 2016–2018, million RUB

<table>
<thead>
<tr>
<th>Name</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income tax established for organizations making capital investments in a certain amount</td>
<td>35.04</td>
<td>15.59</td>
<td>11.70</td>
</tr>
<tr>
<td>Transport tax for the implementation of an investment project in the territories included in the consolidated register of investment sites in the Kurgan region</td>
<td>0.61</td>
<td>4.00</td>
<td>0.20</td>
</tr>
<tr>
<td>Property tax for the volume of investments in the purchase of fixed assets (in excess of the amount of exempted movable property)</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
</tbody>
</table>

#### Tab. 51. Regional Tax Concessions Received by JSC Khiagda in 2016–2018, million RUB

<table>
<thead>
<tr>
<th>Name</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property tax for the implementation of the investment project in accordance with the Law of the Republic of Buryatia No. 868-I V dated 08.05.2009 “On State Support of Investment Activities in the Republic of Buryatia”</td>
<td>47.26</td>
<td>200.28</td>
<td>239.26</td>
</tr>
</tbody>
</table>

#### Tab. 52. Regional Tax Concessions Received by JSC Dalur in 2016–2018, million RUB

<table>
<thead>
<tr>
<th>Name</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property tax for the implementation of an investment project in the territories included in the consolidated register of investment sites in the Kurgan region</td>
<td>11.38</td>
<td>19.74</td>
<td>0</td>
</tr>
<tr>
<td>Property tax for the power transmission lines, as well as facilities that are an integral technological part of these facilities</td>
<td>0.61</td>
<td>4.00</td>
<td>0.20</td>
</tr>
<tr>
<td>Income tax established for organizations making capital investments in a certain amount</td>
<td>35.04</td>
<td>15.59</td>
<td>11.70</td>
</tr>
<tr>
<td>Transport tax for the implementation of an investment project in the territories included in the consolidated register of investment sites in the Kurgan region</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>Property tax for the volume of investments in the purchase of fixed assets (in excess of the amount of exempted movable property)</td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
</tr>
</tbody>
</table>

#### The minimum wages in the operation areas

The minimum wage (including regional coefficients and northern allowances) at all enterprises of the Holding Company exceeds the subsistence minimum for the working-age population established in operation areas.

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Tab. 48. Tax Payment of ARMZ Uranium Holding Co. Key Enterprises to Regional and Local Budgets in 2016–2018, million RUB

<table>
<thead>
<tr>
<th>Regional and local budgets</th>
<th>ARMZ Uranium Holding Co. Enterprises</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurgan region</td>
<td>JSC Dalur</td>
<td>145</td>
<td>45</td>
<td>158</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>136</td>
<td>43</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>9</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>196</td>
<td>115</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>184</td>
<td>112</td>
<td>221</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>12</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>785</td>
<td>618</td>
<td>713</td>
</tr>
<tr>
<td></td>
<td>JSC Dalur</td>
<td>736</td>
<td>580</td>
<td>675</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>20</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>25</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>5</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>4</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>2</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>JSC RUSBRUMASH</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>JSC Khiagda</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,133</td>
<td>788</td>
<td>1,102</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,057</td>
<td>1,057</td>
<td>1,159</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,616</td>
<td>1,616</td>
<td>1,616</td>
</tr>
</tbody>
</table>

**Property tax for the power transmission lines, as well as facilities that are an integral technological part of these facilities**

**Property tax for the implementation of the investment project in accordance with the Law of the Republic of Buryatia No. 868-I V dated 08.05.2009 “On State Support of Investment Activities in the Republic of Buryatia”**

**Income tax established for organizations making capital investments in a certain amount**

**Transport tax for the implementation of an investment project in the territories included in the consolidated register of investment sites in the Kurgan region**

**Property tax for the volume of investments in the purchase of fixed assets (in excess of the amount of exempted movable property)**

**JSC RUSBRUMASH and JSC VNIIPromtechnologii did not receive state financial support in 2016-2018.**

**The minimum wages in the operation areas**

The minimum wage (including regional coefficients and northern allowances) at all enterprises of the Holding Company exceeds the subsistence minimum for the working-age population established in operation areas.
Investments in public infrastructure and charity

We are convinced that we have a significant impact on the social and economic development of the operation areas, not only participating in the G7 and creating a revenue base of regional and local budgets, but also implementing a complex of social and charitable programmes.

Corporate social responsibility programmes are aimed at:

- support of educational programmes and projects;
- cultural awareness initiatives and the cultural heritage preservation;
- support of environmental activities;
- popularization of mass and amateur sports and a healthy lifestyle;
- support of patriotic values and patriotic education.

In 2018, JSC Atomredmetzoloto spent 7 million RUB to provide charitable support to legal entities and individuals.

Results of 2018:

- public loyalty index regarding the nuclear power industry acceptability in Russia and abroad increased;
- new cooperation agreements were concluded in the operation areas;
- work with federal authorities and public organizations continued;
- several charitable projects were implemented in the field of education and social infrastructure support in the operation areas;
- V grant competition was held in support of social projects in Krasnokamensk, Trans-Baikal Territory.

Major social projects implemented at the Company’s expense

- Competition of charitable and social projects in Krasnokamensk, including the celebration of the Social Entrepreneur Day:
  - for social entrepreneurs operating in the territory of the urban settlement “Krasnokamensk City” - grants up to 150 thousand RUB;
  - for NPO - grants of 200 thousand RUB each;
  - for PSC PIMCU volunteers - grants of 50 thousand RUB each.
- Publication of sets of books "Atlas of the Illustration Perception" for distribution in children’s specialized institutions of Krasnokamensk (Trans-Baikal Territory) and Dalmatovo (Kurgan Region);
- The support programme for educational institutions of the Kurgan region – assisting Municipal State-owned Educational Institution Trudovskaya Secondary School (Tryul i Znamie village, Zverinogolovsky district) in the acquisition of equipment for vocational guidance class “Dalur” with in-depth study of the physical sciences;
- Trans-Baikal Territory Development Fund, which provides support in the remediation of consequences of emergency situations and provides prompt assistance to the population in the event of a possible deterioration of the flood situation;
- The Regina Yuryeva Foundation to support and facilitate the implementation of priority social projects, which assists in organizing the participation of children in the international social project “A World without Terror Through the Eyes of Children”. This project is aimed at finding talented children in the field of painting, including those with disabilities, in the regions of Russia and foreign countries, as well as attracting to the project prominent artists who actively contribute to the children promotion and public recognition.

**Volunteer initiatives proposed by JSC Atomredmetzoloto employees**

In addition to corporate charity programmes, we participate on our own and at our own expense in the implementation of volunteer projects:

- The "Good things" action: collecting things for the "Good things" social project;
- The "Alma" action: collecting rags for "Alma" animal shelter;
- The "Batteries and light bulbs" action: recycling used batteries and light bulbs;
- The "Old age in joy" action: collecting New Year’s gifts for the elderly, who are in nursing homes;
- The "Become a donor" action: blood donation for patients of the Bakulev Medical Centre.

2018 is the year of volunteer in Russia

"The things you are doing has no boundaries, neither demographic, nor territorial, nor political. You build your fate and the fate of your country!"

Sergei Kiriyenko, First Deputy Head of the Presidential Administration, Chairman of the Organizing Committee for the Year of the Volunteer
### 4.7. Contribution to the National Projects

In accordance with the Decree of the President of the Russian Federation No. 204 dated 07.05.2018 “On the national goals and strategic objectives of the Russian Federation development for the period up to 2014”, the Government of the Russian Federation has developed national projects in 12 areas. ARMZ makes a feasible contribution to the implementation of all national projects.

<table>
<thead>
<tr>
<th>National projects</th>
<th>ARMZ contribution to national projects</th>
<th>Section of the Report, where the contribution is disclosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demography</td>
<td>• assistance in improving housing conditions;</td>
<td>See Section 4.5. Human Capital</td>
</tr>
<tr>
<td></td>
<td>• financial support for families at baby birth;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• holding sports and cultural events, etc.;</td>
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<tr>
<td></td>
<td>• non-state pension provision;</td>
<td></td>
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<tr>
<td></td>
<td>• voluntary health insurance of employees;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• involvement of employees in systematic physical exercises and sports.</td>
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<tr>
<td>Healthcare</td>
<td>• voluntary health insurance of employees;</td>
<td>See Section 4.6.1. Social Investment Management</td>
</tr>
<tr>
<td></td>
<td>• voluntary insurance of employees against accidents and diseases;</td>
<td></td>
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<tr>
<td></td>
<td>• health resort treatment and rehabilitation;</td>
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<tr>
<td></td>
<td>• ensuring coverage of all employees with voluntary medical insurance;</td>
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<tr>
<td></td>
<td>• reduction of occupational injuries;</td>
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<tr>
<td></td>
<td>• ensuring coverage of all citizens with preventive medical examinations at least once a year.</td>
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</tr>
<tr>
<td>Education</td>
<td>• further expanding the list of training localization programmes at the Holding Company enterprises;</td>
<td>See Section 4.5.3. Personnel Professional Development</td>
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<tr>
<td></td>
<td>• further implementation of training plans and programmes aimed at developing the managerial skills of</td>
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<td></td>
<td>senior, middle and junior managers;</td>
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<td></td>
<td>• implementation of the e-learning development strategy EL-2020 at the Holding Company enterprises;</td>
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<td></td>
<td>• holding professional skills competition ARMZSkills under the WorldSkills methodology;</td>
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<td></td>
<td>• development of mentoring for the critical knowledge transfer.</td>
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<tr>
<td>Housing and urban environment</td>
<td>• assistance in improving housing conditions;</td>
<td>See Section 4.6.1. Social Investment Management</td>
</tr>
<tr>
<td></td>
<td>• ensuring sustainable reduction in unlivable housing.</td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>• efficient production and consumption waste management;</td>
<td>See Section 4.4. Natural Capital</td>
</tr>
<tr>
<td></td>
<td>• reduction of the air pollution level, including reduction of the total pollutant emissions into the air;</td>
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<td></td>
<td>• biodiversity preservation;</td>
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<td></td>
<td>• land reclamation;</td>
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<td></td>
<td>• reduction of the volume of wastewater discharged into water bodies;</td>
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<td></td>
<td>• further implementation of the various hazard class waste treatment system.</td>
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<tr>
<td>Safety and high-quality roads</td>
<td>• implementation of systemic measures aimed at increasing labour productivity, equipment and personnel;</td>
<td>See Section 4.1.4. ROSATOM Production System, Compliance with Product Quality Requirements</td>
</tr>
<tr>
<td></td>
<td>• further implementation of RPS projects at Holding Company enterprises aimed at reducing the lead time,</td>
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<td></td>
<td>stocks in the stream and unclaimed goods and materials at the enterprises;</td>
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<td></td>
<td>• reduction of mining site construction periods;</td>
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<td></td>
<td>• theoretical and practical training of personnel;</td>
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<tr>
<td></td>
<td>• assessment of management systems (quality management system and environmental management system);</td>
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<tr>
<td></td>
<td>• implementation of a Unified Industry System - “Quality” - in the Holding Company organizations.</td>
<td></td>
</tr>
<tr>
<td>Labour productivity and employment support</td>
<td>• further research on the parameters of hardening and pasta laying of the developed mountain space based on uranium ore processing tallings;</td>
<td>See Section 4.3. Intellectual Capital</td>
</tr>
<tr>
<td></td>
<td>• provision of a certain number of articles in publications indexed in international databases;</td>
<td></td>
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<tr>
<td></td>
<td>• further assessment of the state of sites for underground nuclear explosions and the development of measures for their rehabilitation;</td>
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<tr>
<td></td>
<td>• development of technical solutions for the disposal of solid radioactive waste and assessment of the status and prospects for industrial liquid and radioactive waste injection point operation.</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>• the reserve production life cycle digitalization and the mining complex optimization;</td>
<td>See Section 4.3. International Capital</td>
</tr>
<tr>
<td></td>
<td>• development of a sustainable and secure information and telecommunications infrastructure for high-speed data transmission;</td>
<td></td>
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<tr>
<td></td>
<td>• provision of information security.</td>
<td></td>
</tr>
<tr>
<td>Digital economy</td>
<td>• mass cultural and educational events;</td>
<td>See Section 4.6.1. Social Investment Management</td>
</tr>
<tr>
<td></td>
<td>• equipping educational institutions in the field of culture with musical instruments, equipment and teaching materials;</td>
<td></td>
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<tr>
<td></td>
<td>• replenishment of the library;</td>
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<tr>
<td></td>
<td>• equipping cinema halls with cinemas with modern equipment;</td>
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</tr>
<tr>
<td></td>
<td>• provision of grants to the best amateur creative teams.</td>
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</tr>
<tr>
<td>Culture</td>
<td>• increase in the number of people employed in the field of small and medium business, including individual entrepreneurs</td>
<td>See Section 4.6.1. Social Investment Management</td>
</tr>
<tr>
<td></td>
<td>• improvement of business conditions;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• expanding access of small and medium enterprises (SMEs) to financial resources, including concessional financing;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• acceleration of SME facilities;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• promotion of entrepreneurship;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• further holding of a grant competition to support social and charitable initiatives in Krasnoyarsk.</td>
<td>See Section 4.6.1. Social Investment Management</td>
</tr>
<tr>
<td>Small business and support for individual entrepreneurial initiative</td>
<td>• increase in exports of non-primary non-energy goods;</td>
<td>See Sections 4.1.2. Production Capital Management 4.1.3. Business Diversification</td>
</tr>
<tr>
<td></td>
<td>• increase in the volume of exports of services;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• improvement of the transport infrastructure quality;</td>
<td></td>
</tr>
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<td></td>
<td>• development of the Arctic basin port infrastructure;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• modernization of energy infrastructure.</td>
<td></td>
</tr>
<tr>
<td>International coorporation and export</td>
<td>• support of programmes contributing to the development of the road network in the operation areas;</td>
<td>See Section 4.4.3. Occupational and industrial safety</td>
</tr>
<tr>
<td></td>
<td>• development of road safety programmes;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• improvement of the system of control over the observance of traffic rules at the Holding Company enterprises and by contractors;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• development of the system for organization of the vehicle and pedestrian movement.</td>
<td></td>
</tr>
</tbody>
</table>

Sections of the Report, which describe the Holding Company contribution to the implementation of national projects, are marked by the corresponding infographic icons in the text of the Report.
Chapter 5.

INTERACTION WITH STAKEHOLDERS

5.1. Definition of Stakeholders

Assessing the impact on the current activities and strategic development of ARMZ, as well as the current practice of the Company’s interaction with external stakeholders and their dependence on the ARMZ performance results, we identified the following key stakeholders:

- Shareholders,
- Investment community,
- Local communities,
- Government (federal authorities of the subjects of the Russian Federation), local governments, regulatory authorities,
- Business partners, suppliers,
- Holding Company employees, trade unions,
- Product consumers (JSC TVEL, JSC TENEX),
- Mass media, NPOs, environmental organizations.

The degree of mutual influence and intersection of interests of stakeholders is reflected in the ranking map of stakeholders.

Fig. 31. Ranking Map of Stakeholders
5.2. Interaction with Stakeholders

We support regular open communication with stakeholders and build it on the basis of the business social responsibility principle.

The company adheres to a systematic approach to social issues and social investment management, helping to reduce social risks, ensure long-term fruitful relations with the operation areas and create the image of a socially responsible company.

In its activities JSC Atomredmetzoloto uses various means of communication with stakeholders – general meetings of shareholders, congress and exhibition events, presentations, informing through the media, social networks and corporate publications, hotlines for employees, federal communication projects, regional projects of the Holding Company. All of the Holding Company subsidiaries also have their own programmes of interaction with local communities.

In order to strengthen the positive image, JSC Atomredmetzoloto took part in a number of major international exhibitions, such as:
- annual symposium of the World Nuclear Association;
- St. Petersburg International Economic Forum SPIEF-2018;
- International Forum ATOMEXPO 2018;
- International Forum of Nuclear Industry Suppliers ATOMEX 2018;
- International Arctic Forum "The Arctic: Territory of Dialogue", etc.

Resolving community relations disputes

Ensuring the public acceptability regarding the nuclear energy development is one of the main strategic objectives of ROSATOM. JSC Atomredmetzoloto conducts activities in this area, guided by the principle of information transparency.

In the event of problem situations in the community relations, the Holding Company will be guided by the laws of the Russian Federation and the requirements of ROSATOM.

There were no complaints about the JSC Atomredmetzoloto impact on the local community.

Interaction with stakeholders

Tab. S4. Interaction with Stakeholders in 2018

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Interests</th>
<th>Interaction mechanisms</th>
<th>Activity and results in 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shareholders</td>
<td>• building up and diversification of the resource base;</td>
<td>• holding general meetings of shareholders;</td>
<td>• holding regular meetings;</td>
</tr>
<tr>
<td></td>
<td>• investment efficiency;</td>
<td>• disclosure of information on an external website;</td>
<td>• production quality and price</td>
</tr>
<tr>
<td></td>
<td>• safety priority;</td>
<td>• regular reporting;</td>
<td>• holding regular meetings;</td>
</tr>
<tr>
<td></td>
<td>• achievement of rated indicators</td>
<td>• annual report presentation as part of the dialogues</td>
<td>• presentation of annual reports as part of dialogues and public consultations</td>
</tr>
<tr>
<td>Investment community</td>
<td>• investment efficiency and growth quality</td>
<td>• holding regular meetings;</td>
<td>• disclosure of information on an external website</td>
</tr>
<tr>
<td></td>
<td>• investment efficiency and growth quality</td>
<td>• disclosure of information on an external website</td>
<td>See Chapter 2 Strategy and markets; Section 4.1.3. Business Diversification</td>
</tr>
<tr>
<td>Local communities</td>
<td>• social and economic development of the regions;</td>
<td></td>
<td>• issuing of press releases;</td>
</tr>
<tr>
<td></td>
<td>• implementation of social projects in the operation areas;</td>
<td></td>
<td>• holding press conferences and Informing Days;</td>
</tr>
<tr>
<td></td>
<td>• maintaining a stable level of employment;</td>
<td></td>
<td>• presentation of annual reports as part of dialogues and public consultations</td>
</tr>
<tr>
<td></td>
<td>• environment</td>
<td></td>
<td>• provision of comments on issues related to the activities of ARMZ Uranium Holding Co. enterprises</td>
</tr>
<tr>
<td></td>
<td>• public opinion polls</td>
<td></td>
<td>See Section 5.3. Transparency as the Main Principle of Interaction with Stakeholders</td>
</tr>
<tr>
<td></td>
<td>• holding public hearings as part of the annual report publication;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• holding public hearings as part of the new facility construction;</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• informing through mass media</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Economic impact on suppliers and contractors

In order to ensure a competitive and impartial choice of suppliers of goods and services, we adhere to the principles of openness and transparency of procurement activities.

In our work, we take into account our possible impact on contracting organizations by applying sanctions for non-fulfilment of obligations stipulated by contracts, as well as by withholding payment until the execution of contractual obligations in full. Possible sanctions are spelled out in the contract, which is an integral part of the procurement documentation, and the same for all participants.
5.3. Holding Information Transparency as the Main Principle of Interaction with Stakeholders

We strive to ensure the maximum level of openness and transparency of our activities, adhering to the principle of an active, regular and constructive dialogue with stakeholders. We support mutually beneficial cooperation and partnership with all stakeholders, promptly responding to the stakeholder requests and wishes and providing essential information on all aspects of the Holding Company’s activities.

Informational openness, transparency and fulfillment of the obligations assume respect for the balance of public interests and the commercial secrets of the Holding Company’s enterprises.

The Holding Company enterprises disclose information in the form of publishing decisions made by their Boards of Directors, disclosing stages of the procedure for issuing securities, the Annual Report, annual accounting (financial) statements and other documents. This information can be found on the websites of JSC Atomredmetzoloto http://www.armz.ru/aktsioneram-i-investoram/raskrytie-informatsii/soobshcheniya-o-raskrytiy-informatsii and its subsidiaries.

Media relations

In our work with the media, we strive to provide the most up-to-date and reliable information about the work of the Holding Company and the radiation situation in uranium production enterprises as quickly as possible.

Relevant information on all aspects of ARMZ Uranium Holding Co. activities is published by federal, regional and foreign media.

Fig. 32. Dynamics of ARMZ Mentions in the Media

<table>
<thead>
<tr>
<th>Year</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>3,102</td>
</tr>
<tr>
<td>2017</td>
<td>3,318</td>
</tr>
<tr>
<td>2018</td>
<td>3,799</td>
</tr>
</tbody>
</table>

Media representatives can send inquiries and requests through the website of JSC Atomredmetzoloto (http://www.armz.ru/press/contacts_for_mass_media/) and the corresponding sections of the websites of its subsidiaries.

As part of an open information policy, ARMZ Uranium Holding Co. is widely represented on all industry information resources of ROSATOM: on the website http://www.rosatom.ru, in the Strana ROSATOM newspaper, in the State Corporation video blog and Strana ROSATOM radio programme, etc.

Corporate newspapers are published for employees of ARMZ Uranium Holding Co. enterprises and residents of the operation areas. PJSC PIMCU publishes the “Gornyak Priargunya” newspaper, JSC Khiagda – “Vestnik Khiagdy”, JSC Dalur – “Vesti Dalura”, JSC RUSBURMASH – “RUSBURMASH pobedit!”. Also, PJSC PIMCU is the main shareholder of JSC TV-Centre (Krasnokamensk) – a local television company that broadcasts its own programmes on the frequency of the TNT channel on the basis of federal licenses and a corresponding agreement.

ARMZ Uranium Holding Co. is represented in four social networks, ARMZ and PJSC PIMCU groups are also created.

In 2018, JSC Atomredmetzoloto began to issue the internal corporate newspaper Vestnik ARMZ.

5.4. Commitment to Human Rights Protection

We do not accept the violation of human rights in any form or manifestation. One of the fundamental principles of the ARMZ work is respect for human rights. For the Company violation of human rights in all forms and manifestations in the field of interaction with employees, business partners and other stakeholders is unacceptable.

We strive for strict adherence to the rules of ethical business vision, demonstrate a responsible attitude toward employees and ensure that their work is voluntary and is rewarded properly.

We recognize our responsibility to ensure that any of our actions do not directly or indirectly contribute to the violation of human rights.

In the area of human rights, ARMZ is guided by:
- the Constitution of the Russian Federation and Russian legislation,
- documents of the International Labour Organization;
- UN Universal Declaration of Human Rights;
- UN Global Compact Principles;
- UN governing principles of entrepreneurial activity in the aspect of human rights, etc.
The environmental protection (EP) and the rational use of natural resources are increasingly significant, and by the mid-1990s, the construction of the Priargunsky Mining and Chemical Combination in 1968, the construction of the Priargunsky Mining and Chemical Works has begun. By the order of ROSATOM No. 1.63/nct 02.03.2018, the enterprise work collective was awarded the Departmental Order for the first time in the history of the nuclear industry “Svoboda”. By order of the JSC Atometminerozavod Director General Vladimir Verkhovtsev No. 003/198-fl dated 09.08.2018 the town-forming enterprise was given the name of E.P. Slavsky. The full name of the enterprise now is Public Joint-Stock Company E.P. Slavsky Priargunsky Industrial Mining and Chemical Union (JSC E.P. Slavsky PJSC).

The football tournament, essay and children’s drawing contests were dedicated to the anniversary of the legendary minister, as well as such events as: publication of the book “E.P. Slavsky. Uranium mining enterprises of the domestic nuclear industry”; holding an evening of memories “Efim Slavsky. The Legend” on November 2 in the Palace of Culture “Dauryt” in Krasnokamensk; publication of the article “To the 120th anniversary of the birth of Efim Pavlovich Slavsky” in the Mining Journal No. 7, 2018.

JUNE: anti-vandal streetsimulators were installed in 4 districts of Krasnokamensk; PJSC PJSC PMCU museums - the B.N. Khomontsov Mineralogical Museum and the Paleontological Museum – moved into the new premises; creation of the Alley of PMCU Veterans; opening of the PJSC PMCU children’s holiday camp “Sputnik” after reconstruction; JUNE-AUGUST: holding of the Trans-Baikal marathon “Around the World in 80 Days”, dedicated to the 50th anniversary of PJSC PMCU. For 80 days, its participants in total had to run 40,072 km, which is the maximum circumference of the Earth at the equator. By the end of the project, the runners “crossed” the equator twice and scored 96,402 km, the total distance traveled by cyclists was 71,488 km.

JULY: regional intellectual quest; The main festive events dedicated to the anniversary were held in August 2018: opening in Krasnokamensk of a permanent photo exhibition “40 Years of Accomplishments”; gala concert of the second season of the KVN league among the PJSC PMCU business units; giving PJSC PMCU the name of the legendary Minister of Medium-Machine-Building of the USSR, E.P. Slavsky; awarding JSC E.P. Slavsky PMCU of ROSATOM sign “Efim Pavlovich Slavsky”; solemn procession of PJSC PMCU work collectives along the Stroiteley Avenue of Krasnokamensk on Miner’s Day; music festival “Krasny kamen”; regional competition “Jeep Sprint “Red Heat”,

The result of the public awareness efforts was the support of uranium production plans in the region by the majority of local residents. In 2018, in accordance with the current legislation, the following public hearings were held in the village nearest to the Dobrovobnoye deposit, the village of Trud i Znanie, Zverinogolovsky district: March 2018 – on the materials on the planned economic activity and the preparation of the terms of reference for the development of the environmental impact assessment project “Pilot section for uranium drillhole in-situ leaching at the Dobrovobnoye deposit”;

As a result, in the village of Ulyanskoye (Dalmatovsky district) the materials for justifying the license for the construction of nuclear facilities were used unpromptedly. In the village of Tuzlakovo (Shumikhinsky district), 45 of present people voted “for”, 2 – “against”. In the village of Trud i Znanie (Zverinogolovsky district), 42 participants in the hearings voted “for”, 4 – “against”. At the initiative of the inhabitants of the village of Zverinogolovsky Nikolay Afanasiev and Mikhail Khizhnik, during the construction and operation of the pilot section for uranium drillhole in-situ leaching, sections describing the impact on aquifers appeared in the EIA. They proved that the technology of drillhole construction and production, the geological-geochemical conditions of the field, primarily the depth and isolation of the ore-bearing formation from the overlying horizons, exclude the ingress of productive solutions into the Tobol River and groundwater. The proposals of local residents made at the public hearings to conduct continuous monitoring of the facility and its placement in a “sludge pits”

The result of the public awareness efforts was the support of uranium production plans in the region by the majority of local residents. In 2018, in accordance with the current legislation, the following public hearings were held in the village nearest to the Dobrovobnoye deposit, the village of Trud i Znanie, Zverinogolovsky district:

- March 2018 – on the materials on the planned economic activity and the preparation of the terms of reference for the development of the environmental impact assessment project “Pilot section for uranium drillhole in-situ leaching at the Dobrovobnoye deposit”;
- August 2018 – on the materials on the planned economic activity and the preparation of the terms of reference for the development of the environmental impact assessment (EIA) project for the “sludge pits” for spent drilling muds;
- November 2018 – on the discussion of the preliminary draft of the environmental impact assessment project for the operation of a pilot section for uranium drillhole in-situ leaching at the Dobrovobnoye deposit;
- December 2018 – on the discussion of materials justifying the license for the construction of nuclear facilities.

Guided by the listed priorities and current legislation, before the deposit development, JSC Dalur makes public awareness efforts toward the Kurgan Region population. In particular, informing the population of the Kurgan region Zverinogolovsky district after obtaining a license for the right to use a subsoil plot of federal value Dobrovobnoye (government order of the Russian Federation No. 1113-p).

In the villages of Zverinogolovsky and Trud i Znanie, a permanent public information centre is open.

In the city of Kurgan, the villages of Zverinogolovsky and Ulyanskoye, JSC Dalur holds round tables and seminars with the involvement of renowned scientists; monthly tours to the existing JSC Dalur industrial sites for the Kurgan Region residents. Also, public participation was organized in the environmental monitoring of promising uranium production areas, in the preparation of a terms of reference and in the direct development of license justification documents, environmental impact assessment, etc.
5.5. Public Reporting System

The Holding Company is key organization of ROSATOM in terms of reporting. In order to increase the transparency of its activities and expand interaction with all stakeholders, since 2008 the Holding Company annually publishes integrated annual reports. The functional responsibility for the preparation of the public annual report was transferred to the corporate communication department. The working group for the annual report drafting is chaired by the Deputy Director General for Strategy A.G. Burutin.

Since 2017, JSC Atomredmetzoloto Public Annual Reporting Standard is in effect. It sets out the general requirements for public annual reports and the public reporting system, the Report drafting procedure; the Report content, including public reporting indicators and their data sheets.

Our awards and achievements for the Public Annual Report 2017:

Federal competitions:
- Diploma in a special category “Best comprehensive disclosure of the company’s results achieved in 10 years” of the XV annual competition of annual reports of the international rating agency Expert RA
- Diploma of the nominee in the category “Best Integrated Report” in the competition of annual reports for 2017 of the XV annual competition of annual reports of the international rating agency Expert RA

International competitions:
- Gold medalist in the category “Print Media/Print Creativity/CSR” following the results of the American competition of corporate communications MarComm Awards 2018
- Platinum medalist in the category “Print Media/Publications/Annual Report” following the results of the American competition of creative professionals Hermes Creative Awards 2019

Industry competition:
- Victory in the competition category “Best Public Report in the Field of Sustainable Development”

5.6. Interaction with Stakeholders during the Report Drafting

Dialogues with stakeholders during the report drafting

The holding company seeks to ensure that reporting information complies with the stakeholder requests. In accordance with international standards AGLOOSES, GRI SRS and IIRS, interaction is carried out through dialogue with stakeholders.

Dialogue No. 1. "Discussion of the draft concept for the JSC Atomredmetzoloto Annual Report for 2018" was conducted in the form of a stakeholder survey in November 2018.


Public consultation No. 4. "Discussion of JSC Atomredmetzoloto Draft Annual Report for 2018" were held in absentia in April 2019. In total, during the dialogues 47 proposals were received from stakeholders for finalizing the draft Report and improving stakeholder engagement. All of them are taken into account when finalizing the Report.

For details, see information about past events on the JSC Atomredmetzoloto website: https://www.armz.ru

5.7. Conclusion on Public Certification

Background
The JSC Atomredmetzoloto management thereinafter referred to as ARMZ Uranium Holding Co. (Company) suggested that, we evaluate the integrated public annual report for 2018 thereinafter referred to as the Report in terms of completeness and materiality of the information disclosed in it, and evaluate the efficiency of the Company's management response to the stakeholder wishes and comments.

Draft Report evaluation procedure
To this end, the Company provided us with the opportunity to participate and express our comments in four meetings with stakeholders that took place:
November 2018. Absentee questioning of stakeholders on the discussion of the Report draft concept and the updating of substantive topics;
During the events, we were given the opportunity to freely express our opinion.

Our conclusion is based on a comparative analysis of two versions of the Report (draft Report for public consultations and a final version of the Report) and materials provided to us based on the results of the dialogues held (protocols, tables for taking into account the stakeholder comments), as well as comments received from the Holding Company management and employees during the public certification of the Report.

In the process of the Report public certification, we did not set the task of verifying the information accuracy. Confirmation of the degree of the Report compliance with any reporting systems, both Russian and international, is also not part of the task of this conclusion.

We observe the ethical requirements of independence and objectivity of evaluations; we express our personal expert opinion, and not the opinion of organizations that we represent. All participants in public consultations had the full opportunity to freely express their opinions. We confirm that we did not receive any remuneration from the Company for participating in the public certification procedure.

The results of our work are presented in the form of this Conclusion on Public Certification, containing the judgments about which we have come to an agreement.

Opinions, comments and recommendations
Regarding the structure and content, we appreciate the Report. JSC Atomredmetzoloto prepared an informative and well-structured report that meets our expectations. It is important that the Company voluntarily assumed responsibility for the Report preparation and for the eleventh consecutive year demonstrates a high level of commitment to ensuring public and environmental acceptability, and readiness to conduct an open dialogue with stakeholders on various areas of its activities. We see that the Company's management is aware of the constructiveness and prospects for interaction with stakeholders.

The undoubted advantage of the Report is the use in its preparation of international standards Sustainability Reporting Standard of Global Reporting Initiative (GRI SRS), A1000.
Appendices

Appendix 1. Report Information Contents of the Report

The JSC Atomredmetzoloto public annual report for 2018 (hereinafter referred to as the Report) is the eleventh integrated report of the Holding Company.

Report Boundaries


The report covers all major companies among the Holding Company’s subsidiaries.

The JSC Atomredmetzoloto annual report for 2017 was published on the Holding Company’s website at www.armz.ru (Shareholders and Investors> Information disclosure> Annual reports) in June 2018.

Standards and regulatory requirements used in the Report preparation

The Report Drafting and Content Determining Process

In the process of the Report preparation, an analysis of the Holding Company’s activities in 2018 was conducted. The integrated report format allows to demonstrate the Company’s performance in an economic, social context and in relation to environmental protection. During the Report preparation, a survey of internal and external stakeholders was conducted in order to update the matrix of material topics. Information for the Report was collected using special technical inquiries under the GRI and ISO requirements, taking into account the materiality analysis results. The Report also reflects the Company’s influence on stakeholders. The Report preparation was carried out in close cooperation with them.

Federal regulations:


International Public Reporting Standards:

- International stakeholder relation standards of the Global Reporting Initiative (GRI);

ROSATOM’s Regulatory Documents:

- Uniform Industry Policy of ROSATOM in the field of public reporting, approved by order of ROSATOM No. 1/1069-F dated 11.11.2015;

JSC Atomredmetzoloto’s Regulatory Documents:

- JSC Atomredmetzoloto Public Annual Reporting Standard

Application Level: GRI Standard SRS Basic

In November 2018, an absentee dialogue was held to discuss the Report concept. On December 27, 2018, two dialogues were held to discuss the priority topic.

In April 2019, absentee public consultations were held to discuss the draft Report. See details in Section 5.6. Interaction with Stakeholders during the Report Drafting.

Information materiality determining process

In November 2018, in accordance with the International Integrated Reporting Standard and the Sustainable Development Guidelines GRI SRS, a survey of the Holding Company stakeholder representatives was conducted with a view to prioritize substantive topics. The survey proposed to isolate from the complete list of topics those that in the respondent opinion should be disclosed in the Report first. It was necessary for them to assess the importance of each topic on a three-point scale and offer their own options for significant topics. The matrix is built in the axes, which determine the position of each topic both along the horizontal axis (“Significance for the Company”) and along the vertical axis (“Significance for stakeholders”). The most significant topics are in the upper right corner (the darkest field).

Priority Topic of the Report: 50 Years of PJSC PMCS: New Prospects for Strategic Development

Signatures of Certifiers:

Marina Aksenova,
Director (Editor-in-Chief) of the Municipal Unitary Enterprise "Media Center "Voskhod"

Ekaterina Aibazhina,
Chairman of the Krasnokamensk Local Public Organization of the All-Russian Public Organization of the Federation of Disabled People

Nadezhda Beryyukh, Director of the Municipal Public Educational Institution "Sokolniki Secondary School", Dalmatovsky district of the Kurgan region

Oleg Brizhanov, Chairman of the Krasnokamensk Local Public Organization of Internally "Repatriate Veterans"

Sergey Golovachev, Advisor to the Communications Department of the Municipal Unitary Enterprise "Media Center "Voskhod"

Yury Didenko, Head of the Krasnokamensk Local Public Organization of Internally "Repatriate Veterans"

Olga Kamnikova, Deputy head of the Microcredit Company "Fund for the Support of Small Entrepreneurship of the Krasnokamensk Urban Settlement"

Nataliya Markova, Chairman of the Krasnokamensk Local Public Organization of the Trans-Baikal Regional Public Organization of the Federation of Disabled People

Grigory Mashkovtsev, Executive Director of the Non-Governmental Environmental Fund "EcoFriends of Khakassia"

Olga Piyamina, Executive Director of the Non-Governmental Environmental Fund "EcoFriends of Khakassia"

Andrey Fedorov, Chairman of the Krasnokamensk Local Public Organization of Internally "Repatriate Veterans"

Igor Radovskiy, Head of the Corporate Social Responsibility Department of TENEX

Igor Savelev, Director of the JSC OTEK branch office "Vitimskoye rural settlement"

Olga Plyamina, Director (Editor-in-Chief) of the Municipal Unitary Enterprise "Media Center "Voskhod"

Andrey Fedorov, Chairman of the Krasnokamensk Local Public Organization of Internally "Repatriate Veterans"
The report passes two external certifications:

- Financial audit - Nexia Pacioli Group of Companies  
- Non-Financial Audit - Nexia Pacioli Group of Companies

There are no significant changes in the scope and boundaries of significant topics compared to previous reports. The boundaries of topics and content of the Report are determined by the working group for the annual report drafting, taking into account the views of stakeholders and agreed by JSC Atomredmetzoloto.

**Economy topics:**
1. Financial performance
2. Market presence
3. Indirect economic effects (including creation of jobs on the social council)
4. Procurement
5. Financial statements
6. Innovation
7. Corporate governance (including improvement of procedures and internal control)
8. Performance indicators
9. Environmental indicators

**Environmental topics:**
10. Water (water consumption)
11. Power (power consumption)
12. Materials (used materials)
13. Investments
14. Diversification
15. Approaches to labour organization
16. Social topics:
- Claims against human right infringement
- Safety (safety practices)
- Freedom of association
- Employment
- Health and occupational safety
- Training and education

**Society:**
- Influence on operational areas (social programs, charity)
- Consumer health and safety
- Environment topics:
- Emergency preparedness
- Biodiversity
- Environmental compliance
- Product safety
- Water (water consumption)

**Report Verification**
Financial audit - Nexia Pacioli Group of Companies  
Audit of the internal control and audit department
Public certification
Non-Financial Audit - Nexia Pacioli Group of Companies

- conclusion on public certification, in which representatives of external stakeholders participate on a voluntary gratuitous basis;
- conclusion of an independent non-financial auditor, whose selection is carried out as part of an open procurement procedure.

**Statement of limitation of responsibility for the forecast data publication**
The report contains forward-looking statements regarding production, financial, economic and social indicators characterizing the Company’s further development. The implementation of the assumptions and intentions is directly related to the political, economic, social and legal situation. In this regard, the actual results of the Company’s activities may differ from those predicted.

**Economy topics:**
1. Financial performance
2. Market presence
3. Indirect economic effects (including creation of jobs on the social council)
4. Procurement
5. Financial statements
6. Innovation
7. Corporate governance (including improvement of procedures and internal control)
8. Performance indicators
9. Environmental indicators

**Environmental topics:**
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11. Power (power consumption)
12. Materials (used materials)
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**Society:**
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Audit of the internal control and audit department
Public certification
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Financial audit - Nexia Pacioli Group of Companies  
Audit of the internal control and audit department
Public certification
Non-Financial Audit - Nexia Pacioli Group of Companies

- conclusion on public certification, in which representatives of external stakeholders participate on a voluntary gratuitous basis;
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**Statement of limitation of responsibility for the forecast data publication**
The report contains forward-looking statements regarding production, financial, economic and social indicators characterizing the Company’s further development. The implementation of the assumptions and intentions is directly related to the political, economic, social and legal situation. In this regard, the actual results of the Company’s activities may differ from those predicted.
### Appendix 3. Conclusion of the Internal Control Directorate

The internal non-financial audit of the drafting process of JSC Atomredmetzoloto’s public Annual Report 2018 (hereinafter the Report) has been completed in furtherance of clause 9 of Attachment 2 to the order of JSC Atomredmetzoloto’s Director General No. 003/334-П dated 12/14/2018 On Organization of Work for Drafting JSC Atomredmetzoloto’s Annual Report 2018.

The Report drafting process engaged the considerable part of JSC Atomredmetzoloto’s core business units and employees of its subsidiaries. Information provided by them was assessed, discussed and further consolidated. Responsible persons have conducted the dialog with representatives of stakeholders regarding disclosure of the priority topic in the annual report as well as public consultations regarding the draft annual report.

The year 2018 was marked by the commemoration of the 50th anniversary of P.JSC PIMCU and the 125th anniversary of the birth of the Head of the Ministry of Medium Machine-Building, E.P. Slavsky. Therefore, the Report has been supplemented with authentic historical references.

The most important event for the Holding Company within the reporting period is the start of construction of a new uranium mine No. 6 of PJSC PIMCU in the Trans-Baikal Territory. The Report contains up-to-date information about this project.

The Report provides both general information on key events and results of 2018 and detailed information on activities to which JSC Atomredmetzoloto’s management and staff pay special attention and which concentrate maximum resources:

- formulation of the Holding Company’s strategy and priorities;
- improvement of management and production performance;
- implementation of national projects;
- protection of natural resources.

The information set forth in the Report fully represents the main facts and achievements of the Mining Division in 2018 in all material respects.

The report allows informing users of the existing systems and practices of business corporate governance, achieved results, short- and long-term plans.

Audit findings allow concluding that the public reporting process is efficient and that the public reporting procedure of JSC Atomredmetzoloto is compliant with the requirements of Russian legislation and international standards for the public reporting.

*Acting Director, Internal Control*

D.M. Pimenov
Appendix 4. Conclusion on the Report
independent certification results

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2 Malaya Polyanka St., Moscow 119180, Russian Federation

Conclusion on the Results of the Independent Certification of the Public Annual Report of Atomredmetzoloto, JSC for 2018

Addressees
Management Board of Atomredmetzoloto, JSC

Subject of the Certification
Information included in the Public Annual Report of Atomredmetzoloto, JSC for 2018 (hereinafter referred to as the Report)

Criteria
Information included in the Public Annual Report of Atomredmetzoloto, JSC for 2018:
- Requirements of the legislation of the Russian Federation to the annual reports of joint-stock companies regarding the disclosed information,
- Requirements of local regulations in the field of public reporting,
- Requirements of the global standards for sustainability reporting (GRI Standards) to the basic compliance option.

Responsibility of the Management Board
The Management Board is responsible for preparation and submission of the Public Annual Report, as well as the implementation of the process concerning the interaction with interested parties, including the implementation of all related procedures and requirements, including the internal control system. This responsibility includes the organization and maintenance of the internal control system that the Management Board considers necessary for the preparation of the Report, while ensuring that there are no material misstatements due to fraud or mistakes.

This responsibility also includes the selection of applicable legal requirements, as well as the preparation of internal documents and methodologies for calculating the key performance and other indicators for the purposes of preparing the Report.

Responsibility of the Auditor
We performed the assignment in accordance with the International Standard for Assurance Assignments 3000 (Revised) “Assurance Assignments Different from the Audit and the Review of the Financial Information for the Past Periods” approved by the Order of the Ministry of Finance of the Russian Federation on January 2, 2019.

Our responsibility is to obtain sufficient appropriate evidence to make the conclusion that provides limited confidence that the Report contains no material misstatements due to fraud or mistakes.

As a part of the assignment providing the limited confidence, the auditor reduces the risk under the assignment to any acceptably low level, while considering the circumstances, in order to make the conclusion.

As a part of the assignment performed in accordance with IASAS 3000, we apply our professional judgment and maintain professional skepticism during the audit. In addition, we perform the following activities:
- Identification and assessment of all risks of material misstatements in the Report due to fraud or mistakes, development and implementation of procedures in response to such risks, obtaining the evidences that are sufficient and appropriate to serve as the basis for making our conclusion. The risk of failure to find material misstatements due to fraud is higher than the risk of failure to find material misstatements due to mistakes, as unfair actions may include collusion, forgery, intentional omission, distorted information or bypassing the internal control system,
- Obtaining the understanding of the internal control system, which is relevant to the performance of the assignment, in order to develop the procedures appropriate to the circumstances, but not to make the conclusion about the effectiveness of the Customer’s internal control system,
- Assessment of the appropriateness of applied policy, internal documents and calculation methods, as well as the reasonableness of all estimates and the corresponding disclosures prepared by the Management Board.

We perform the informational interaction with the persons responsible for the corporate governance by providing them, among other things, with the information on the planned scope and terms under the assignment, as well as significant remarks on the results of the assignment.

Standards and Level of the Certification
The certification is performed in accordance with the International Standard of Assurance Assignments 3000 “Assurance Assignments Different from the Audit and the Review of the Financial Information for the Past Periods” (IORC 3000, ISAE 3000). The certification is limited in accordance with IASAS 3000.

Methodology
We performed the following activities during the certification process:
- Selective interviewing of the top management of JSC Atomredmetzoloto, as well as the specialists of JSC Atomredmetzoloto involved in the process of preparing the Public Annual Report,
- Analysis of local regulations in the field of public reporting,
- Verification of documents and the performance data used to prepare the Public Annual Report,
- Study of the information about the activities of JSC Atomredmetzoloto, including in the field of sustainable development, available on the official website,
- Selective study of the information about JSC Atomredmetzoloto available in the mass media,
- Assessment of the compliance of the process of preparing the Public Annual Report, including the process of collecting, documenting, analyzing, verifying and selecting the data included in the Report, with the requirements of local regulations applicable to this area,
- Assessment of compliance with the GRI 101 standard in terms of the requirements for the principles of determining the content of the report and ensuring its quality.
Assessment of the compliance with the GRI 103 standard in terms of disclosure requirements for management approaches,

Assessment of the compliance with the GRI standards (102, 201, 202, 204, 205, 302, 303, 304, 305, 306, 307, 401, 402, 403, 404, 405, 406, 413, 415, 416, 417, 418 and 419) in terms of the requirements for reporting elements stated in the GRI standards, as well as thematic requirements for the disclosure of the information about management approaches,

• Assessment of the information contained in the Public Annual Report for the compliance with the requirements of the legislation of the Russian Federation related to the content of annual reports of joint-stock companies.

Findings

According to implemented procedures and obtained evidences, our attention was not paid to any facts that would make us believe that the subject matter of the certification did not comply in all material aspects with the requirements of the legislation of the Russian Federation to the annual reports of joint-stock companies, regarding the disclosed information, as well as the requirements of local regulations in the field of public reporting and the requirements of the GRI standards for reporting on sustainable development to the basic compliance option.

We note that the requirements of the GRI standards regarding the indicators, such as 102-22, 405-1, 301-1 and 306-1, are not fully considered (partial disclosure), explanations on the disclosure of indicators (305-2, 305-3 and 305-5) also do not fully comply with the requirements of the GRI standards (do not contain plans and terms for the full disclosure).

Inherent Limitations

Without changing our opinion, we pay our attention to the presence of limitations inherent in the certification associated with the selective nature of the verification. As a result, there is a possibility that unfair actions, mistakes or violations may not be found.

The certification was performed on the basis of the data for 2018. The certification was not performed in respect of forward-looking statements, statements expressing opinions, beliefs and intentions.

The on-site audit procedures were limited to the visit to the Headquarter of JSC Atomredmetzoloto.

The certification was exclusively performed in relation to the version of the Public Annual Report for 2018 represented in Russian and MS Word format.

We were not able to certify the fact that the Public Annual Report was publicly available, including all Annexes, including the conclusion on the public certification, in its final form, because the signing of such conclusion preceded it.

For a similar reason, we did not have the opportunity to certify the fact of the inclusion of the conclusion on the public certification of the Public Annual Report in the Report.

Recommendations

Disclosure of indicators is advisable to be performed in relation to the target values and plans for the future.

Increase in the degree of the disclosure of indicators, which are not fully covered by the requirements for the GRI indicators.
### List of Abbreviations and Terms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>BIM</td>
<td>Building Information Modeling</td>
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<tr>
<td>EBITDA</td>
<td>Earnings Before Interest, Taxes, Depreciation and Amortization</td>
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<td>GRI</td>
<td>Global Reporting Initiative</td>
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<td>FIFR</td>
<td>Fatal Injury Frequency Rate</td>
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<td>LTIFR</td>
<td>Lost Time Injury Frequency Rate</td>
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<tr>
<td>Multi-D</td>
<td>Innovative technology for managing a complex industrial facility</td>
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<tr>
<td>AIE TUE</td>
<td>Automated Information and Measurement System for Technical Electric Power Accounting</td>
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<td>NPP</td>
<td>Nuclear Power Plant</td>
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<tr>
<td>LT</td>
<td>Lead Time</td>
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<td>TM</td>
<td>Top Management – Director Generals, Deputy Director Generals</td>
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<td>GGE</td>
<td>FN Glavgosexpertiza of Russia</td>
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<td>LP</td>
<td>Leach Plant</td>
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<td>MPW</td>
<td>Mining and Processing Works</td>
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<td>ICA</td>
<td>Independent Contractor Agreement</td>
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<td>GG</td>
<td>Geological Exploration Crew</td>
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<td>ID</td>
<td>Internal Control Directorate</td>
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<td>SC</td>
<td>Subsidiary Companies</td>
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<td>UHRS</td>
<td>Unified Harmonized Remuneration System</td>
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<td>RWS</td>
<td>railway shop</td>
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<td>NFC LC</td>
<td>Nuclear Fuel Cycle’s Life Cycle</td>
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<td>PNNL</td>
<td>Pulsed Neutron-Neutron Logging</td>
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<td>LMS</td>
<td>Logistics Management Information System</td>
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<td>HL</td>
<td>Heap Leaching</td>
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<td>CCC</td>
<td>Cluster Computer Centre</td>
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<tr>
<td>CSS</td>
<td>Consolidated Group of Taxpayers</td>
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<tr>
<td>LIFN</td>
<td>Logging by the Method of Instantaneous Fission Neutrons</td>
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<tr>
<td>STF</td>
<td>Sewage Treatment Facilities</td>
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<td>LDR</td>
<td>Lost Day Rate</td>
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<td>GDR</td>
<td>Occupational Disease Rate</td>
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<tr>
<td>KPI</td>
<td>Key Performance Indicators</td>
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<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<td>SWCG</td>
<td>Switchgear and Control Gear</td>
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<td>LSU</td>
<td>Local Sorption Unit</td>
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<td>MRB</td>
<td>Mineral Resource Base</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<td>NPO</td>
<td>Non-Profit Organizations</td>
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<td>uPVC</td>
<td>Unplasticized Polyvinyl Chloride</td>
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<td>NSPP</td>
<td>Non-State Pension Provision</td>
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<td>Non-State Pension Fund</td>
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<td>FE NFC</td>
<td>Front-End of the Nuclear Fuel Cycle</td>
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<td>STI</td>
<td>Scientific and Technical Information</td>
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<td>CT</td>
<td>Critical Tasks</td>
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<td>EI A</td>
<td>Environmental Impact Analysis</td>
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<td>NIF</td>
<td>Negative Impact Facilities</td>
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<td>EP</td>
<td>Environmental Protection</td>
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<td>PW</td>
<td>Pilot Works</td>
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<td>PP</td>
<td>Pilot Plant</td>
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<td>GMS</td>
<td>General Meeting of Shareholders</td>
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<td>PP</td>
<td>Pilot Works</td>
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<td>ETW</td>
<td>experimental works</td>
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<td>ULP</td>
<td>LLC United Uranium Plants</td>
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<td>VSF</td>
<td>Vibrating Screen Feeder</td>
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<td>UMM</td>
<td>Underground Mining Method</td>
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<td>LHD</td>
<td>Load-Haul-Dump Machines</td>
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<td>DEW</td>
<td>Design and Exploration Work</td>
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<td>FDMC</td>
<td>The First One Mining Company</td>
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<td>PMCW</td>
<td>Phirangundy Mining and Chemical Works</td>
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<td>SS</td>
<td>Substation</td>
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<td>RPS</td>
<td>RIDGATOM Production System</td>
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<td>RAW</td>
<td>Radioactive Waste</td>
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<td>RIA</td>
<td>Repair and Recovery Activities</td>
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<td>RIA</td>
<td>Results of Intellectual Activity</td>
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<td>RMP</td>
<td>Repair and Mechanical Plant</td>
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<td>EM</td>
<td>Exploratory Mine</td>
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<td>SE</td>
<td>Social Expenses</td>
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<td>SLF</td>
<td>Synthetic Liquid Fuel</td>
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<td>MM</td>
<td>Mass Media</td>
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<td>DSL</td>
<td>Drilling In-Situ Leaching</td>
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<tr>
<td>USSR</td>
<td>Union of Soviet Socialist Republics</td>
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<tr>
<td>ASN</td>
<td>average staff number</td>
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<tr>
<td>RMO</td>
<td>Risk Management System</td>
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<td>PSEDA</td>
<td>Priority Social and Economic Development Area</td>
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<td>DP</td>
<td>Decision Point</td>
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<tr>
<td>FE</td>
<td>Feasibility Study</td>
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<tr>
<td>CHP</td>
<td>Combined Heat and Power Plant</td>
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<tr>
<td>CLA</td>
<td>Central Laboratory of Instrumentation and Automation</td>
</tr>
<tr>
<td>CPS</td>
<td>Central Production Site</td>
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<tr>
<td>MCD</td>
<td>Mine Construction Department</td>
</tr>
<tr>
<td>NEC</td>
<td>Nuclear Energy Centre</td>
</tr>
<tr>
<td>BCO</td>
<td>Biochemical consumption of oxygen</td>
</tr>
</tbody>
</table>

### Contact details

**Full company name**
JSC Atomredmetzoloto

**Abbreviated name**
JSC Atomredmetzoloto

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