



ROSATOM



## ANNUAL REPORT 2017

JSC ATOMREDMETZOLOTO –  
ARMZ Uranium Holding Co.,  
Mining Division of ROSATOM



# 10 YEARS

## SUSTAINABLE DEVELOPMENT TRAJECTORY



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## APPROVED BY

the resolution of the Board of Directors of JSC Atomredmetzoloto

(Minutes No.209 dd. May 25, 2018)

This Report has been pre-approved by

the Director General, JSC Atomredmetzoloto

(order No. 003/124-П dd. May 14, 2018)

## INTEGRATED ANNUAL REPORT

JSC Atomredmetzoloto

2017

## 10 YEARS: SUSTAINABLE DEVELOPMENT TRAJECTORY

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## Address of the Chairman of the board of directors Alexander Lokshin

### DEAR READERS!

In 2017, JSC Atomredmetzoloto celebrated its 10th anniversary as one of the recognized leaders of global uranium industry renowned as a reliable, efficient and impeccable supplier of strategic feedstock for the Russian nuclear industry. For those ten years, the company had been on the track of establishment and development, recurrent upgrading and overcoming its current challenges. Currently, we are a dynamically developing company with established vertical governance and a brilliant team of professionals completing ROSATOM's tasks under any, even the most complex, conditions.

The company is working on its operational performance improvement. In the reporting period, we have managed not only to prevent cost growth but also to continue reducing the unit cost of production in uranium mining. Such high results could not be achieved without streamlining the volumes and cutting the underground uranium mining costs at PJSC PIMCU, and increasing in-situ leaching production volumes at JSC Dalur and JSC Khiagda (+14% vs. 2016). These are our key performance indicators. Undoubtedly, they must not be underestimated like the entire performance of our company proving once again that no challenge is impossible for it.

The holding has been sustainably supplying the industry with Russian natural uranium. Here, our Company pays special attention to development of modern processes. We were able to make environmentally friendly and economically efficient in-situ leaching (ISL) to account for 44% of the total Russian production volume. The development driver was commissioning of key infrastructural assets at

JSC Khiagda in 2015 to 2016 including the production facility, sulfur acid works and power facility. The rated capacity with production of circa 1,000 tpa is expected to be achieved in 2019.

Employees' lives and health remain the highest value for the Holding's enterprises. The actions aimed at improving safety allowed the Mining Division to prevent fatal injuries in 2017.

The Holding's enterprises are responsible especially for preservation of favorable environment in the operating regions. The positive experience of the most efficient uranium mining asset, JSC Dalur, has been rated highest winning the award of the prestigious international project Environmental Culture. Peace and Harmony organized by V.I. Vernadsky Fund and supported by the Federation Council of the Federal Assembly of the Russian Federation. The award for implementation of environmental protection operation has been given to JSC Dalur's representatives during the reception at the Presidential Administration of the Russian Federation.

In 2017, foundations were laid for implementation of the innovative project that would change the approach to uranium mining radically. The Smart Mine project based on digitalization of all processes is no longer fantasy. The project would allow creating high-performance production and casting a new glance at uranium mining process economy in the nearest future. I wish our colleagues success in their creative work!

I must also note the Holding's operations in implementation of non-uranium projects. The Scandium project has become successful after the pilot

batch of high-purity scandium oxide was produced during the reporting year. Additionally, 2017 saw attraction of new customers as well as increase of contractual volumes and periods for sale of sized coal produced by PJSC PIMCU.

The brightest and, I would even say, historical event of the reporting year was start of infrastructure construction at the new uranium mine No. 6 at PJSC PIMCU, which, in its turn, defines the development pattern both of the enterprise and the city of Krasnokamensk. Given the continuing surplus of supply in the uranium market, the Priargunsky Works managed to end Y2017 with positive balances. Such success, undoubtedly, became possible only due to the efficient and concerted efforts of the entire Holding's team as well as its skillful and efficient management system.

I am sure that the upcoming year and the next decade will become not less fruitful and successful for the experienced and skillful team of ARMZ Uranium Holding Co.



## Address of the Director General Vladimir Verkhovtsev

### DEAR COLLEAGUES,

In 2017, ARMZ Uranium Holding Co. celebrated its 10th anniversary. I am proud to present the 10th report of JSC Atomredmetzoloto describing the decade's events and trends as well as important strategic initiatives that have determined, in many respects, further development of our Company and the entire Russian nuclear industry.

Those were no easy times as influence of external factors made us revise our strategic targets and management system, change the Holding's structure consolidating Russian uranium mining assets since 2013.

Still and despite the uranium market volatility, the Holding's team has managed to show high operation and financial performance. The flexible management system, accumulated experience and focus on innovations and use of cutting-edge processes have allowed our Company to remain the leader among uranium majors and ensure successful development of non-nuclear businesses.

The most important outcome of the reporting year and, I daresay, the entire decade has become start of financing the construction of Mine No. 6 at PJSC PIMCU. The first installment of RUB 389 MM has been provided for construction of infrastructural facilities. Launching the mines would grant new opportunities both for the single enterprise and the city of Krasnokamensk, the uranium capital of Russia.

Profitable operations of PJSC PIMCU in 2017 (RUB 7 MM) are another significant achievement emphasizing efficient operations of the management under extremely unfavorable market conditions.

The reporting year saw continued work for achieving ROSATOM's strategic targets. The Holding's team ensured reduction of unit production cost of mining by 2% versus 2016 by increasing

the share of uranium production at enterprises mining uranium using in-situ leaching.

We consider organizing output of new products for the Russian and international markets another important task. Last year saw the start of high-purity scandium oxide production. ROSATOM approved the Holding's initiative for titanium, lithium and other rare metal mining. Within the framework of our most large-scale project being construction of the MPC at Pavlovskoye lead-zinc field on Novaya Zemlya Archipelago, field engineering survey operations have been completed, design has been started and preliminary agreements have been executed with anchor product customers.

The production achievement of PJSC PIMCU is high expert appraisal of models of self-propelled mining machinery developed by the enterprise. Mine No. 8 saw startup of commercial operations of the integrated automated access control system being the project aimed at improving labor safety and injury reduction.

JSC Khiagda is systematically increasing its production level and started development of Vershinnoye Uranium Deposit in 2017. As the developing and most prospective enterprise of the holding, JSC Khiagda would become, in 2018, the pilot site for implementation of the Smart Mine innovative project that would change the shape of domestic uranium mining in the nearest future by ensuring its transition to smart management of specific processes and deposit development lifecycle based on digital processes.

The most efficient enterprise of the holding, JSC Dalur, has started preparing for development of its new Dobrovolnoye Uranium Deposit in the Zverinogolovskoye District (Kurgan Region). Its commissioning will allow maintaining the current uranium output in the long term. The project is supported by the regional government as one of the most important for its social and economic development.

JSC Atomredmetzoloto is working systemically on improving investment

cases of its operation regions. In 2016, the Krasnokamensk Priority Social and Economic Development Area (PSEDA) was founded in the Trans-Baikal Territory and its operations will diversify the city's economy. Given ARMZ support, 2017 saw the first three businesses included in the PSEDA's registry of residents, over 20 new jobs created and RUB 5 MM transferred to the city's budget. The largest investment project implemented by AtomSpeccement, JSC provides for construction of the grinding facility at the special cement plant and employment of 120 local residents.

ARMZ is supporting actions for development of its operation regions. RUB 7 million was given to charity during the reporting year. The implemented initiatives include construction of the school at Uksyanskoye in the Kurgan Region which was proclaimed the best school in the region. The funds of the consolidated taxpayer group have been used to reconstruct the Krasnokamensk - Matsievskaya motorway and other social infrastructure facilities.

In 2018, the Holding has the following critical tasks: continuing construction of key facilities at uranium Mine No. 6 and becoming more successful in improving production performance and increasing revenue from its new business projects.

Achieving such large-scale objectives is possible only with the team of professionals currently existing at ARMZ. Experienced, ambitious and responsible specialists are our pride and the cornerstone of further development and prosperity of our Company.



## Address of the President of the Veteran Council Nikolay Petrukhin

the Medium Mechanical Engineering Ministry of the USSR in 1953 and its First Chief Administration (further renamed JSC Atomredmetzoloto).

After the dissolution of the Soviet Union, uranium mining saw a very complicated period as over 80% of reserves including the ones concentrated in the largest deposits fit for development using in-situ leaching (ISL) were outside Russia. In the absence of budget financing, Atomredmetzoloto's team endeavored to preserve good working order of uranium mining enterprises located in Russia.

The request initiated by Atomredmetzoloto Group of Companies supported by the Ministry for Atomic

Energy of the Russian Federation and given to the Russian Government to export warehouse reserves of natural uranium (in the peroxide and oxide form) and use such export proceeds to support uranium mining and exploration operations has contributed greatly to it.

The positive resolution passed on its request has allowed improving the financial condition and operation performance of PJSC PIMCU, finance required geological exploration operations and pilot testing of uranium ISL at Dalmatovo Deposit in the Urals and other deposits. History saw JSC Atomredmetzoloto separated from its enterprises for some years. As time

has told, nothing good has come out of it (as it should) because everyone must do its business. Mining industry is hard to develop anywhere.

In 2007, ROSATOM's management passed its historical resolution to consolidate, within JSC Atomredmetzoloto, all uranium and other mineral mining enterprises in Russia. It has become its second birth, and in 2008, ARMZ Uranium Holding Co. (JSC Atomredmetzoloto) was authorized to supply the nuclear industry of Russia with natural uranium.

Over the 10 years, ARMZ Uranium Holding Co. in its capacity of the head entity of ROSATOM for uranium mining, has managed not only to preserve its

reputation of a reliable partner and strategic feedstock supplier, but also to start implementing new projects and developing new deposits underlying further years of stable operations. It confirms correctness of the resolution passed by ROSATOM's management in 2017. Other details of ARMZ Uranium Holding Co.'s strategic success for ten years are provided in this annual report.

Our company highly values uranium mining veterans and we, veterans, are sure that relying on the glorious traditions and deep experience of its predecessors as well as on the team of professionals and soulmates, ARMZ Uranium Holding Co. is up to any tasks given to it by ROSATOM, no matter how ambitious they are.

### DEAR READERS!

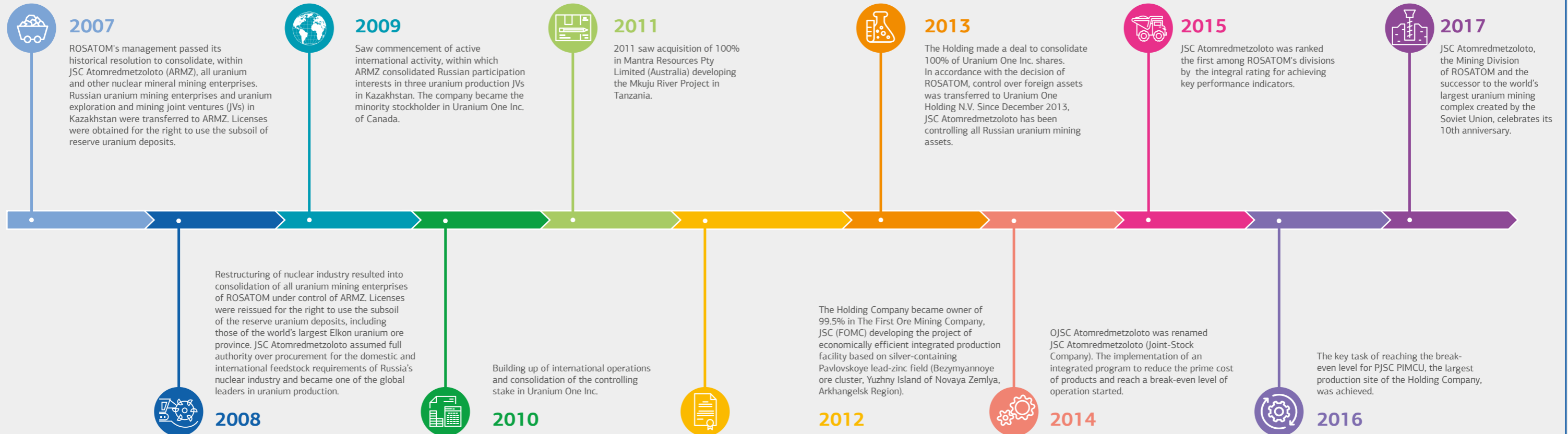
In 2017, ARMZ Uranium Holding Co. celebrated its 10th anniversary. ARMZ Uranium Holding Co. celebrating its 10th anniversary is the successor to the largest global uranium mining complex created in the USSR and having a long history starting with creation of

### HISTORICAL BACKGROUND

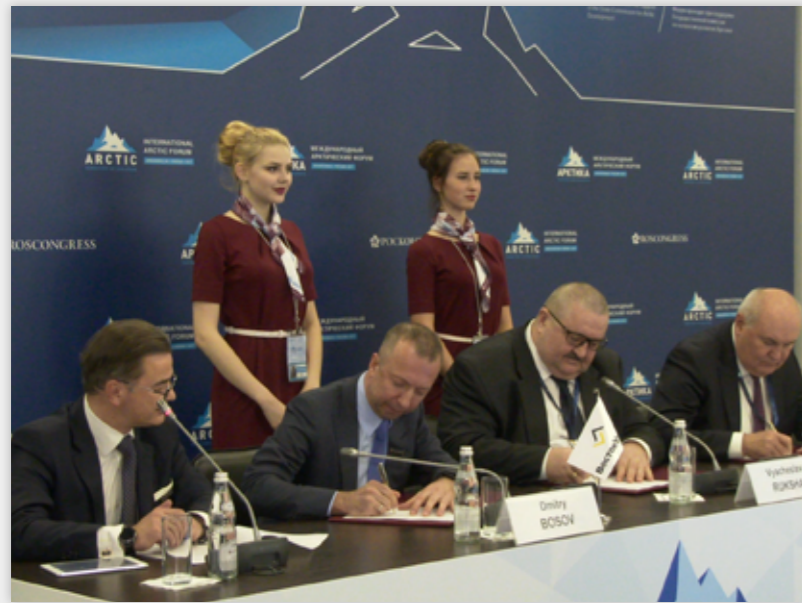
State Concern Atomredmetzoloto was founded in 1991 as the successor to the former First Main Administration of the USSR Ministry of Medium Mechanical Engineering and was operating within the structure of the Ministry for Atomic Energy of the Russian Federation. The concern was a production conglomerate of mining and processing enterprises located in six countries: Russia, Ukraine, Uzbekistan, Kazakhstan, Tajikistan and Kyrgyzstan.

State Concern Atomredmetzoloto was involved in exploring, mining, and processing of uranium, gold, and rare and disperse element ores. It was also engaged in designing mines, ore processing facilities, and machine engineering plants. In 1995, State Concern Atomredmetzoloto was reorganized to become a PTC (publicly traded company). In 1999, the Company was transformed into OJSC Atomredmetzoloto due to the re-registration of joint-stock companies.

## 10 Years: Sustainable Development Trajectory



# 2017 Key Events



## JANUARY

- Execution of the trilateral agreement on interaction for actions aimed at environmental impact reduction by and between JSC Dalur, the Government of the Kurgan Region and Rosprirodnadzor's Administration for the Kurgan Region.



## FEBRUARY

- Installation of the electronic display showing radiation level on the administration building of Zverinogolovskoye District of the Kurgan Region.

## MAY

- Production of first designs of the load-haul-dump machine PD-2EE at the mechanical repair plant of PJSC PIMCU.

## JUNE

- JSC Dalur is granted the right to use the Dobrovolnoye subsoil area of federal importance in the Kurgan Region for uranium exploration and mining;
- JSC RUSBURMASH is granted Rospotrebnadzor's license for use of ionizing radiation sources;
- Underground uranium mine No. 8 of PJSC PIMCU reaches its rated capacity.

## MARCH

- Arctic Collaboration Agreement by and between JSC Atomredmetzoloto, FSUE Atomflot and VostokUgol MC LLC;
- Agreement by and between ROSATOM and the Arkhangelsk Region Government on cooperation for implementation of the Pavlovskoye Project.

## APRIL

- Physical launch of the first stage of the pilot plant for 1.5 tpa of scandium oxide.

## JULY

- JSC Dalur's Information Center inaugurated at Zverinogolovskoye Village in the Kurgan Region;
- New Director Generals appointed at PJSC PIMCU and JSC Khiagda.

## AUGUST

- Commissioning of level 7D at underground uranium mine No. 8 of PJSC PIMCU.

## SEPTEMBER

- Presentation of new domestic LHD models produced by PJSC PIMCU at the Import Substitution Exhibition in Crocus Expo;
- Celebration of the 10th anniversary of JSC Atomredmetzoloto;
- The Creation and Development of the Domestic Nuclear Industry's Mineral Resource Base monograph published.

## OCTOBER

- ARMZ Uranium Holding Co. creates the Competence Center for Geological and Mathematical Modelling of Deposits being developed.

## NOVEMBER

- The first instalment is provided for construction of the new uranium mine No. 6 at PJSC PIMCU's site in Krasnokamensk.

## DECEMBER

- The Uranium Geotechnology (Russian Experience) monograph published.



# 2017 Key Indicators

## URANIUM PRODUCTION AND MINERAL RESOURCE BASE

Figure 1. Uranium production, tonnes

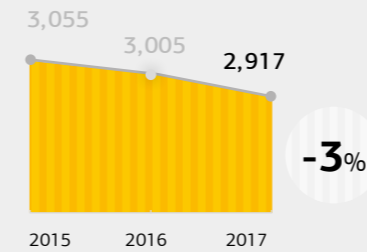
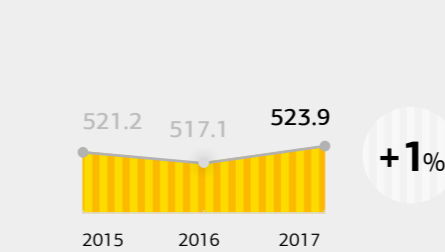


Figure 2. Uranium resources (Russian assets), kt



## PERSONNEL

Figure 3. Staff number, persons

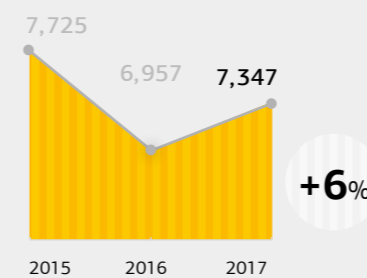


Figure 4. Staff liquidity, %

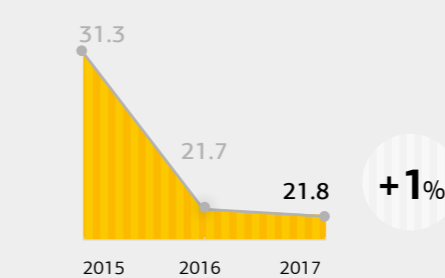


Figure 5. Average monthly wage, RUB

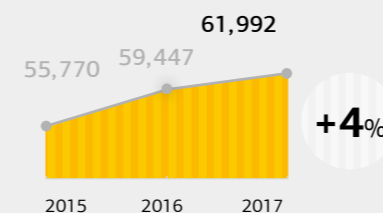
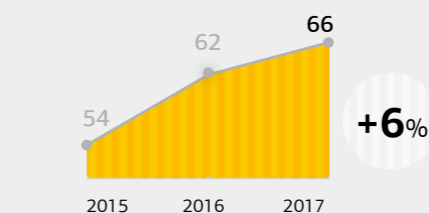
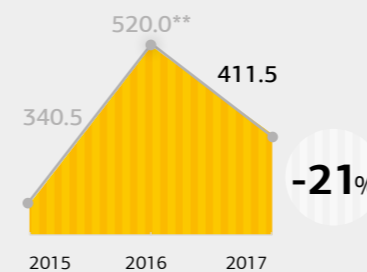


Figure 6. Employee engagement (division), %



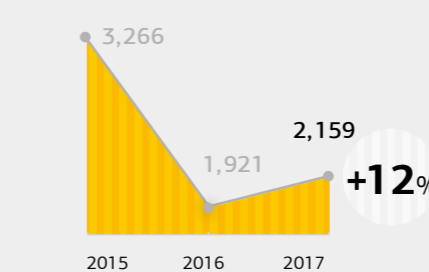
## ENVIRONMENTAL OPERATIONS

Figure 7. Environmental protection costs, Million RUB



## SOCIAL AND ECONOMIC SPHERE

Figure 8. Taxes paid by key enterprises of ARMZ Uranium Holding Co. to regional budgets, Million RUB\*\*\*



\* Including Uranium One Group enterprises.

\*\* Data for 2016 recalculated subject to details of primary capital investments aimed at environmental protection and sustainable use of natural resources.

\*\*\*Subject to profit tax payments within the consolidated taxpayer group (the – CTG).

2nd place

2015 2016 2017  
of ROSATOM and JSC Atomredmetzoloto among the world's largest uranium-mining companies by mineral resource base\*

4th place

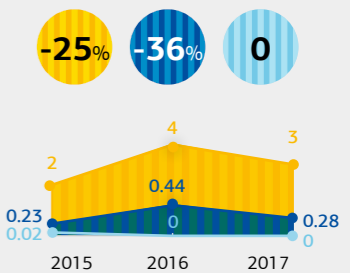
2015 2016 2017  
of ROSATOM among world's largest uranium-mining companies by production volume\*

6th place

2015 2016 2017  
of JSC Atomredmetzoloto among the world's largest uranium-mining companies by production volume

## OCCUPATIONAL HEALTH AND SAFETY

Figure 9. Occupational Safety and Health, Process Safety



● Accidents  
● Lost Time Injury Frequency Rate (LTIFR)  
● Fatal Injury Frequency Rate (FIFR)



# 1. General Information about JSC Atomredmetzoloto

## 1.1. About the Company

### 1.1.1. General Information

#### MAIN AREAS OF OPERATION

JSC Atomredmetzoloto (ARMZ Uranium Holding Co., Mining Division of ROSATOM, Company, Holding Company, ARMZ) is the successor to the world's largest uranium mining complex created in the USSR – celebrated its 10th anniversary in 2017.

- It manages Russian uranium mining assets in the Trans-Baikal Territory (PJSC PIMCU), Republic of Buryatia (JSC Khiagda) and the Kurgan Region (JSC Dalur);
- It possesses unique competencies and performs integrated operations ranging from geological exploration, pilot and design work to recultivation and decommissioning of production facilities;
- It implements a number of non-uranium projects, including construction of a lead-zinc works on Novaya Zemlya Archipelago, associated scandium mining, pyrite cinder processing, etc.

ARMZ Uranium Holding Co. also includes the projected enterprises, namely, JSC The First Ore Mining Company, JSC Elkon MMP, JSC Lunnoye and JSC «UMC Gornoe».

A significant contribution to the Holding Company's business is made by subsidiaries being LLC ARMZ Service, JSC RUSBURMASH,

JSC VNIIPromtehnologii and LLC United Uranium Plants.

#### KEY LAWS AND REGULATIONS GOVERNING THE COMPANY'S BUSINESS

In its business, JSC Atomredmetzoloto relies on provisions of its Articles of Association, internal documents and applicable laws including the following regulations:

- Civil Code of the Russian Federation (part one) No. 51-FZ dd. 11/30/1994;
- Federal Law No. 208-FZ dd. 12/26/1995 «On Joint-Stock Companies»;
- Federal Law No. 317-FZ dd. 12/1/2007 «On ROSATOM State Atomic Energy Corporation»;
- Federal Law No. 13-FZ dd. 2/5/2007 «On Features of Management and Disposal of Assets and Stocks of Companies in Nuclear Power Use and Amendments to Certain Laws of the Russian Federation»;
- Federal Law No. 170-FZ dd. 11/21/1995 «On Nuclear Power Use»;
- Federal Law No. 223-FZ dd. 7/18/2011 «On Procurement of Goods, Work and Services by Certain Types of Companies»;

- Federal Law No. 135-FZ dd. 7/26/2006 «On Protection of Competition»;
- Federal Law No. 39-FZ dd. 4/22/1996 «On Securities Market»;
- Presidential Decree No. 556 On Restructuring of the Nuclear Power Industry of the Russian Federation dd. 27.04.2007;
- «Regulation No. 454-P on information disclosure by securities issuers» approved by the Bank of Russia on 30.12.2014.

#### MEMBERSHIP IN ORGANIZATIONS AND ASSOCIATION

JSC Atomredmetzoloto is a member of the World Nuclear Association.

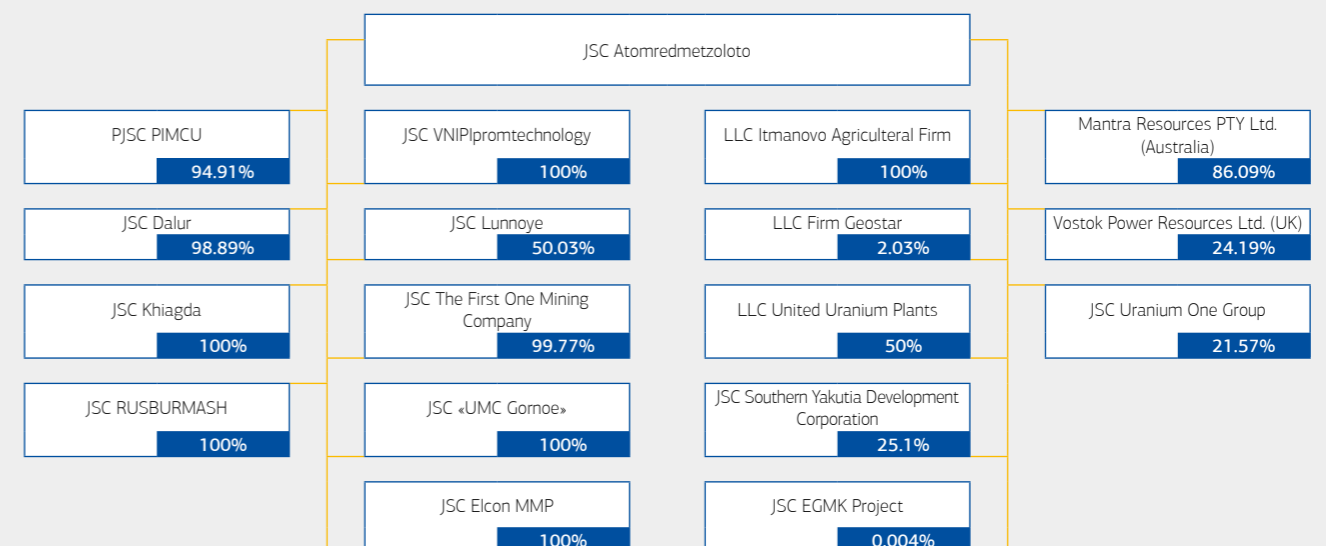
#### EXTERNAL ARTICLES OF ASSOCIATIONS, PRINCIPLES AND OTHER INITIATIVES

The Company exists in accordance with the Russian Business Social Articles of Association.

Please see section 1.1.2. for more information about the history of Atomredmetzoloto. Historical Background of the Report 2014.

### 1.1.2. Holding Structure

Figure 10. Diagram showing JSC Atomredmetzoloto's Subsidiaries as of 31 December 2017



G102-1  
G102-2  
G102-4

G102-13

G102-12

G102-5

### 1.1.3. Mission and Values

The mission of JSC Atomredmetzoloto is to provide competitiveness of long-term raw material deliveries for the development of Russian technologies, above all in nuclear power engineering.

ARMZ's business vision relies on its status of the national producer guaranteeing satisfaction of feedstock needs of its primary stockholder, ROSATOM, at a competitive cost and without geopolitical risks.

Primary competitive edges of the company are as follows:



- feedstock base of unique scale capable of profitable extraction of valuable components (uranium and other strategic metals);



- advanced production assets and scientific potential, and skilled team with many years of experience in the mining industry;



- full range of competencies for managing the lifecycle of development and operation of deposits, including under severe natural and climate conditions.

### 1.2. Market Presence

The primary business line of ARMZ is the production of natural uranium.

Stable positions of ARMZ in the uranium market are guaranteed by stable demand for its products on part of the Russian nuclear industry, diversified mineral resource and production base, and systemic efforts to increase its business performance. Additional contributions to their stability are favorable global prospects of nuclear power. Its development would be contributing to mid- and long-term growth of demand for uranium.

The Company is actively developing its non-uranium businesses (those associated with servicing both

core businesses and new ones). The servicing activities feature production of heat and electric power, sulfuric acid, mining equipment (PJSC PIMCU), drilling and exploration services (JSC RUSBURMASH), design and engineering (JSC VNIIPromtehnologii). Consumers of these products and services are Mining Division enterprises, other ROSATOM entities and external partners (Russian and foreign companies).

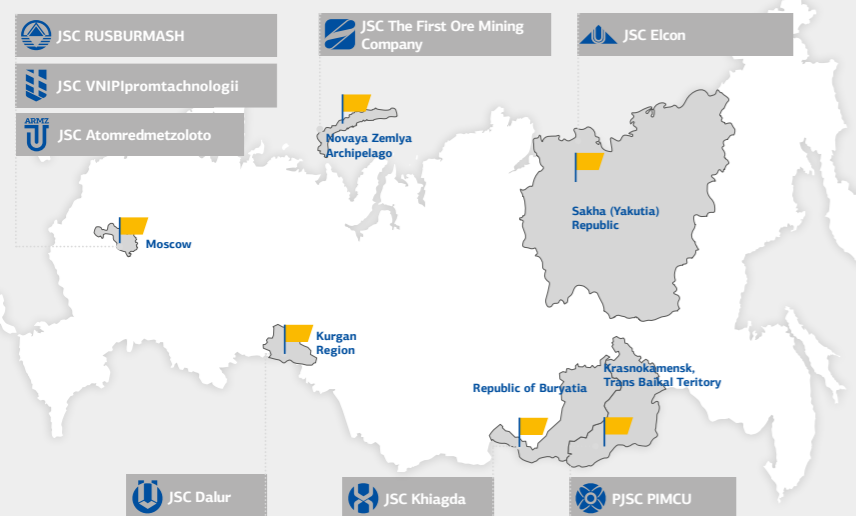
Scandium production (in the form of high-purity scandium oxide) was started in 2017 at JSC Dalur's site within the new business launch framework. The Company has improved

its operations to increase its feedstock product portfolio subject to the needs of the nuclear industry and its external partners. In 2017, ROSATOM approved the division's strategic initiatives for development of rare metal productions (titanium, lithium, etc.).

ARMZ also continues assessing the potential of new prospective markets and developing projects and initiatives related to entering these markets. They will be included into disclosures as the relevant projects and initiatives are implemented.

See also Our Strategy and Markets and Production Capital

Figure 11. Map of JSC Atomredmetzoloto's Assets in Russia



2<sup>nd</sup> place

of ROSATOM and JSC Atomredmetzoloto among the world's largest uranium-mining companies by mineral resource base\*

4<sup>th</sup> place

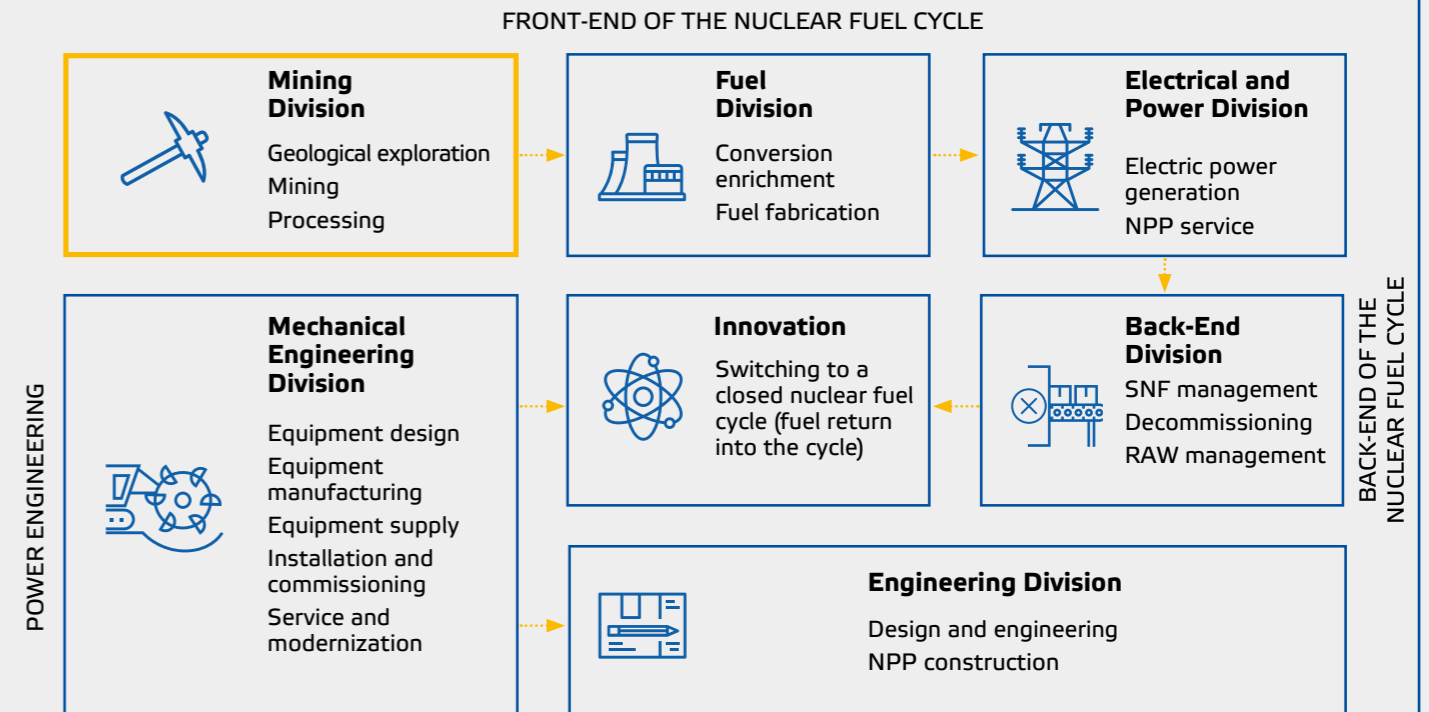
of ROSATOM among world's largest uranium-mining companies by production volume\*

\* Including Uranium One Group enterprises.

### 1.3. Role in ROSATOM's Production Cycle

For more details see section 1.1. About the Company and 2.1. Strategic vision and Targets.

Figure 12. JSC Atomredmetzoloto's Role in ROSATOM Production Cycle



### 1.4. Supply Chain

#### CONSUMER SATISFACTION ASSESSMENT

One of JSC Atomredmetzoloto's priorities is ensuring satisfaction of the end consumers of uranium raw materials (JSC TVEL and JSC TENEX), to which Russian raw materials are supplied under long-term contracts with LLC United Uranium Plants. JSC Atomredmetzoloto continuously monitors long- and short-term satisfaction of customers' natural uranium needs, as well as promptly responds to any of their requests and expectations.

To improve quality of its uranium products supplied to its end consumers, JSC Atomredmetzoloto is considering total product outputs with physical and chemical properties close to ASTM C 967-08.



ALL CONTRACTUAL OBLIGATIONS FOR THE SUPPLY OF PRODUCTS TO CUSTOMERS WERE PERFORMED IN FULL IN 2017.

#### CUSTOMER SERVICE

The Company maintains long-term contractual relations with its key customers being enterprises of ROSATOM, based on the principles of mutually beneficial and fruitful cooperation.

Streamlining of finished goods warehousing and shipping systems is used to improve product quality.

In December 2017, JSC Atomredmetzoloto relying

on assignment agreement with LLC United Uranium Plants became a party to the agreement with JSC Siberian Chemical Works allowing direct interaction with the works concerning organization of deliveries, railcar unloading and warehousing of uranium feedstock.

December 2017 saw preparations for assignment of the agreement to return empty TPCs from LLC United Uranium Plants to JSC Atomredmetzoloto's subsidiaries.



#### BUSINESS CASE: CUSTOMER SERVICE

In November 2017, JSC Atomredmetzoloto supplied its trial batch of uranium oxide concentrate produced by PJSC PIMCU to Uranium One Group, JSC for further supply to the PRC. This delivery allowed JSC Atomredmetzoloto to learn about the PRC's interest in Russian natural uranium and the prospect of developing further business and investment cooperation.

Due to liquidation of LLC United Uranium Plants in Q4,2017, JSC Atomredmetzoloto started preparation for switching to direct deliveries to JSC TVEL and JSC TENEX without using the agency system.

#### QUALITY MANAGEMENT

Product quality assurance remains one of the key priorities for JSC Atomredmetzoloto.

JSC Atomredmetzoloto's product quality depending on the form of the natural uranium concentrate complies

with TU 95,1981-2009, TU 95,2822-2002 and the Basic Specification. In 2017, JSC Atomredmetzoloto received no quality claims regarding product supplies from its customers (JSC TVEL and JSC TENEX) and its consignee (SCW, JSC).

To improve its product quality, JSC Atomredmetzoloto, in Q4,2017, started developing the possibility of processing ammonium polyuranate produced by JSC Khiagda into uranium oxide concentrate using PJSC PIMCU's production capacities.

## 1.5. Value Chain and Business Model

### 1.5.1. Value Chain

The value chain of the Mining Division is integrated into ROSATOM's harmonized value chain and is built in accordance with lifecycles of fuel and equipment.

The Holding Company creates the value via integrated operations ranging from geological exploration, pilot surveys and design work to reclamation and decommissioning of production facilities. Given its unique competencies and integrated operations, ARMZ offers its customers products compliant with the highest standards.

One must note that value created by ARMZ consists not only in obtaining the primary finished product being strategic natural feedstock but also in diverse economic, social and environmental effects for operation regions. On the one hand, the Company strives simultaneously to increase the positive effect of its operations and, on the other hand, to minimize its environmental impact.

For value chain details, see Annual Report 2016.

### 1.5.2. Business Model

The value chain underlies JSC Atomredmetzoloto's public business model.

The business model is a system that ensures creation of value on short-, medium- and long-term horizons and is aimed at achieving strategic goals.

The business model is a layout of ARMZ's business formulated as a process of transforming input resources (assets) into key results (uranium production, environmental protection costs, social payments to employees, etc.). There is also capital change presented, including transformation/gains of resources used and the company's contribution to achieving ROSATOM's strategic objectives and UN sustainable development objectives.

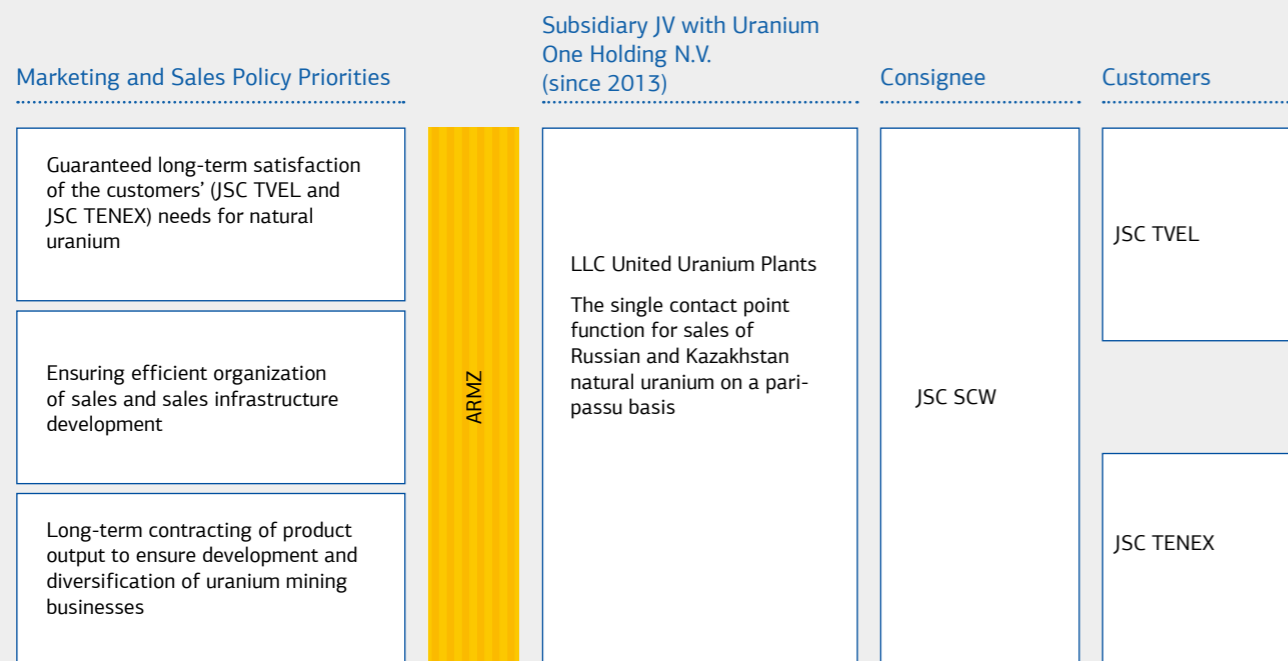
For details of JSC Atomredmetzoloto's business model, see Annual Report 2016.



YEAR 2017 SAW NO CHANGES TO SUPPLIERS' LOCATION, SUPPLY CHAIN STRUCTURE OR SUPPLIER RELATIONS.

#### JSC Atomredmetzoloto Supply Chain







Figure 13. ARMZ Uranium Holding Co.'s Supply Chain

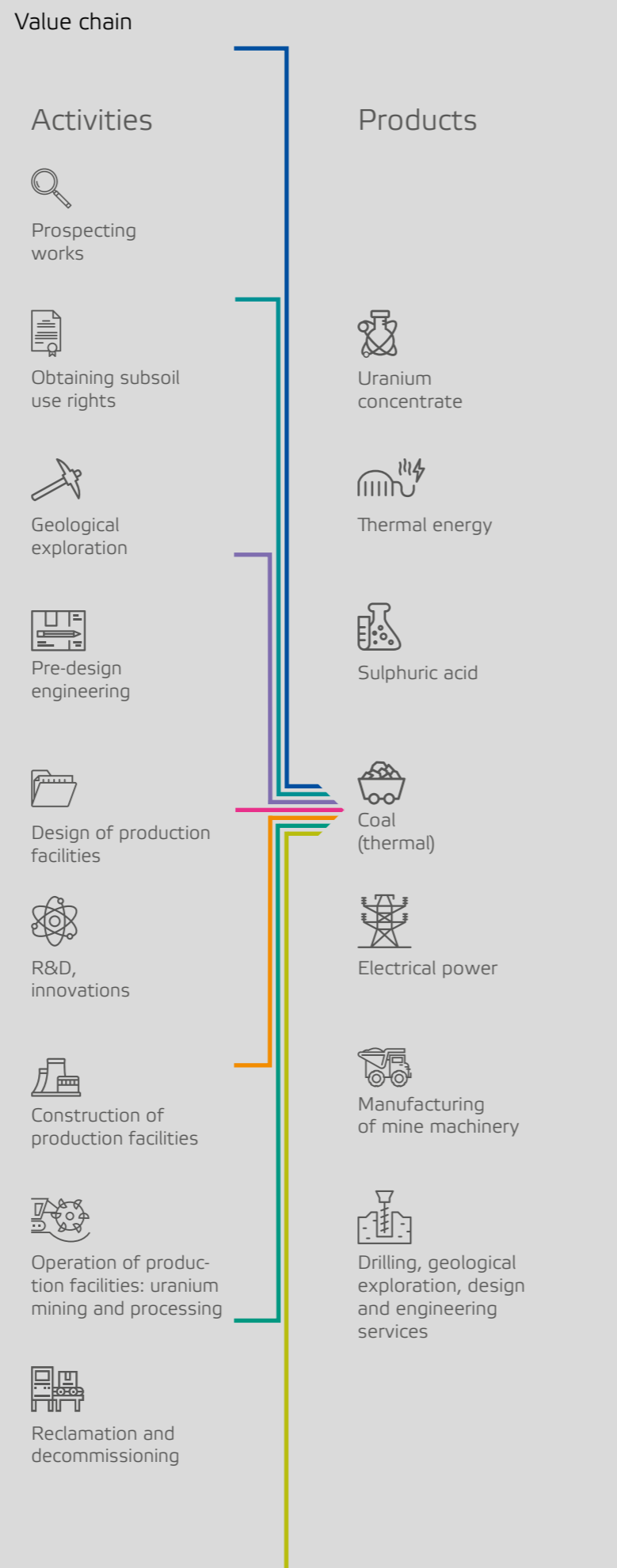











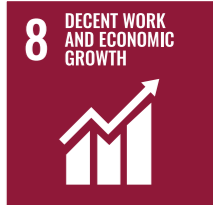


# ARMZ Business Model

Contribution in achievement of the UN Sustainable Development Goals

| Resources*   |   |
|--|---|
| Production capital   | <b>3,005</b><br>Uranium production, tonnes                              |
|    | <b>3.1</b><br>Labour productivity, million RUB per person               |
| Human capital  | <b>6,957</b><br>Number of employees                                     |
|    | <b>59,447</b><br>Average monthly salary, RUB                            |
| Nature capital   | <b>520</b><br>Environmental protection expenses, million RUB            |
|   | <b>517.1</b><br>Uranium mineral resource base (Russian assets), ktonnes |
| Financial capital  | <b>4.9</b><br>Capital expenditures, billion RUB                         |
|  | <b>22.1</b><br>Revenue, billion RUB                                     |
| Social capital   | <b>212.6</b><br>Social payments to employees, million RUB               |
|  | <b>7.7</b><br>Charity spending, million RUB                             |
| Intellectual capital   | <b>345</b><br>Innovation projects spending, million RUB                 |
|  | <b>6.5</b><br>Intangible assets, billion RUB                            |



| Key results*  |   |
|---|---|
| <b>2,917</b><br>Uranium production, tonnes                              | Production capital  |
| <b>2.8</b><br>Labour productivity, million RUB per person               |    |
| <b>7,347</b><br>Number of employees                                     | Human capital   |
| <b>61,992</b><br>Average monthly salary, RUB                            |    |
| <b>411.5</b><br>Environmental protection expenses, million RUB          | Nature capital  |
| <b>523.9</b><br>Uranium mineral resource base (Russian assets), ktonnes |   |
| <b>4.9</b><br>Capital expenditures, billion RUB                         | Financial capital   |
| <b>17.8</b><br>Revenue, billion RUB                                     |  |
| <b>212.9</b><br>Social payments to employees, million RUB               | Social capital  |
| <b>7.0</b><br>Charity spending, million RUB                             |  |
| <b>209</b><br>Innovation projects spending, million RUB                 | Intellectual capital  |
| <b>6.4</b><br>Intangible assets, billion RUB                            |  |

| Change in capitals  |   |
|---|---|
| <b>2%</b><br>Reduction of uranium unit production cost                      |    |
| <b>66%</b><br>Employee engagement rate                                      |    |
| <b>77%</b><br>Reduction of borrowed funds                                   |  |
| <b>57%</b><br>Level of support for nuclear energy in the Russian Federation |  |
| <b>102%</b><br>Integrated investment activities efficiency indicator        |   |

\* As of 2016

\* As of 2017



## 2. Strategy and Markets

### 2.1. Strategic Vision and Targets

#### RESULTS FOR TEN YEARS: NEW SUSTAINABLE DEVELOPMENT PROSPECTS

The first decade of the Mining Division's newest history saw material achievements of its team including, without limitation:

- socially responsible restructuring of PJSC PIMCU (achieving break-even of uranium production and preserving resources for further development of the enterprise and diversification of its business);
- active development of drill hole in-situ leaching assets (JSC Khiagda and JSC Dalur);
- increasing depth of processing of the proprietary mineral resource

base (producing sized coal, scandium products, etc.);

- launching new business lines in the mining and adjacent industries raising investments and engaging external partners' competencies.

In this connection, value of these results is determined not only with their contribution to general performance of ROSATOM or responses to challenges associated with unfavorable conditions. The platform has formed for long-term balanced development of the company in its capacity of the center responsible for supply of Russian

nuclear industry with strategic feedstock. In relation to its new business lines, ARMZ's initiatives synchronize with projects of other divisions aimed at development of rapidly growing markets and retaining global process leadership of ROSATOM.



In the reporting year, the Mining Division made its significant contribution to strengthening market positions of the Russian nuclear industry and reliable satisfaction of its feedstock needs growing with the increasing long-term order portfolio. Performance improvement operations continued in 2017 with the total production cost of uranium at the division's enterprises decreasing by 10% versus the planned level.

Development of uranium assets was accompanied with the growing mineral resource base (at JSC Dalur) and further operations to develop new uranium deposits (at JSC Khiagda and JSC Dalur's sites). The Division's largest production



site, PJSC PIMCU, continued its break-even operations in 2017 and completed implementation of its Mine No. 6 project implementation program in full.

Active development of new business lines allowed the Mining Division not only to comply with planned targets set by ROSATOM but also to initiate its new mining projects. Fruitful and concentrated work of the team on these and other priorities allowed creating conditions for further sustainable development of the company's business.

For details, see the Business Diversification section.

#### STRATEGIC OBJECTIVES OF THE COMPANY

In pursuing its long-term strategy, ARMZ focuses on complying with ROSATOM's strategic objectives. Reflection thereof in the Company's business determines its strategic goals.



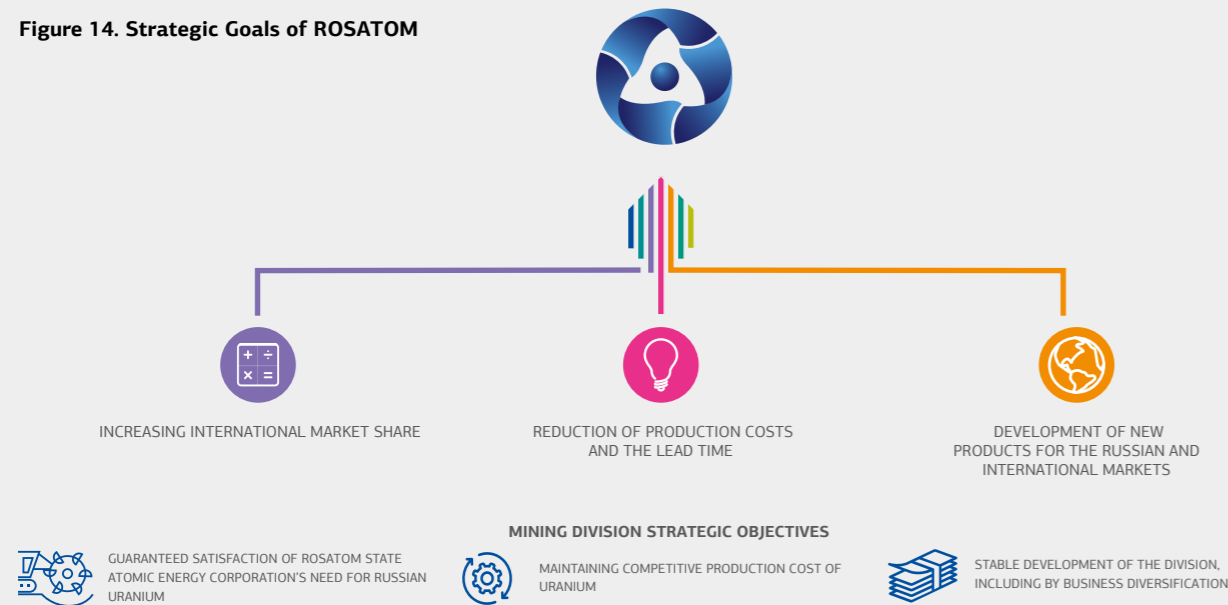
## 2.2. Contribution to Pursuit of ROSATOM's Strategy

In developing its uranium mining, ARMZ relies on ROSATOM's needs and market conditions. Russian enterprises have no objective to produce

uranium whatever the cost with ensuring safety and competitive production cost being the priorities. This approach is supplemented with identifying

and implementing design and technical solutions, and cost cutting to preserve business stability regardless of external conditions.

Figure 14. Strategic Goals of ROSATOM



### KEY PRIORITIES OF URANIUM MINING DEVELOPMENT IN THE RUSSIAN FEDERATION:

KEY PRIORITIES OF URANIUM MINING DEVELOPMENT IN THE RUSSIAN FEDERATION ARE AS FOLLOWS:

- starting construction of PJSC PIMCU's mine No. 6 (launching it in 2023 would allow maintaining uranium mining volumes after retirement of operational mines);
- maintaining economic efficiency of uranium mining at JSC Dalur and increasing uranium mining at JSC Khiagda within the framework of achieving full capacity.

Significant foundations were laid for the above priorities:

- in 2017, PJSC PIMCU fully completed its work program for Mine No. 6 project to start its construction in 2018 when the enterprise will be celebrating its 50th anniversary;
- JSC Khiagda's site saw pilot operations at Istochnoye Deposit. Additionally, physical launch was performed of the mining complex and auxiliary facilities at Vershinnoye Deposit. These operations were performed to bring the enterprise to its rated capacity (1,000 tpa of uranium);
- In 2017, JSC Dalur received the license for Dobrovolnoye Uranium Deposit.

Other promising uranium projects including the Elkon Project are in the strategic reserve until external conditions improve sustainably. They are scheduled for commissioning by 2030.

In the specified period, JSC Atomredmetzoloto's core business is uranium production. Work to develop operational enterprises will be supplemented with implementation of projects in mining and adjacent industries to ensure growth of the division's business scales and improvement of its social and financial stability.

## 2.3. Strategic Objectives Achieved in 2017



- 01 Program for the implementation of Mine No. 6 Project completed in full
- 02 Ash dump at Krasnokamensk TPP launched
- 03 Physical launch of the mining and processing complex ensured at JSC Khiagda's Vershinnoye Deposit
- 04 JSC Khiagda permitted to perform commissioning of its Istochnoye Deposit (Placer No.1)



- 05 A number of actions was implemented to obtain the status of the RPS enterprise by JSC Khiagda
- 06 The technical design for the development of Dalmatovskoye Deposit was approved
- 07 The subsoil use license was received for and design work started at Dobrovolnoye Deposit
- 08 The positive conclusion was received for the Pilot Production Site for Uranium ISL at Khokhlovskoye Deposit



- 09 Development of the aluminum-scandium master alloys production process was completed at JSC Dalur
- 10 Survey was completed for construction of the mining and concentration works at JSC The First Ore Mining Company
- 11 Semi-commercial process testing of ores at Pavlovskoye Field was completed

## 2.4. Strategic Targets for 2018



PRIARGUNSKY INDUSTRIAL MINING AND CHEMICAL UNION (PJSC PIMCU) CREATED IN 1968 STILL REMAINS THE LARGEST URANIUM MINING ENTERPRISE IN RUSSIA. IN 2018, THE ENTERPRISE WILL BE CELEBRATING ITS 50TH ANNIVERSARY.



### JSC ATOMREDMETZOLOTO

- maintaining the production cost and achieving the break-even point for the Division.

### PJSC PIMCU

- commencing construction of Mine No. 6;
- commissioning the second milestone of the Sredneye tailings' pond;
- commissioning the plant for production proprietary granulated explosives;
- developing new businesses including sized coal, pyrite cinders, lithium and mining machinery;
- commissioning the water drainage duct at the Urtuysky strip mine.

### JSC KHIAGDA

- commencing commissioning of Istochnoye Deposit;
- commencing development of design documents for Kolichikanskoye Deposit;
- developing competencies and implementing new methodologies of repair and restoration operations (RROs);
- commissioning the Dzhilinda 110/10 kV reducing substation (RSS).

### JSC DALUR

- performing engineering surveys and developing design documents for LSU-2 and the near-rail base at Khokhlovskoye Deposit;
- performing engineering surveys and developing design documents for the pilot plant (PP) at Dobrovolnoye Deposit;
- commencing construction of the pilot production facility for aluminum and scandium master alloys;
- extending the subsoil use license for Dalmatovskoye Deposit.

### JSC RUSBURMASH

- implementing the Ready Polygon Project at JSC Khiagda and JSC Dalur;
- switching to the new well design using non-plasticized PVC (NPPVC) to replace high density polyethylene (HDPE) at JSC Dalur (100% of wells) and JSC Khiagda (25% of wells).

### JSC VNIPIPROMTEKNOLOGII

- completing the internal order of the Holding Company's production enterprises in due time and in due quality, and reducing the share of subcontracting;

- taking actions to increase the performance efficiency and increase the labor productivity, reduce the project implementation costs and terms by at least 5%;
- within the further development framework of JSC VNIPIpromteknologii as an engineering company:
  - implementing PMS;
  - creating the chemical analytical laboratory;
  - creating the resin quality assessment laboratory.

### JSC THE FIRST ORE MINING COMPANY

- develop project documentation for the construction of the mining and thickening plant at the Pavlovskoye deposit (Novaya Zemlya archipelago);
- complete the engineering survey for the construction of the sea port complex.



## PLANS FOR 2018, LONG-TERM AND MID-TERM PLANS

In 2017, ARMZ's enterprises completed their production program in full. In the future, natural uranium mining is planned to be supported at around three ktpa (subject to demand trends on part of industrial consumers).

Basic priorities of the Company remain ensuring the uranium mining efficiency, including through the development of new deposits, and active development of new business lines. PJSC PIMCU will construct its new mine based on Argunskoye and Zherlovoye fields accounting for more than 40% of the enterprise's mineral resource base. Commissioning of Mine No. 6 in 2023 will not only keep the infrastructure and potential of

the enterprise, but also ensure its cost-effective operation over a long period of time.

Moreover, in-situ leaching enterprises, JSC Dalur and JSC Khiagda, will continue their balanced production growth. JSC Khiagda, given its significant potential for development of competitive uranium mining, will continue developing the new deposits of the Khiagda ore field — Istochnoye, Vershinnoye and others. The objective of the enterprise is to reach the capacity of about 1,000 tpa of uranium in 2019 with the possibility of increasing it on a long-term horizon. JSC Dalur's priorities are maintaining the current

production level and developing Dobrovolnoye Uranium Deposit.

Within the framework of developing new business lines, further increase of the Company's product portfolio is provided for. The Division's service enterprises will continue promoting their services based on their existing competencies at new markets. Implementation of mining projects on partnership principles and organization of strategic feedstock processing engaging adjacent divisions and external partners will allow ARMZ to make a material contribution to increase of new business revenues within ROSATOM.

## 2.5. Sustainable Development Agenda

ARMZ considers contributing to sustainable development of the public as one of its constant strategic priorities. ARMZ strives to pay material attention to developing communications with regional administrations, public and environmental organizations, and education authorities in its operating regions. ARMZ as a socially responsible company admits that its sustainable development contributes to welfare of its operating regions and areas.

The Holding Company has a significant influence on the formation of the revenue part of the budgets of the areas of operation. Tax deductions, creation of new jobs with decent salaries, charitable programs, etc. determine the importance of the Holding Company for the regions of operation.

ARMZ conducts a responsible environmental policy based on:

- the principles of priority conservation of natural ecological systems;
- obligatory use of advanced scientific achievements and ensuring environmental safety;
- transparency and accessibility of information on the environmental aspects of the Company's activities to the general public.



### SUSTAINABLE DEVELOPMENT CONCEPT IS

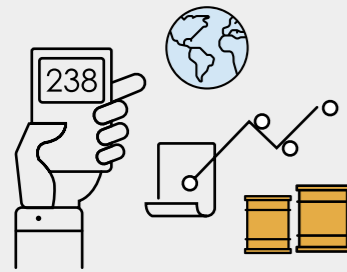
the model of civilization development based on the need to establish the global balance of solving social and environmental problems and environmental protection. For the first time, the term 'sustainable development' was used in the Our Common Future report presented in 1987 by the UN Global Environmental and Development Commission under Gro Harlem Brundtland. It denoted such society development model under which satisfying life necessities of the current generation of people does not endanger future generations' ability to satisfy their needs.

### KEY APPROACHES TO SUSTAINABLE DEVELOPMENT

Sustainable development is inseparably linked with the implementation of corporate social responsibility measures aimed at improving the quality of life of employees and their families, promoting stable development of regions and increasing the welfare of the population in the areas of the Company's operation.



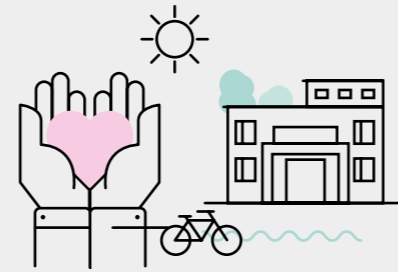
TRINITY OF SUSTAINABLE DEVELOPMENT OBJECTIVES IS INTEGRATED INTO THE COMPANY BUSINESS AND IMPLIES



Participation in maintenance of the global uranium market stability, national and regional economy, balance of reasonable expectations and stakeholders' interests



Minimizing environmental impact, reasonable subsoil use, resourcesavings, compliance with international environmental standards



Social responsibility for safety, health and professional development of staff, social and economic welfare of operation regions, support to local communities, charity



WITHIN THE FRAMEWORK OF THE APPROACH, THE HOLDING COMPANY



Maintains continuous dialog with stakeholder to improve transparency and reportability of the Company's business



Improves the corporate governance system based on Russian and international standards



Develops and implements innovative processes



Complies with business ethics rules

CONTRIBUTION TO ACHIEVING THE UN SUSTAINABLE DEVELOPMENT OBJECTIVES

ARMZ supports all UN Sustainable Development Objectives and strives to make a material contribution to the objectives that comply with the Company's business specifics as much as possible.



AT THE UN SUMMIT ON SUSTAINABLE DEVELOPMENT IN SEPTEMBER 2015, HEADS OF STATES AND GOVERNMENTS ADOPTED AN AGENDA FOR THE PERIOD UP TO 2030, WHICH INCLUDES 17 SUSTAINABLE DEVELOPMENT GOALS (SDGS).

THE COMPANY'S CONTRIBUTION TO ACHIEVING THE OBJECTIVES



ARMZ is in the very first process NFC stage and its natural feedstock production is used for conversion into products of higher processing stages and NPP nuclear fuel. The share of nuclear power in the country's total power balance is on the growing trend. Production cost of nuclear power is its material competitive edge versus other types of electric power plants. Its moderate level depends on the cost of natural feedstock among other things.



ARMZ's key strategic environmental objectives are environmental protection and sustainable use of natural resources at its subsoil use locations. The principles of ARMZ's Environmental Policy include reducing its environmental impact.

ARMZ also pays much attention to development of advanced processes. During the newest history of the feedstock industry, the nuclear industry has been able to increase the share of environmentally friendly and economically efficient in-situ leaching (ISL).



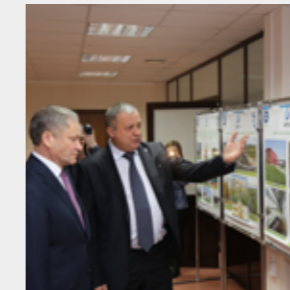
Social capital management and establishing partnerships in operating regions are parts of ARMZ's sustainable development policy. ARMZ strives towards recognition and fair appraisal of its employees' achievements. The Company is sure that additional social protection initiatives for its employees allow them to feel comfortable. Therefore, the Company provides its employees with the full set of statutory social guarantees and allows them to use additional social programs.

Infrastructure investments are another important of the Holding Company's social responsibility. As the Holding Company's enterprises are located in different regions of the Russian Federation (Kurgan Region, Republic of Buryatia and Trans-Baikal Territory), ARMZ considers possible social and economic consequences of its decisions and interacts closely with all stakeholders.



One of ARMZ's business priorities is ensuring satisfaction of final consumers of uranium feedstock. The Company promotes integrating the most sustainable solutions into its supply chain. ARMZ is continuously monitoring satisfaction of its customers' needs in natural uranium for the short and long term, as well as promptly responds to any their requests and expectations. Streamlining of finished goods warehousing and shipping systems is used to improve product quality.

ARMZ is also supporting the need for reducing consumption and processing of natural resources.



THE MINING DIVISION IS DIRECTLY INFLUENCING ACHIEVEMENT OF OTHER SDGS.



Ensure access to and sustainable use of water resources and sanitation for all



Build resilient infrastructure, promote sustainable industrialization and foster innovation



Make cities inclusive, safe, resilient and sustainable



Conserve and sustainably use the oceans, seas and marine resources



Promote peaceful and inclusive societies for sustainable development purposes, ensuring access to justice for all and creating efficient and transparent institutions based on wide participation at all levels.

Other UN objectives are not immediately associated with the Mining Division's business. The Company adheres to them and contributes to achieving them according to its abilities.

For details of the contribution to achievement of UN Sustainable Development Goals, see Annual Report 2016.

For information on key sustainable development 2017 Results, see primary sections hereof.

SUSTAINABLE DEVELOPMENT FUNCTIONAL RESPONSIBILITIES

Different business lines existing, sustainable development matters are resolved individually for each line and are allocated among profile units as follows:

social responsibility: Deputy Director General for Strategy and Business Development, and Chief HR Officer;

environmental impact: Chief Safety Inspector;

environmental responsibility: Deputy Director General for Economics and Finance.

## 2.6. Natural Uranium Market Overview and Outlook

### NATURAL URANIUM MARKET IN 2017

#### Global Demand for and Supply of Uranium

As of 2017, the global uranium market is estimated at 73 to 74 kt subject to NPP reactor needs, and formation of commercial and strategic reserves. In this connection, the global natural uranium production exceeded 58 kt last year. The balance of the supply was ensured with supplies of uranium extracted and processed earlier (secondary sources).

For most of the year, the uranium market was unstable on excessive supply not supported with short-term

demand. Declarations of restricted production by some uranium producers contributed to improvement of market conditions but failed to overcome depressive trends.

Mean spot price in 2017 was USD 57 per kilogram of uranium (Ux Consulting\*).



Sources: input data from Ux Consulting\*; mean value calculated by JSC Atomredmetzoloto.

\* Ux Consulting (UxC) is an independent international company specializing in the research of market environment and predicting nuclear fuel cycle markets. Founded in 1994. Website: <https://www.uxc.com/>

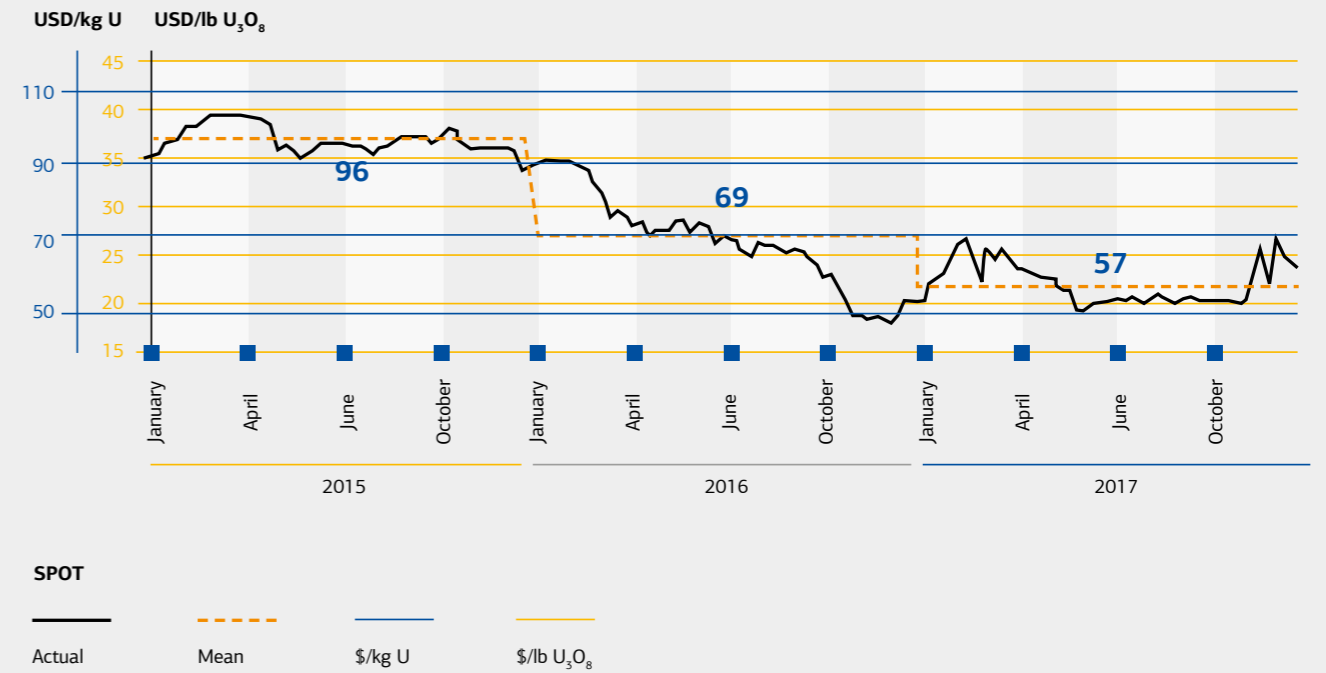


Figure 15. Uranium Spot Price Trends

### Global Uranium Production in 2017

At year-end 2017, global uranium production exceeded 58 kt and was 6% lower YoY (over 62 kt). Decreasing

production under restricted excessive mining was observed in Kazakhstan, Canada, Niger and some other

countries. Significant growth was recorded only in Namibia (due to start of pilot operation of the Husab mine).

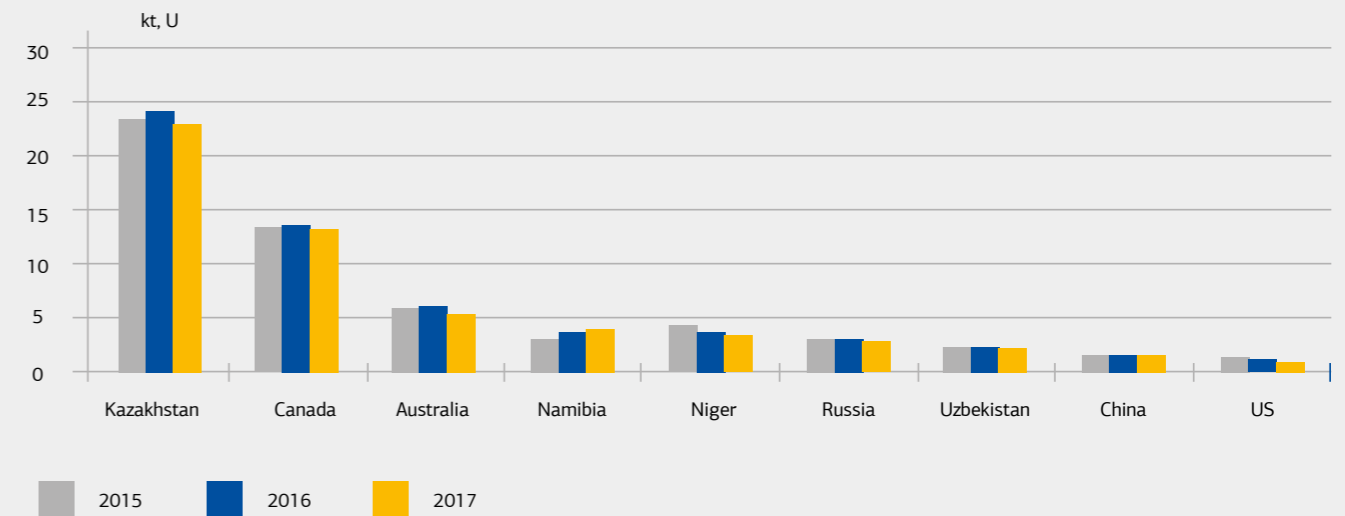
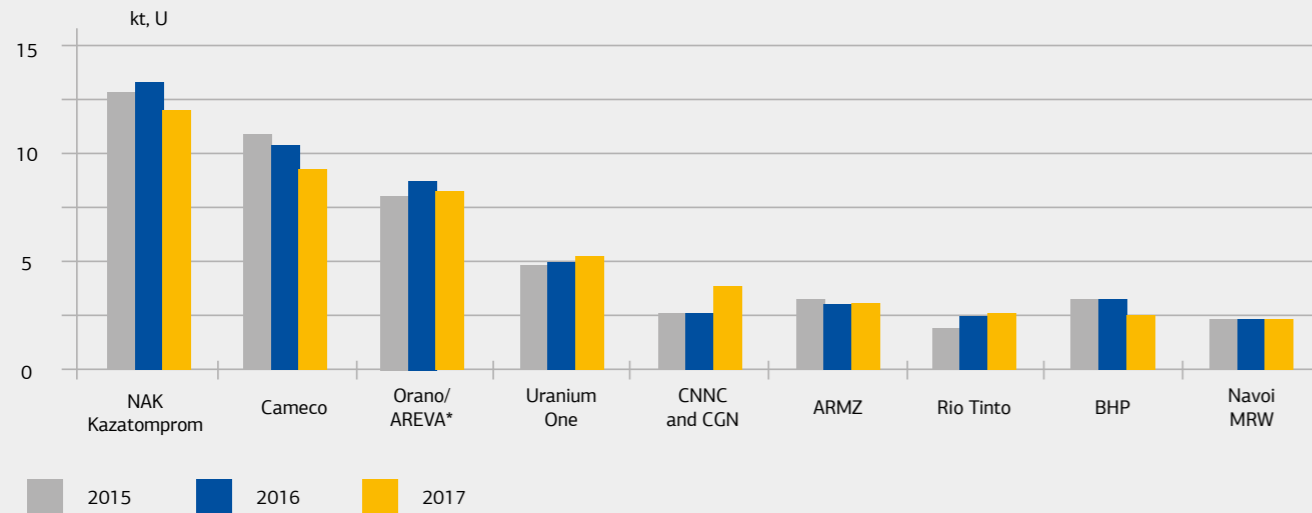


Figure 16. Uranium Production Countries, 2015-2017, thousand tonnes

Sources: estimate of JSC Atomredmetzoloto based on press-release and company report data, US Energy Information Administration (U.S. EIA).

Nine key producing countries accounted for circa 97% of global uranium production. Kazakhstan, Canada and Australia retained their leading positions. Russia ranks 6th among the leading countries (5% of global production).

JSC NAK Kazatomprom has been the largest uranium mining company globally since 2010. ROSATOM including ARMZ and Uranium One (shown separately) produced more than 8.0 thousand tonnes of uranium in 2017, which makes up circa 14% of the global production (global rank 4).



**Figure 17. Uranium Production by Major Companies in 2015–2017, thousand tonnes**

Sources: company press release and report data (Orano / AREVA, CNNC and CGN, Navoi MRW – JSC Atomredmetzoloto's estimate. Production volume is recorded proportionally to ownership interests.

### MERGERS AND ACQUISITION IN URANIUM INDUSTRY

2017 saw further decrease in mergers and acquisitions (M&A). Volatile uranium market contributed to decreasing asset values and insufficient financing for organizing major deals. Key market players showed no activity in M&A but used their efforts to develop their asset portfolios formed earlier.

### DEVELOPMENT OF EXISTING AND PROMISING PROJECTS IN 2017

In the reporting year, major uranium producers responding to continuing adverse trends supplemented cost cutting and investments with production restrictions. Relevant plans aimed at rebalancing the market were announced by JSC NAK Kazatomprom, Cameco, AREVA\* and other companies. The total reduction of uranium mining, provided such plans are implemented, may be 7 to 8 kt in annualized terms.

In particular, JSC NAK Kazatomprom plans additional uranium mining reduction in Kazakhstan in 2018 to 2020. Cameco announced suspending operations at McArthur River in Canada for 10 months in 2018. AREVA\* announced further production reduction at its Niger enterprises (planned as of 2018).

In view of the above, development rates of most existing projects were low. An exception to this was Namibian Husab (owned by Chinese CGN). In 2017, the enterprise running in the pilot operation mode produced circa 0.9 kt of uranium.

Junior companies continued streamlining key projects (in Canada, Australia, the US and some other countries) to commission them at the uranium market growth stage. Nonetheless, the work rates for most of such projects were also low due to the difficulties in raising financing and ensuring product sales.

**ROSATOM INCLUDING ARMZ AND URANIUM ONE (SHOWN SEPARATELY) PRODUCED MORE THAN**

**8,000**

**TONNES OF URANIUM IN 2017, WHICH MAKES UP CIRCA**

**14%**

**OF THE GLOBAL PRODUCTION**

### FORECAST FOR YEAR 2018

Moderately optimistic assessments are predominant in relation to the uranium market situation in 2018. At the same time, whether the will be implemented depends on the scale and excessive production reduction rates of key producers (their relevant plans were announced last year and earlier). Efforts of certain players may be significantly balanced with increasing production of enterprises reaching full capacity.

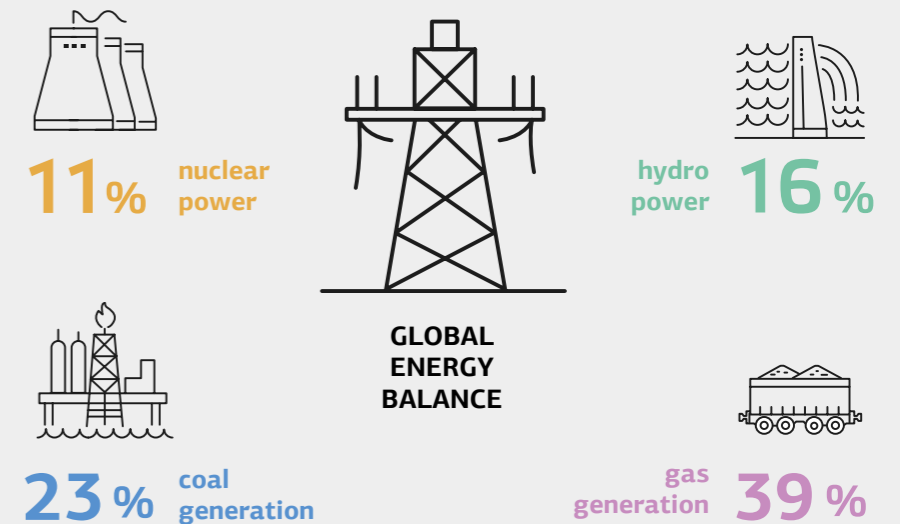
In this connection, highly volatile prices may continue in 2018. The situation, like in the previous years, may be influenced materially by situational factors such as significant events of key market players and problems solved by them to ensure business stability.

### URANIUM MARKET PROSPECTS

#### Global Nuclear Power Development Outlook

As of 2017, nuclear generation remains one of the basic components of global energy balance satisfying all consumers' needs in relation to safety, reliability, environmental and economic efficiency, etc.

The most active growth of nuclear power in the future is expected in China, India, Middle East (UAE, Iran, Turkey and Egypt) and other world regions. Some developed countries, primarily in Western Europe, are expected to gradually reduce their nuclear generation due to their focus on large-scale development of renewable energy.



**Figure 18. Global energy balance**

### Global Natural Uranium Market Outlook

The situation in the global market will remain unstable in the short term. Its stable improvement and uranium price recovery are predicted in the medium term (from early 2020s) driven by the following:

- increasing demand as NPPs are restarted in Japan, and newly constructed units are commissioned in China, India, the UAE and other countries, most of which do not have ready uranium resources;
- decreasing supply due to intense depletion of existing uranium deposits, long time (up to 10 years) and resource cost of new deposit development;
- decreasing deliveries from secondary sources as their liquid portion is used;
- increasing long-term contracting (in relation to deliveries until 2025).

In the long run, the demand for uranium is expected to increase on intense construction of new NPPs. To cover the demand and replace disappearing production volume, existing deposits will need to launch new more expensive projects. Growth of such trends from the mid-2020s will be contributing to further market price growth. According to the forecast of the World Nuclear Association (WNA), global demand for uranium may reach 84 kt by 2030.

Natural uranium production will grow in line with the demand Trends. The full potential for increasing production by 2030 will be at least 87,000 tonnes of uranium. Therefore, no deficit is expected, even with decreasing secondary deliveries.



**THE FULL POTENTIAL FOR INCREASING PRODUCTION BY 2030**

**87,000**  
**TONNES OF URANIUM**





# 3. Governance Performance

## 3.1. Corporate Governance System

### 3.1.1. Corporate Governance

#### INFORMATION ON COMPLIANCE WITH PRINCIPLES AND RECOMMENDATIONS OF THE CORPORATE GOVERNANCE CODE

Certain provisions of the Corporate Governance Code recommended by Letter of the Bank of Russia No. 06-52/2463 dd. 4/10/2014 are applied by JSC Atomredmetzoloto in practice, taking into account the specifics of the legal status of ROSATOM, established by regulatory legal acts of the Russian Federation which provide for single management of nuclear industry entities, and are reflected in a number of local regulations.

#### AUTHORIZED CAPITAL AND STOCKHOLDER OF ARMZ URANIUM HOLDING CO.

As of 31 December 2017:

- JSC Atomredmetzoloto's authorized capital made up RUB 26.100.829, 138
- The Company offered 26.100.829.138 ordinary registered shares with a par value of RUB 1.00 each (issue registration number 1-01-03912-A);
- the total number of persons registered with the shareholder registry is three (ROSATOM State Atomic Energy Corporation, JSC Atomenergoprom, JSC TVEL).

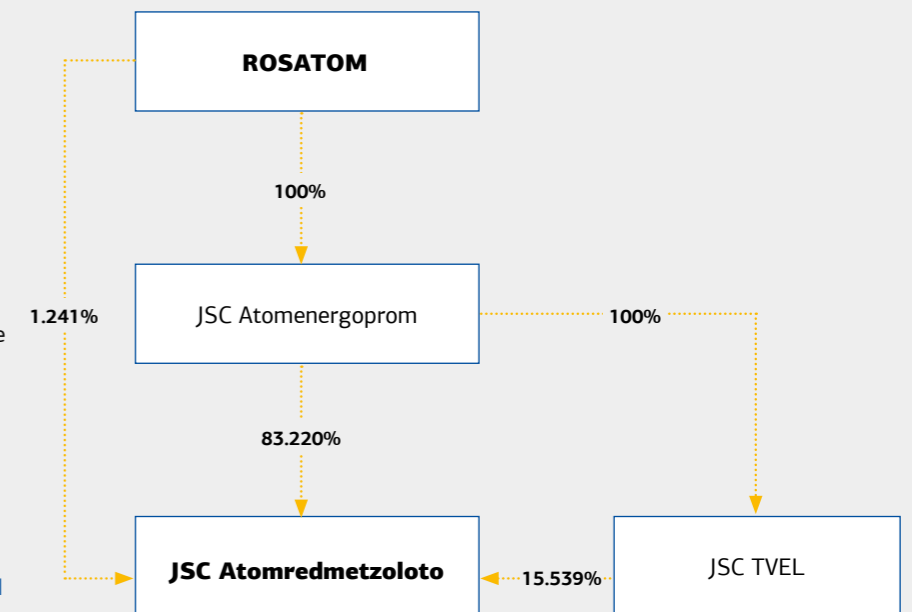



Figure 19. Shareholder Structure as of December 31, 2017

Table 1. Shareholder Structure Trends in 2015-2017, %

| JSC TVEL           | Interest in JSC Atomredmetzoloto, % |                  |                  |
|--------------------|-------------------------------------|------------------|------------------|
|                    | as of 12/31/2015                    | as of 12/31/2016 | as of 12/31/2017 |
| JSC Atomenergoprom | 82.574                              | 82.574           | 83.220           |
| JSC TVEL           | 16.137                              | 16.137           | 15.539           |
| ROSATOM            | 1.289                               | 1.289            | 1.241            |

#### MANAGEMENT SYSTEM



JSC ATOMREDMETZOLOTO'S ANNUAL REPORT 2016 HAS BEEN APPROVED BY THE RESOLUTION OF THE BOARD OF DIRECTORS ON 24 MAY 2017.

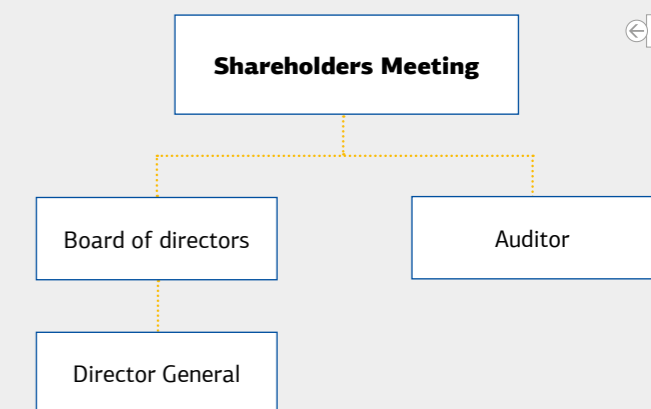


Figure 20. Structure of Corporate Governance Bodies of JSC Atomredmetzoloto

G102-10

G102-18



## CONTROL AND MANAGEMENT BODIES

### GENERAL SHAREHOLDERS MEETING

The General Shareholders Meeting (GSM) is the supreme management body of JSC Atomredmetzoloto. GSM's authority, convocation and organization procedures are defined by the provisions of the Company's Articles of Association, as well as the regulatory acts of the Russian Federation.

The Company promptly informs its shareholders both about the date of GM and the results of voting at the meeting. Relevant information is posted on the official website of the Company.

In 2017, two GSMs were held passing resolutions on the Company governance matters including:

- approval of the restated Articles of Association;
- creation of the Company's governing bodies;
- distribution of profit for reporting period 2016.

### BOARD OF DIRECTORS

The Board of Directors carries out general management of the Company. The competence of the Board of Directors is set forth in the provisions of the Company's Articles of Associations.

No members of the Board of Directors hold JSC Atomredmetzoloto's shares.

The members of the Board of Directors are nominated as set forth in Art. 53 of the Federal Law On Joint-Stock Companies.

JSC Atomredmetzoloto's Board of Directors is convened as required by the Chairman of the Board of Directors on its own initiative, on request of the Board member, Director General or auditor.

For details, see section 3.1.2. Report of the Board of Directors on the Results of the Company Development by Priority Business Lines

The Board of Directors consists of five members. The Chairman of the Board of Directors and the Director General are different persons.

No members of the Board or the Director General executed any deals to acquire or dispose of the Company's shares in 2017.

From 1/1/2017 until 6/26/2017, the Board of Directors elected by the ordinary General Shareholders Meeting (minutes No. 25 dd. 6/23/2016) was composed of:

1. Alexander M. Lokshin, Chairman of the Board of Directors;
2. Vladimir N. Verkhovtsev;
3. Vladimir S. Vysotskiy;
4. Vladislav I. Korogodin;
5. Ekaterina V. Lyakhova.

From 6/27/2017 until 12/31/2017, the Board of Directors elected by the ordinary General Shareholders Meeting (minutes No. 29 dd. 6/27/2017) was composed of:

1. Alexander M. Lokshin, Chairman of the Board of Directors;
2. Oleg S. Barabanov;
3. Vladimir N. Verkhovtsev;
4. Vladimir S. Vysotskiy;
5. Vladislav I. Korogodin.

**Table 2. Backgrounds of JSC Atomredmetzoloto's Board of Directors Members\***

|   |   |
|---|---|
| <b>Alexander M. Lokshin</b>   |   |
| Member of the Board of Directors since 6/30/2014, President since 7/1/2014  |   |
| Born in 1957 in Chita. Graduate of Leningrad Kalinin Technical Institute. Honored Energy Engineer of the Russian Federation   |   |
| 06.2008 – until now   | Deputy Director General, Deputy Director General – Head of the NPC Directorate, First Deputy Director General for Operation Management of ROSATOM |
| <b>Oleg S. Barabanov</b>  |   |
| Member of the Board of Directors since 6/27/2017  |   |
| Born in 1971 in Moscow. Graduate of Moscow Ordzhonikidze State Geological Exploration Academy, Ph.D. (Economics)  |   |
| 2011 – until now  | Treasure Director, Development and Restructuring Director, ROSATOM  |
| <b>Vladimir N. Verkhovtsev</b>  |   |
| Member of the Board of Directors since 6/30/2014  |   |
| Born in 1955 in Lyal Mikar settlement, Jarkurgan district of the Surkhandarya Region, Uzbek SSR. Graduate of F.E. Dzerzhinsky Military Academy, Military Academy of the General Staff of the Russian Federation Armed Forces, Ph.D. (Science) |   |
| 09.2011 – until now   | Deputy Director General, Director General, JSC Atomredmetzoloto   |

\*Data for 31.12.2017

### Vladimir S. Vysotskiy

Member of the Board of Directors since 12/10/2014

Born in 1954 in Komarino village, Gorodoksky district of Lvov region, Ukrainian SSR. Graduate of the Military Academy of the General Staff of the Russian Federation Armed Forces

|                  |   |
|------------------|---|
| 2007 – 2012      | Supreme Commander of the Russian Federation Navy, Admiral                                   |
| 2013 – until now | Deputy Director General, Deputy Director General for Special Projects, JSC Atomredmetzoloto |

### Vladislav I. Korogodin

Member of the Board of Directors since 9/7/2007

Born in 1969 in Moscow. Graduate of Moscow Physical and Technical Institute

|                     |   |
|---------------------|---|
| 03.2010 – until now | Deputy Director of the NPC Directorate, Director for NFC LC and NPP Management, ROSATOM |
|---------------------|---|

### Ekaterina V. Lyakhova

Member of the Board of Directors since 6/30/2011 until 6/26/2017

Born in 1975 in Ekaterinburg. Graduate of the Urals State Law Academy and Universiteit Antwerpen Management School

|                     |  |
|---------------------|--|
| 04.2011 – until now | Deputy Director, JSC Atomenergoprom  |
| 07.2011 – until now | Deputy Director of the Directorate for Nuclear Power Complex, Director for Investment and Operation Management, ROSATOM, Director for Economy and Investments, ROSATOM |



### DIRECTOR GENERAL

The Director General in its capacity of the sole executive body manages current operations of the Company.

The Director General of JSC Atomredmetzoloto is Vladimir N. Verkhovtsev\* elected by the resolution of the extraordinary General Shareholders Meeting (minutes No. 15 of 5/27/2013).

V.N. Verkhovtsev owns no shares of JSC Atomredmetzoloto.

In accordance with requirements of art. 69 of the Federal Law On Joint-Stock Companies, Art. 9 of the ARMZ Article of Association, the Director General arranges for implementation of resolutions of the Company's General Shareholders Meeting and Board of Directors.

### KEY PROVISIONS OF THE REMUNERATION AND/OR REIMBURSEMENT POLICY, DETAILS OF REMUNERATIONS AND/OR REIMBURSEMENTS

For their participation in operations of the Board of Directors, members of Board of Directors may be paid remuneration depending on financial and economic performance

\*For background details, see the Board of Directors section.

of the Company. The amount of remuneration is set forth by the General Shareholders Meeting.

Members of the Board of Directors who are full-time employees of JSC Atomredmetzoloto receive their wages in accordance with the Harmonized Industrial Remuneration System established by the ROSATOM for joint-stock companies of the Corporation and subsidiaries of JSC Atomenergoprom. Remunerations and compensations to the members of the Board of Directors are paid in accordance with labor contracts and valid local regulations on payroll.

The Staff Performance Management System based on key performance indicators (KPI) implemented at ARMZ plants provides evaluation of achievements of the Company as a whole, as well as individual managers and employees. The KPI system is a strategic and day to day management tool that allows to plan performance at all levels of the company.

**Table 3. Target Key Performance Indicators of JSC Atomredmetzoloto (KPI) for 2017**

| KPI Name, KPI Measurement Unit   | KPI Compliance Level  |                       |
|--|-----------------------|-----------------------|
|  | Target Value for 2017 | Actual Value for 2017 |
| Adjusted free cash flow (AFCF) of ROSATOM (subject to the Mining Division AFCF compliance), RUB bn | 285.0                 | 308.7                 |
| Mining Division AFCF, RUB bn   | 1.5                   | 2.1                   |
| Integral Investment Performance Indicator, %*  | 100.00                | 102.3                 |
| Comprehensive Costs, RUB bn  | 15.9                  | 15.6                  |
| Labor Productivity, Million RUB / person   | 3.1                   | 2.79                  |
| Stock Reduction, RUB bn  | -30                   | -45.7                 |
| Incomplete Construction / Equipment Performance, %   | 100                   | 90.98                 |
| Employee Engagement Rate, %  | 57                    | 66                    |
| LTIFR and Injury Severity Reduction at Enterprises' Production Sites, including Contractors, %     | 0.54/30%              | 0.28/33%              |
| No INES Level 2 and Higher Breaches  | 0                     | 0                     |

\*Exclusive of uncontrolled scenario conditions factors (prices and inflation)

**Table 4. Target Key Performance Indicators of JSC Atomredmetzoloto (KPI) for 2018**

| KPI Name, KPI Measurement Unit   | KPI Compliance Level |
|--|----------------------|
|  | Target               |
| ROSATOM AFCF (inclusive of the Mining Division AFCF compliance), RUB bn                        | 298.0                |
| NFC AFCF, RUB bn   | 120.7*               |
| EBITDA Contribution (NFC), RUB bn  | 116                  |
| Integral Investment Performance Indicator, %   | 100.0                |
| Comprehensive Costs, RUB bn  | 15.4                 |
| Labor Productivity, Million RUB / person   | 2.35                 |
| NFC Stocks, RUB bn   | 109                  |
| Reduction of Unused Incomplete Construction / Equipment for Installation / ITA, RUB bn         | 0.3                  |
| Employee Engagement Rate, %  | 61                   |
| LTIFR and Injury Severity Reduction at Enterprises' Production Sites, including Contractors, % | 0.49/30%             |
| No INES Level 2 and Higher Breaches  | 0                    |

\*Due to the changes to the AFCF calculation perimeter of the divisions, data for 2018 and previous years are not comparable. From 2018, the comprehensive AFCF of JSC Atomredmetzoloto, JSC TVEL and JSC TENEX will be calculated.

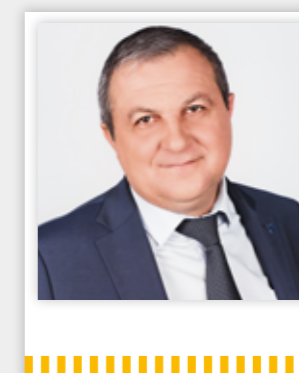
In the reporting period, the amount of remunerations, as well as the amount of expenses connected with execution of functions of members of the Board of Directors compensated by JSC Atomredmetzoloto, was RUB 40.0 million.

## MANAGEMENT

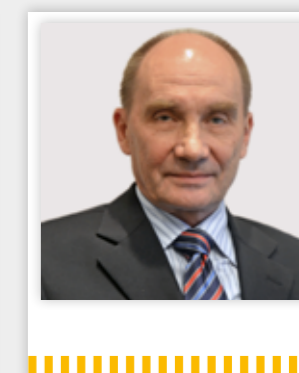
(as of 31 December 2017)



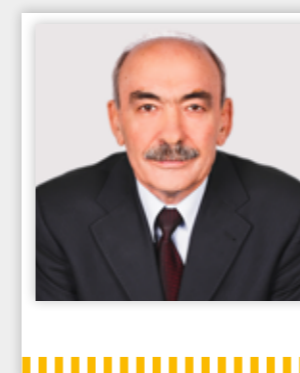
**VLADIMIR N. VERKHOVTSEV**  
Director General



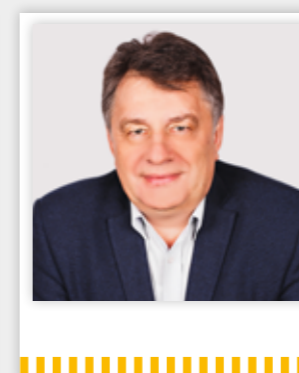
**VICTOR S. SVYATETSKIY**  
First Deputy Director General – Executive Director



**VLADIMIR S. VYSOTSKIY**  
Deputy Director General for Special Projects



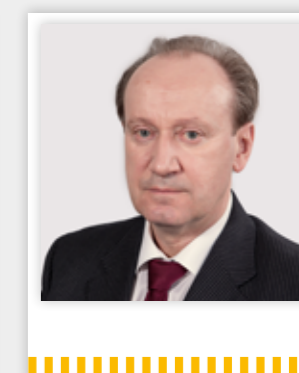
**VLADIMIR D. MORGUN**  
Deputy Director General for Security



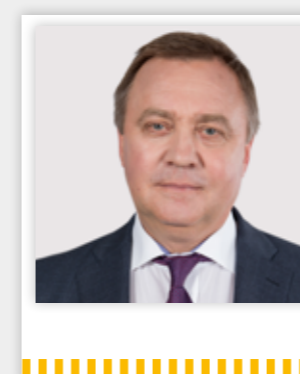
**VICTOR M. ZAKHAROV**  
Deputy Director General for Economy and Finance



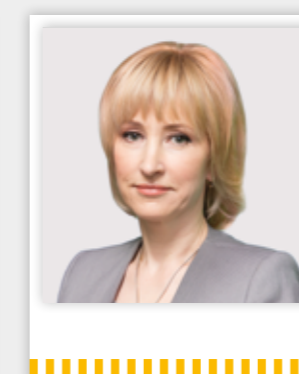
**MARINA I. LIBORAKINA**  
Deputy Director General for Strategy and Business Development



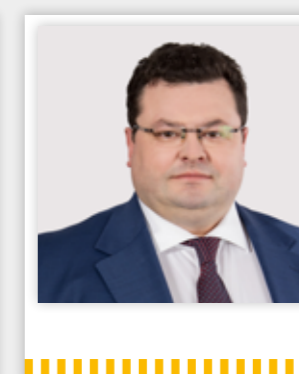
**ILYA I. KOROLEV**  
Deputy Director General for Administration



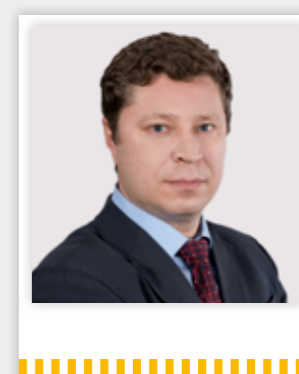
**STANISLAV M. ANIKEEV**  
HR Director



**VERA B. SOROKINA**  
Chief Accountant



**ILYA A. YAROSHEVICH**  
Director of Corporate and Legal Affairs



**VSEVOLOD YU. GALINOV**  
Chief Inspector for Safety Control

(as of 31 December 2017)

## COMMITTEES OF JSC ATOMREDMETZOLOTO



### INVESTMENT COMMITTEE

#### 2017 RESULTS

Nine meetings of JSC Atomredmetzoloto's Investment Committee (the Committee) were held to:

- approve investment limits of costly projects for 2018;
- approve changes to passports of the projects for Integrated Uranium Production Performance Improvement for PJSC PIMCU, R&D of PJSC PIMCU, Uranium Production Infrastructure Retention of PJSC PIMCU, Reconstruction of Hydro Technical Structures of PJSC PIMCU, PJSC RUSBURMASH and JSC VNIPIpromtehnologii;
- approve changes to the long-term development plan of JSC Dalur.

18 matters were reviewed in total, 33 investment resolutions were passed.

During the year, membership of the Committee was updated. The Committee included representatives of JSC Atomredmetzoloto, ROSATOM and subsidiary companies (PJSC PIMCU, JSC Khiagda, JSC Dalur). The President of the Committee is the Director General of JSC Atomredmetzoloto, Mr. V.N. Verkhovtsev.

For details, see section 4.2.3. Investments.



### RISKS COMMITTEE

#### 2017 RESULTS

Thirteen remote meetings were held of JSC Atomredmetzoloto's Risks Committee (the Committee) to:

- approve/adjust intragroup borrowing rates for granting and raising loans by organizations of the Mining Division (interest risk management);
- approve/adjust monthly limits of intragroup lending to organizations of the Mining Division (loan risk management);
- approve the currency risk management strategy of the Mining Division.

The President of the Committee is the First Deputy Director General, Chief Operating Officer, Mr. V.S. Svyatetskiy.

For more details, see section 3.2. Risk Management



### CHARITY COMMITTEE

#### 2017 RESULTS

Three Committee meetings were held (one personal and two remote ones).

- Charity priorities for 2017 were supporting the Company's operation regions:
  - holding the Social Projects Competition of the City of Krasnokamensk municipality and
  - program for support of education institutions in the Kurgan Region.

The President of the Committee is the Deputy Director General for Strategy and Business Development, Ms. M. I. Liborakina.

For more details, see section 3.6. Social Capital Management

### REPORT ON PAYMENT OF DECLARED (ACCRUED) DIVIDENDS ON COMPANY SHARES

JSC Atomredmetzoloto's dividend policy is set by the management bodies with an account of the required investment in compliance with the Company's strategy.

From 2014 until 2017, no dividends were declared or paid.

There are no declared and unpaid dividends.

Payment of dividends for 2017 is not planned.

### MAJOR AND RELATED PARTY TRANSACTIONS

In 2017, the Company did not execute any major transactions that require approval under the Federal Law On Joint Stock Companies.

From 1/1/2017 until 2/8/2017, JSC Atomredmetzoloto executed no related party transactions that require approval of the governance body in accordance with the Federal Law On Joint-Stock Companies.

As of 2/9/2017, the restated Articles of Associations were enacted containing the provision on non-application of Chapter 11 of Federal Law No. 208-FZ dd. 12/19/1995

On Joint-Stock Companies to the Company.

### CORPORATE REGISTRAR DETAILS

The registrar of JSC Atomredmetzoloto is Open Joint-Stock Company Registrar R.O.S.T.

**Registrar Details:**  
OGRN 1027739216757,  
INN 7726030449

**Location:** Moscow, 18/13 Stromynka Street.

**Phone/Fax:** (495) 771-73-36.

## 3.1.2. Report of the Board of Directors on the Results of the Company Development by Priority Business Lines

In 2017, 21 meetings of the Board of Directors were held passing resolutions on critical Company governance matters including:

- approval of the Company and Holding Company's budget for 2017;
- approval of target key performance indicators (KPIs);
- determination of remuneration payable to the top management;

- issuance of recommendations on profit distribution at the annual General Shareholders Meeting;
- approval of the auditor for 2017 and determination of its service cost;
- passing of the resolution to increase the authorized capital by offering additional shares;

- approval of the resolution to issue additional securities and approval of amendments to it;
- passing of resolutions to purchase shares in JSC Khiagda, JSC The First Ore Mining Company, JSC UMC Gornoe offered within the framework of additional securities issuances.

All meetings were held in absentia. The Board of Directors considered 28 agenda matters in total.

## 3.2. Risk Management

### 3.2.1. Risk Management System

JSC Atomredmetzoloto shares the single risk management approach with ROSATOM, taking into account risks during business planning. As a part of risk management activities, critical risks and their owners have been identified, while the measures to manage risks have been developed and implemented.

In 2017, JSC Atomredmetzoloto successfully passed external audit

and obtained the certificate of compliance with ISO 9001:2015 and ISO 14001:2015 (the new version focuses largely on risk management procedures).

#### PLANS FOR 2018 AND THE FUTURE

Given publication of the Harmonized Industrial Methodological Guidelines for Compliance with Investment Project Risk Management Procedures,

2018 will see revision of all project risks in accordance with the new methodology. This work will allow focusing on risk management operations and reducing possible consequences of risk occurrence.

Work will continue to implement the project for Development of Argunskoye and Zherlovoye fields and Construction of Mine No. 6 in the Trans-Baikal Territory.

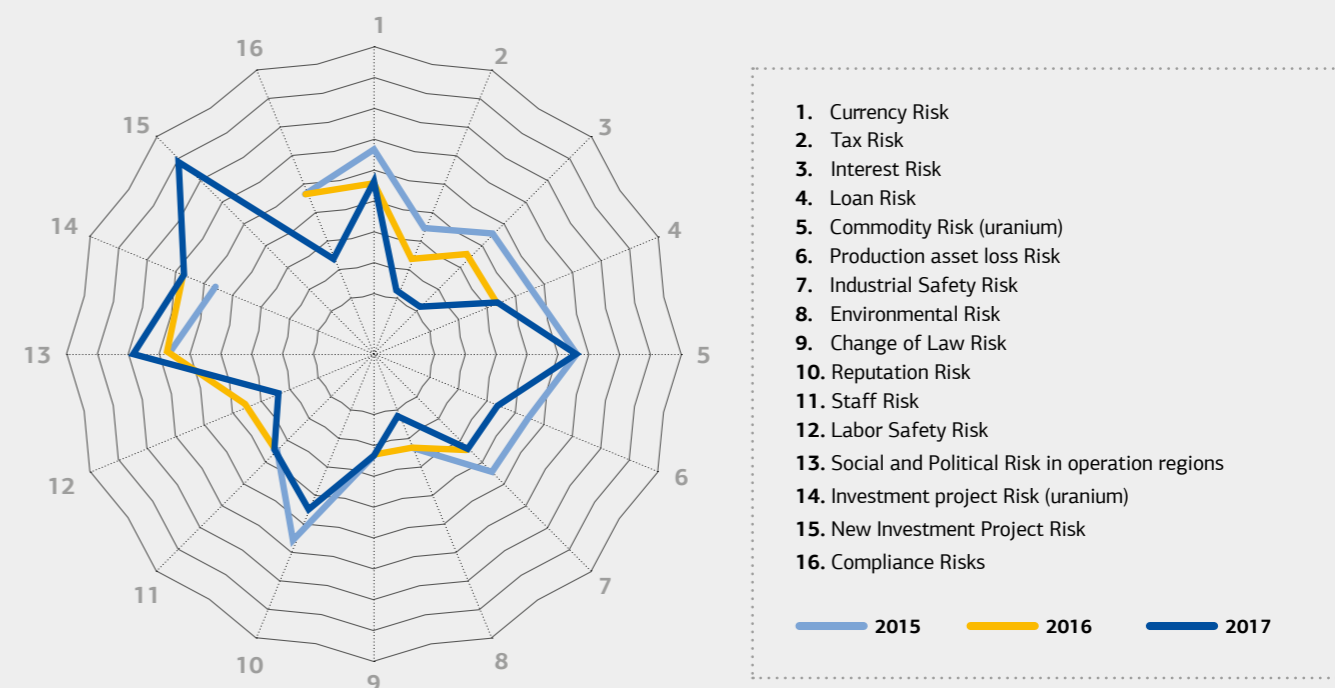


Figure 21. Radar of Key Risks of JSC Atomredmetzoloto in 2015-2017

## 3.2.2. Key Risks and Their Management

Table 5. Key Risks and Their Management Critical risks ranking 5 and higher are shown



| Risk, its Radar number and key risk factor   | Key Risk Management Performance in 2017   | Risk Trends |
|--|---|-------------|
| <p><b>1.</b><br/>Currency Risk<br/>(unfavorable changes to exchange rates)</p>   | <p>Material ranking of the currency risk in the Holding Company is due to the presence of the currency component in the Company's income as well as due to the significant volatility of the US dollar. Due to lower than planned USD exchange rate, hedging deals were ineffective during the year. Key efforts focused on possible transfer of the currency risk to the buyer. In 2017, negotiations were held on changes to pricing of products sold allowing to minimize the currency risk impact on JSC Atomredmetzoloto's financial performance in 2018.</p> <p><b>Result:</b> minimized currency risk impact on 2018 performance.</p>  | ●           |
| <p><b>5.</b><br/>Commodity Risk<br/>(decreasing uranium prices)</p>  | <p>The risk is due to continuing decrease of uranium market prices in 2017. Minimization of the impact of this type of risk was limited by the methods of natural hedging and was achieved due to balancing of raw materials' sales schedules by various pricing contract mechanisms taking into account the actual and predicted Trends of uranium price indicators due to flexible contract terms by managing available sources of raw materials. In 2017, negotiations were also held on changes to pricing of products sold allowing to minimize the commodity risk impact on JSC Atomredmetzoloto's financial performance in 2018.</p> <p><b>Result:</b> due to the management of implementation schedules, the impact of unfavorable uranium price Trends on the financial result of the Company business was reduced by more than RUB 100 MM. Minimized commodity risk impact on 2018 performance.</p>   | ●           |
| <p><b>10.</b><br/>Reputation Risk<br/>(changes to stakeholders' perception of the Division's reliability and attractiveness)</p> | <p>The risk is due to possible dissemination of negative information on ROSATOM and its entities; major accidents in nuclear industry; protests against deposit development (Dobrovolnoye uranium deposit in the Kurgan Region); massive public concern about the future of the enterprise (construction of PJSC PIMCU's new Mine No. 6 in Krasnokamensk, Trans-Baikal Territory).</p> <p>The following actions were taken to manage the risk in the Kurgan Region:</p> <ul style="list-style-type: none"> <li>● inauguration of JSC Dalur's Information Center at Zverinogolovskoye Village in the Kurgan Region</li> <li>● installation of an electronic display showing radiation level on the Administration Building of Zverinogolovskoye District of the Kurgan Region;</li> <li>● monthly disclosure of information on JSC Dalur's operation in local mass media, including opinion leaders on environmental monitoring results;</li> <li>● holding round tables, meetings of the regional Public Chamber and independent environmental Council in Kurgan and Zverinogolovskoye engaging experts and scientists and resulting into resolutions and explanations in mass media on safety of deposit development subject to mining and geological conditions;</li> <li>● issue of the special information publication for residents of Zverinogolovskoye District of the Kurgan Region;</li> <li>● regular visits of local community to JSC Dalur's production sites.</li> </ul> | ●           |

| Risk, its Radar number and key risk factor  | Key Risk Management Performance in 2017  | Risk Trends |
|---|--|-------------|
|   | <p>The following actions were taken to manage the risk in the Trans-Baikal Territory:</p> <ul style="list-style-type: none"> <li>● disclosure of information on plans and deadlines for construction of PJSC PIMCU's Mine No. 6 in the Trans-Baikal Territory's mass media, as well as on allocation of funds for construction and installation work, and commencement of competitive procedures, including via the PR function of the Government of the Trans-Baikal Territory, including opinion leaders and regional governor;</li> <li>● organization of discussion of Mine No. 6 construction at the session of the Legislature of the Trans-Baikal Territory resulting into over 300 positive publications in the regional and federal mass media;</li> <li>● informing employees of PJSC PIMCU and residents of Krasnokamensk of the time schedule of Mine No. 6 construction for 2018, including on Informing Days and via social networks;</li> <li>● persuading employees of PJSC PIMCU and residents of Krasnokamensk that some production actions (such as increasing floor height between horizons of operational mines) are taken for further use in construction of Mine No. 6.</li> </ul> <p><b>Result:</b> the balance of positive and negative appraisal of nuclear power industry development programs by the Russian population was 57% in 2017.</p>   |             |
| <p><b>13.</b><br/>Social and Political Risk in Operation Regions<br/>(aggravating public tensions in Krasnokamensk)</p> | <p>The Holding Company's primary production enterprise (PJSC PIMCU) is the backbone enterprise and all resolution on development / adjustment of its operations influence the regional (Krasnokamensk) social status materially. In 2017, work continued to launch new businesses in Krasnokamensk (PSEDA) and actively promote the project for Development of Argunskoye and Zherlovoye fields. Construction of Mine No. 6 in the Trans-Baikal Territory. Commencement of actions for implementation of the project allowed keeping the peace in the region.</p> <p>Implementation of social actions continued including:</p> <ul style="list-style-type: none"> <li>● ensuring social protection of employees (voluntary healthcare insurance, accident and disease insurance, reimbursement of vacation travel costs, retirement programs, financial aid);</li> <li>● operation of official communities in VK and OK social networks (answers of PJSC PIMCU's top managers and key specialists to questions of employees and local residents);</li> <li>● operation of the miners' wives club (informing employee family members of the state of things at the enterprise, its plans, development prospects and key events);</li> <li>● interaction with the public employment service on the matters of assisting to public employment as well as public retraining and vocational guidance operations;</li> <li>● holding the conference PIMCU – Path to Development.</li> </ul> <p><b>Result:</b> no strikes and protests at the enterprise.</p> <p><b>Trend:</b> the risk has grown due to insufficiently clear development prospects of Krasnokamensk.</p> | ↑           |
| <p><b>14.</b><br/>Investment Project Risk - Uranium<br/>(risk of the projects' failure to achieve the set targets)</p>  | <p>The Mining Division's business is associated with development of deposits and mining of natural uranium in the Russian Federation. To reduce projects risks, actions are taken on a continuous basis to identify risks affecting financial performance of projects, and actions to mitigate them are developed and taken. Resolutions on further project development are passed subject to possible risk impact.</p> <p>In 2017, ROSATOM made changes to documents governing project risk management. Analysis of uranium mining project risks was revised in accordance with new recommendations.</p> <p><b>Result:</b> The Company's uranium mining project portfolio efficiency has been confirmed by ROSATOM; it is maintained at a stable positive level or increasing.</p> <p><b>Trend:</b> risk growth is due to changed deadlines for the project for Development of Argunskoye and Zherlovoye fields. Construction of Mine No. 6 in the Trans-Baikal Territory.</p>  | ↑           |

| Risk, its Radar number and key risk factor   | Key Risk Management Performance in 2017   | Risk Trends   |
|--|---|---|
| <p><b>15.</b><br/>New Investment Project Risk<br/>(risk of projects' failure to achieve set targets)</p> | <p>To diversify its business, the Holding Company is implementing projects related to new businesses (mining of associated metals, new products and development of non-uranium deposits). In 2017, JSC Atomredmetzoloto controlled implementation of four new business investment projects. Since implementation of such projects is associated with high degree of uncertainty, the projects are analyzed for risks that may adjust their implementation progress. The following actions are taken:</p> <ul style="list-style-type: none"> <li>the project team identifies risks and develops actions to manage them; analysis is repeated or actions are taken to modify risk management and update it;</li> <li>JSC Atomredmetzoloto's risk management team analyzes completeness of risk identification and adequacy of actions developed to mitigate them;</li> <li>resolutions for further project implementation are passed subject to identified risks and their mitigation possibilities.</li> </ul> <p>Key risks for projects implemented in 2017 were absence of project financing sources, decreasing price of products and presence of additional project operations. Operations were performed to mitigate such risks, but actions taken were unable to compensate for them in full, which resulted in extension of such projects' implementation deadlines.</p> <p><b>Result:</b> The Holding Company's project portfolio efficiency has been confirmed by ROSATOM; it is maintained at a stable positive level.</p> <p><b>Trend:</b> risk growth is due to extension of project implementation deadlines.</p> |  |

### 3.3. Internal Control System. Assets Protection

#### INTERNAL CONTROL SYSTEM

Key performance indicators of the internal control system are as follows:

- no any actual incidents or material comments based on results of inspections performed by external control bodies in relation to organizational processes (earlier inspected by the Company's internal control directorate);
- efficient use of resources during control actions.

No comments of state and other external monitoring bodies made following the results of process audits in 2017 were identified. Resource use efficiency in 2017 exceeds its target value.

For details of the internal control system, its tasks and operating principles, see Annual Report 2015.

#### 2017 RESULTS:

- all scheduled actions were taken to inspect financial and economic operations of subsidiaries and the riskiest processes;
- two RPS projects were developed and implemented to increase efficiency of controls;
- employees of internal control and audit business unit of ARMZ Uranium Holding Co. successfully completed independent attestation in accordance with the Internal Control Specialist (Internal Controller) professional standard.

#### PLANS FOR 2018:

Development and improvement of the risk oriented approach to planning and implementation of control activities aimed at increasing transparency level of the Holding Company enterprises; business processes, elimination of financial, production and reputation risks as well as improvement of narrow-profile competencies of control business units' employees.

#### SAFETY MANAGEMENT SYSTEM

JSC Atomredmetzoloto takes integrated actions to ensure economic security, asset protection, prevention of corruption offences.



HR PERFORMANCE OF THE INTERNAL CONTROL DIRECTORATE:

THE EXECUTIVE OF THE INTERNAL CONTROL SERVICE OF JSC RUSBURMASH, MR. M.A. KOVALENKO WAS INCLUDED INTO THE TALENT POOL OF ROSATOM;

EXECUTIVE OF THE INTERNAL CONTROL SERVICE OF PJSC PIMCU, MR. BELYKH N.V. BECAME THE FINALIST OF THE ALL-RUSSIAN LEADERS OF RUSSIA COMPETITION.

**Table 6. Dynamics of Control Events in 2015-2017**

| Indicator  | 2015 | 2016 | 2017 |
|--|------|------|------|
| Control Activities, including by types, pcs.                                       | 22   | 34   | 50   |
| ● Control and Audit Activities   | 2    | 6    | 6    |
| ● Expert and Analytical Activities   | 17   | 24   | 36   |
| ● Internal Audit   | 3    | 4    | 8    |
| Deviations Identified, pcs.  | 52   | 73   | 103  |
| Employees brought to Disciplinary Liability based on Results of Control Activities | 13   | 30   | 28   |

#### 2017 RESULTS:

- actions from the Anti-Corruption Plan for 2016 and 2017 were taken; JSC Atomredmetzoloto's regulations set forth in the Federal Law On Anti-corruption were updated and enacted;
- the commercial secrecy mode is being improved. In 2017, actions were taken subject to requirements set forth in the Harmonized Policy for Commercial Secrecy Protection in Nuclear Industry to harmonize the restricted document electronic turnover among the Holding Company's enterprises and nuclear industry organizations.



## PHYSICAL PROTECTION OF NUCLEAR FACILITIES

The staff of physical protection business units of the Holding Company's enterprises is fully staffed by employees who completed additional training at specialized courses. In 2017, security executives completed scheduled knowledge checks and obtained Rostekhnadzor's permission to operate in nuclear power use industry.

Actions are taken on a scheduled basis to improve and upgrade physical protection of nuclear facilities. Over RUB 30 MM were provided to perform such operations.

Within the agency concept of improving counterterrorism protection of nuclear industry facilities and terrorism counteraction, categorization and development of safety data sheets of the Holding Company's facilities were performed, interactions with territorial counterterrorism committees and law-enforcement agencies on locations of the Mining Division's enterprises were tested.

All nuclear and restricted facilities of the Holding Company were transferred to security protection by FSUE ROSATOM Agency Security (FSUE Atom Security).



THERE WAS NO UNAUTHORIZED INGRESS INTO SECURE ZONES OF THE HOLDING COMPANY'S NUCLEAR FACILITIES.

Parallel to improvement of integrated technical and engineering physical protection, 2015-2017 saw operations for security cost cutting at the Holding Company's facilities with preservation of high safety level.

### QUANTITY AND RESULTS OF PHYSICAL PROTECTION INSPECTION OF FACILITIES

Inspections by control bodies identified no material breaches in physical protection of nuclear materials, nuclear plants and nuclear material storage stations or incompliance with physical protection rules and regulations. Identified defects were eliminated as soon as possible. In 2017, ROSATOM, Rostekhnadzor and Russian MIA conducted a number of physical protection inspections at the Holding Company's facilities. The inspections identified no material breaches.

### PLANS FOR 2018:

- implementation of the Plan for Improvement of Anti-Corruption Operations in ROSATOM State Atomic Energy Corporation;
- improvements of actions aimed at corruption prevention;
- building and upgrading physical protection systems at the Holding Company's sites and facilities;
- improving professional training of security employees.

## 3.4. Procurement Management

### PROCUREMENT ACTIVITIES

The Company adheres to the principles of openness and transparency in relation to its procurement management. Circa 99% of

competitive procurement procedures are conducted on the electronic platforms of LLC Fabrikant, JSC Unified Electronic Trading Platform and JSC

Center for Economic Development which allows saving labor and financial resources, and makes procurement more open.

### PERFORMANCE FOR 10 YEARS:

- **In September 2009**, JSC Atomredmetzoloto acceded to the Uniform Industry Procurement Standard of ROSATOM;
- **Since late 2012**, JSC Atomredmetzoloto has been using electronic procurement procedures;
- **Since 2013**, Federal Law 223-FZ has applied to JSC Atomredmetzoloto. In this connection, procurement transparency has increased due to publication of annual procurement plans, procurement procedures and

- data on contracts executed and performance on the official website;
- **In 2014**, the Authorize Body (procurement special-purpose vehicle (SPV)) – LLC ARMZ Service was created to perform procurement for the Holding Company's enterprises. The category management system was also implemented to improve procurement performance;
- **In 2017**, the Holding Company's enterprises adopted the concept of implementing and developing the manufacturer audit system to improve quality of supplied products. The process of generalizing technical

- specifications of procured products was launched including open discussions with suppliers;
- Additionally, **each year since 2013** has been seeing regional ATOMEX REGION forums in the operation regions held to develop competitive environment, engage additional suppliers, ensure information disclosure and transparency of procurement activities by ARMZ Uranium Holding Co.'s enterprises jointly with ANO ROSATOM Corporate Academy.

Table 7. Holding Company's Procurement Structure

| Indicator  | 2015   | 2016   | 2017   |
|--|--------|--------|--------|
| Share of Procurement using Public Open Competitive Procedures within the Uniform Industry Procurement Standard Framework | 99     | 99     | 99     |
| JSC Atomredmetzoloto's Procurement Amount, Million RUB   | 422    | 317    | 519    |
| Total Procurement Amount of the Holding Company, Million RUB   | 22,936 | 17,242 | 12,670 |
| JSC Atomredmetzoloto's Savings, Million RUB  | 13     | 5      | 6      |
| Total Savings of the Holding Company from Public Competitive Procurement Procedures, Million RUB                         | 1,062  | 770    | 896    |

Table 8. Procurement Structure by Cost, %

|                         |      |
|-------------------------|------|
| not exceeding RUB 1 MM  | 2.4  |
| not exceeding RUB 10 MM | 13.8 |
| RUB 10-50 MM            | 26.8 |
| RUB 50-100 MM           | 23.6 |
| exceeding RUB 100 MM    | 33.4 |

For details of JSC Atomredmetzoloto's procurement structure, see Annual Report 2016.

ARMZ Uranium Holding Co., in accordance with ROSATOM's procurement policy, is not entitled to grant preferences to suppliers by area. Local suppliers participate in competitive procedures on a general basis. No particular approaches to working with local suppliers are applied. The Company does not account costs of such suppliers specially.

For details of key principles, objectives and control in procurement activities, see Report 2015.

### 2017 RESULTS:

- 1,395 competitive procurement procedures were performed to satisfy the Holding Company's needs;
- the total amount of performed competitive procedures was RUB 7.5 bn;
- the savings (difference between the initial procurement price and the winning bid cost) based on

results of performed competitive procurement procedures made up RUB 896 MM;

- in September of the reporting period, the ATOMEX REGION 2017 regional forum was organized in Ulan-Ude jointly with ANO ROSATOM Corporate Academy.

### PLANS FOR 2018:

- performing circa 700 competitive procurement procedures;
- continuing generalization and standardization as well as procured product quality improvement.



# 4. Capital Management Results

## 4.1. Production Capital

### PERFORMANCE FOR 10 YEARS:

- **In 2007**, domestic uranium mining enterprises were consolidated and JSC RUSBURMASH was integrated into ARMZ Uranium Holding Company;
- **In 2008**, trial production operations were completed at Khiagda deposit of JSC Khiagda;
- **In 2009**, PJSC PIMCU's new sulfur acid plant was inaugurated with the capacity of 180 ktpa;
- **In 2012**, the first stage of PJSC PIMCU's mine eight was commissioned.
- **In 2013**, JSC Khiagda completed geological exploration and confirmed reserves at its Dybrynskoye, Koretkondinskoye, Namaruskoye, Kolichikanskoye and Vershinnoye Deposits. JSC Dalur obtained the license for exploration and development of its Khokhlovskoye deposit;
- **In 2015**, one of the largest industrial innovation projects was completed. It was construction, under permafrost conditions, of JSC Khiagda's advanced uranium mining enterprise, commissioning of all primary construction facilities of the central production site and the sulfur acid production plant. JSC Dalur commissioned, for commercial operation, the drying system for uranium compound suspension (yellow cake);
- **In 2016**, JSC Khiagda performed the Physical launch of the mining and processing complex at its Vershinnoye Deposit;
- **In 2017**, JSC Dalur obtained the subsoil use license for its Dobrovolnoye Deposit. JSC Dalur completed construction and installation work in its associated scandium extraction workshop. Physical launch of the mining and processing complex ensured at JSC Khiagda's Vershinnoye Deposit.

### 4.1.1. Mineral Raw Materials Base Development

JSC Atomredmetzoloto's uranium resources (MRB) as of 1/1/2018 stand at 523.9 kt. By the volume of its MRB, the Holding Company ranks second among global uranium mining majors.

**Table 9. Reserves and Resources of ARMZ Uranium Holding Co.'s Russian Enterprises as of 12/31/2017, kt**

| Plant            | Reserves     | Resources P1* | Total MRB    |
|------------------|--------------|---------------|--------------|
| PJSC PIMCU       | 100.8        | -             | 100.8        |
| JSC Khiagda      | 37.1         | 1.4           | 38.5         |
| JSC Dalur        | 14.8         | 8.1           | 22.9         |
| Elkon MMP, JSC   | 357.1        | -             | 357.1        |
| JSC «UMC Gornoe» | 4.6          | -             | 4.6          |
| <b>In total:</b> | <b>514.5</b> | <b>9.4</b>    | <b>523.9</b> |

In 2017, the Holding Company increased its mineral resource base by:

- obtaining the subsoil license for the Dobrovolnoye Deposit (reserves C1+C2 – 7.1 kt, resources P1 – 5.1 kt);
- completing geological exploration at the Khokhlovskoye deposit and approval of reserves with the gain of 0.7 kt.

### GEOLOGICAL EXPLORATION IN RUSSIA

**Table 10. Works Exploration Drilling and Financing in 2017**

| Types of Activities   | Drilling volume, thousand line meters | Financing, Million RUB |
|---|---------------------------------------|------------------------|
| Exploratory scoping FS and reserve calculation report for the Khokhlovskoye deposit (JSC Dalur)   | -                                     | 17.0                   |
| Design of exploration operations at the Dobrovolnoye deposit (JSC Dalur)  | -                                     | 5.9                    |
| Operation scoping FS for 2017 to 2020 for development of Streltsovskoye, Antey and Malo-Tulukuyevskoye molybdenum and uranium ore deposits of Streltsovskoye ore field in the Trans-Baikal Territory (PJSC PIMCU) | -                                     | 28.8                   |
| <b>Total:</b>   | <b>-</b>                              | <b>51.7</b>            |

In 2017, geological exploration was performed at Khokhlovskoye deposit in the Kurgan Region and deposits of Streltsovskoye ore field (PJSC PIMCU, Trans-Baikal Territory). Total investments into geological exploration amounted to RUB 51.7 MM.

#### KEY ACTIVITIES AND RESULTS IN 2017:

- completion of exploration and pilot operation work for uranium mining using in-situ leaching at Khokhlovskoye deposit, receipt of the positive state expert conclusion on the exploratory scoping FS from Rosnedra GKZ (minutes No. 442-к dd. 9/6/2017) and reserve calculation report (minutes No. 5255 dd. 12/15/2017);
- receipt of the subsoil use license for Dobrovolnoye Deposit;
- development and submission of the exploratory operation project for Dobrovolnoye deposit to FBU Rosgeologeksperitiza;
- receipt of the positive state expert conclusion from Rosnedra GKZ for Operation scoping FS for 2017 to 2020 for development of Streltsovskoye, Antey and Malo-Tulukuyevskoye molybdenum and uranium ore deposits of Streltsovskoye ore field in the Trans-Baikal Territory (minutes No. 439-к of 6/9/2017).

#### PLANS FOR 2018:

- receipt of the positive conclusion from FBU Rosgeologeksperitiza for the exploration project for Dobrovolnoye Deposit;
- commencement of pilot production uranium mining operations using in-situ leaching at Dobrovolnoye deposit.

|  |   |
|--|---|
| Commencement of Mine No. 6 project implementation within the framework of further site deconservation                  | The program for implementation of Mine No. 6 project was completed in full in 2017  |
| Commencing construction of the Sredneye tailings' pond second stage at the expense of the Federal Target Program funds | Project implementation started. Dam increase work completed in 2017 Tailings' pond reconstruction operations will continue in 2018                          |
| Commencing design of the pilot operation unit for pyrite cinder processing   | The unit is planned to be designed within the framework of the integrated project for pyrite cinder processing to produce gold and iron containing products |

In 2017, motorcar transportation functions of Allianttransatom, JSC were returned to PJSC PIMCU's business unit, United Assets and RU Urtuyskoye.

Hitachi EH1700 dump truck was purchased for performance of stripping operations at Urtuysky Strip Mine.

New models of the domestic load-haul-dump machine produced by PJSC PIMCU presented at the Import Substitution exhibition at Crocus Expo. Diversification of production will allow PJSC PIMCU to enter new markets and increase its profits in the future. New machinery is planned for use during implementation of PJSC PIMCU's Mine No. 6 construction strategic project critical for the entire Krasnokamensk.

For details of participation in the exhibition, see 4.1.3. Business Diversification.

## 4.1.2. Production Capital Management

### PJSC PIMCU

#### PERFORMANCE FOR 10 YEARS:

- In 2012, the first stage of new uranium mine eight was commissioned;
- In 2014, the personnel and machinery positioning, and mining underground communication system was commissioned;
- In 2015, the new stowing complex was commissioned and implementation of the equipment fleet upgrade program started at Urtuysky strip mine;
- In 2016, break-even operation was achieved;
- In 2017, Mine No. 8 reached its rated capacity of 705 tpa of uranium and preparatory work to commence construction of Mine No. 6 was completed.

Figure 22. Uranium Production and Reserves in 2015-2017



#### 2017 RESULTS:

| Plans declared in Report 2016   | Results   |
|---|---|
| Production of 1,631 tonnes of uranium (-242 tonnes versus 2016)   | Uranium production program 2017 was implemented in full (1,631 tonnes)  |
| Production of 3,500 kt of coal  | 3,306 kt of coal produced (+9% versus 2016)   |
| Taking actions to migrate certain HMP workshops to the five-day working work from the seven-day working week  | Certain HMP business units migrated to the five-day working work from the seven-day working week. It will allow cutting electric power and transportation costs materially as well as avoiding accumulation of ore excesses at the Central Ore Yard |
| Continued upgrading of mine and shaft equipment at underground uranium mine one and underground Mine No. 8, replacement of worn-out imported mining equipment for high-quality domestic peers | Upgrades of mining and shaft equipment performed  |

#### PLANS FOR 2018:

- celebration of PJSC PIMCU's 50th anniversary;
- commissioning of the plant for production proprietary granulated explosives;
- commissioning of the second stage of the Sredneye tailings' pond;
- commissioning the of water drainage duct at the Urtuysky strip mine.

#### MID-TERM PLANS:

- Mine No. 6 construction;
- life extension of existing mines until commissioning of Mine No. 6;
- development of new businesses including sized coal, pyrite cinders, lithium and mining machinery.

ASH DUMP AT KRASNOKAMENSK CHP NOW PUT INTO OPERATION

### JSC Dalur

#### PERFORMANCE FOR 10 YEARS:

##### 2007-2008

- commissioning of the primary process facility for processing of product solution with the capacity up to 700 tpa of uranium;
- commissioning of the Western local sorption unit;
- commissioning of the trial site facilities at Khokhlovskoye deposit including product and return solution tanks, oxidizing process hub and electric panel room.

##### 2009-2010

- implementation of the ISL intensification method using industrial volumes of oxidizer;
- completed construction of the road and bridge across the Barneva river;
- commissioning of the Ust-Uksyanskaya local sorption unit.

##### 2011-2012

- completed construction and commissioning of the road and bridge from the central production site (CPS) to Ust-Uksyanskaya local sorption unit (LSU) site;
- commissioning of the redundant OHL VL-10 kV at Ust-Uksyansk section;
- completed reconstruction of the sulfur acid warehouse at the near-rail base;
- completed standardization of the operating process at the finished product shipment section within the RPS framework.

##### 2013-2015

- receipt of the license for exploration and development of the Khokhlovskoye deposit;
- commissioning of the uranium compound suspension drier;

- implementation of the enterprise motorcar fleet upgrade program.

##### 2016-2017

- commissioning of the trial production plant for associated scandium extraction at the central section of Dalmatovskoye deposit;
- receipt of the license for exploration and production of minerals at Dobrovolnoye deposit in the Zverinogolovskoye district.





**Figure 23. Uranium Production and Reserves in 2015-2017**



**2017 RESULTS:**

| Plans declared in Report 2016   | Results   |
|---|---|
| Production of 580 tonnes of uranium (-11 tonnes versus 2016)  | Completed. Uranium production program 2017 was implemented in full (592 tonnes)   |
| Continued development of ROSATOM Production system within the subsidiary  | Completed. Works on the Development of ROSATOM Production System (RPS) Continue   |
| Receipt of the positive conclusion from FGU Glavgosekspertiza of Russia for the project of pilot production work at Khokhlovskoye deposit | Completed. Receipt of the positive conclusion from FGU Glavgosekspertiza of Russia for the project of pilot production work at Khokhlovskoye deposit                                      |
| Approval of the exploratory scoping FS and reserve calculation report for the Khokhlovskoye deposit by the State Reserve Commission       | Completed. Approval of exploratory scoping FS and reserves of Khokhlovskoye deposit by Rosnedra GKZ   |
| Receipt of the subsoil use license for Dobrovolnoye deposit and commencement of design work for the deposit                               | Completed. Receipt of the subsoil use license for Dobrovolnoye Deposit  |
|   | The Central Production Site completed construction and installation work in the associated scandium extraction and started commissioning operation to produce sample scandium concentrate |
|   | The enterprise migrated to the new electric power supply circuit with gas piston generation   |

**PLANS FOR 2018:**

- production of 591 tonnes of uranium;
- performing engineering surveys and developing design documents for LSU-2 and the near-rail base at Khokhlovskoye Deposit;
- performing engineering surveys and developing design documents for the PP at Dobrovolnoye deposit;
- extending the subsoil use license for Dalmatovskoye Deposit;
- commencing construction of the pilot production facility for production of aluminum and scandium master alloys.

**MID-TERM PLANS:**

- starting commercial production and obtaining high-purity scandium oxide, organizing aluminum and scandium master alloy production;
- commercial development of Khokhlovskoye deposit;
- construction of infrastructural facilities and performing mining refining and mining preparatory operations at Dobrovolnoye deposit.

**JSC Khiagda**

**PERFORMANCE FOR 10 YEARS:**

**Within 10 years, the uranium mining using ISL has increased materially (from 24 tonnes in 2007 to 693 in 2017)**

**2007-2008**

- trial production work had been completed and feasibility of further production expansion had been proven;
- startup of Khiagda 110/10 SS.

**2009**

- material increase of production was achieved;
- the bridge across the Vitim river was built Construction started of the first stage of the settlement, sulfur acid plant, power and warehousing facilities;
- the project was developed and Glavgosekspertiza approved the technical and economical FS for development of Khiagda deposit.

**2010-2011**

- field operations at Istochnoye and Kolichikanskoye deposits;
- Dybrynskoye, Koretkondinskoye and Namaruskoye Deposits completed natural hydrogeological studies and started exploration drilling.

**2012-2013**

- construction completed of two new production facilities being the finished product warehouse and the checkpoint in the production site;
- geological exploration was completed and reserves were confirmed at Dybrynskoye, Koretkondinskoye, Namaruskoye, Kolichikanskoye and Vershinnoye Deposits;
- work completed for additional exploration of Khiagda deposit.

**2014-2015**

- commissioning of the first construction stage facilities (the main building, sulfur acid warehouse, finished product warehouse, sorbent warehouse, fire depot,

- etc.). completion of the second construction stage facilities (power supply facilities, second lifting station, sodium nitrite storage site, etc.);
- construction completed of the sulfur acid production workshop;
- development started at Istochnoye Deposit.

**2016**

- commissioning of the third construction stage facilities being the sulfur acid production plant, auxiliary power supply site, water turnover cooling station, packaging warehouse with the painting section, etc.;
- development started at Vershinnoye Deposit.

**2017**

- construction and commissioning completed for places 11 at Istochnoye Deposit;
- construction completed of the first local sorption plant at Istochnoye Deposit.



**Figure 24. Uranium Production and Reserves**



**2017 RESULTS:**

| Plans declared in Report 2016  | Results  |
|--|--|
| Production of 663 tonnes of uranium (+123 tonnes versus 2016)  | Completed. Uranium production program 2017 was implemented in full (694 tonnes)  |
| Commencement of Vershinnoye Deposit development: construction and outfitting of drill holes, commencement of the acidification stage as well as commencement of commissioning work at the local sorption plant | Physical launch completed of the mining and processing complex ensured at Vershinnoye Deposit  |
| Commissioning of placer four at Khiagda deposit.   | Completed. Placer 4 with complex hydrogeological conditions was commissioned within the framework of pilot operations for construction of new design process drill holes using NPPVC and new hydro insulation mixtures |
| Commissioning of the power supply turbine  | Pending. A number of actions for power audit is being taken  |
|  | Uranium mining in the pilot commercial operation mode at Istochnoye Deposit is in progress   |
|  | Actions were taken to ensure obtaining the status of the RPS enterprise  |

**PLANS FOR 2018:**

- Production of 827 tonnes of uranium (+133 tonnes versus 2017);
- commissioning of Istochnoye Deposit;
- commencing development of design documents for Kolichikanskoye Deposit;
- ensuring competence development and implementation of new RRO methodologies;
- commissioning of Dzhilinda 110/10 kV SS;
- implementation of the Smart Mine project.

**MID-TERM PLANS:**

- increasing uranium output with subsequently reaching the rated capacity of 1000 tpa of uranium;
- completing construction of infrastructural facilities and performing mining refining and mining preparatory operations to increase production output.

**JSC RUSBURMASH**

**PERFORMANCE FOR 10 YEARS:**

- construction of over 1.6 thousand process drill holes for JSC Khiagda's uranium mining using the ISL method;
- construction of over 2 thousand process drill holes for JSC Dalur's uranium mining using the ISL method;
- drilling of over 2 million meters for PJSC PIMCU;
- since 2014, implementation has been in progress of the full cycle of geological exploration, design and survey operations within the framework of Pavlovskoye Field development in Novaya Zemlya Archipelago;
- 244 actions were taken within the Performance Improvement Program framework;
- the Ready Polygon Engineering Center was created;
- construction competencies were obtained within the business diversification framework;
- Construction Site Five standalone business unit (SBU) was created to perform construction and installation work for development of mining polygons;
- AMK KND-M (AINK-49) hardware and methodological suite was developed with unique technical specifications.

JSC RUSBURMASH is a comprehensive geological exploration company with a powerful drilling service. The company is involved in geological exploration works for the benefit of JSC Atomredmetzoloto and construction of all types of wells in the solid minerals deposits.

In 2017, JSC RUSBURMASH performed drilling operations for three operational uranium mining enterprises: JSC Dalur, JSC Khiagda and PJSC PIMCU.

**2017 RESULTS:**

**Table 11. JSC RUSBURMASH Completed Drilling Operations, thousand ML:**

| Customer         | 2015          | 2016          | 2017          |
|------------------|---------------|---------------|---------------|
| PJSC PIMCU       | 403.76        | 310.64        | 255.58        |
| JSC Khiagda      | 47.18         | 47.26         | 36.48         |
| JSC Dalur        | 83.32         | 146.98        | 93.80         |
| <b>In total:</b> | <b>534.26</b> | <b>504.89</b> | <b>391.86</b> |

**'PREPARED TESTING GROUND' CONCEPT – IT IS A PROJECT ENVISAGING THE REDUCTION OF COST OF CONSTRUCTION OF WELLS AND PIPING OF COMPONENTS THROUGH OPTIMISATION OF PROCESS SOLUTIONS**

| Plans declared in Report 2016  | Results  |
|--|--|
| Completion of 100% of drilling operations for JSC Khiagda, 30.391 thousand ML  | Completed. Increasing drilling operations on the Customer's initiative   |
| Completion of 100% of drilling operations for PJSC PIMCU, 268.75 thousand ML   | Not completed due to the Customer's failure to provide work scopes   |
| Completion of 100% of drilling operations for JSC Dalur, 115.209 thousand ML   | Not completed due to prolonged development of drill holes given hydrogeological features of the units  |
| Completion of the field stage of geological engineering surveys within the framework of the Mining and concentration Works based on Pavlovskoye Lead-Zinc Field project in Novaya Zemlya Archipelago | Completed. Field stage 2017 for the Mining and concentration Works based on Pavlovskoye Lead-Zinc Field project in Novaya Zemlya Archipelago was completed in full |

|  |   |
|--|---|
| Updating sections of the Operating Conditions FS for 2016-2020 of Streltsovskoye Ore Field for submission to FBU GKZ   | Completed. Sections were updated and the Operating Conditions FS for 2016-2020 of Streltsovskoye Ore Field successfully completed its expert examination at FBU GKZ   |
| Implementation of prompt fission neutron well logging (KND-M) at JSC Khiagda for the purposes of refining uranium ore radiology and identifying undeveloped rocks and uranium redistributed in the course of ISL   | Completed in accordance with the scope set forth in the executed agreement  |
| Continuation of geological and geophysical support of the drilling of production and exploration wells on uranium deposits of JSC Dalur and JSC Khiagda  | Completed. Geological and geophysical support of the drilling of production and exploration wells on uranium deposits of JSC Dalur and JSC Khiagda are being performed in full  |
| Development of the geological exploration project for Dobrovolnoye deposit   | Not completed. In the course of the bidding procedure, another contractor was selected to develop the geological exploration project for Dobrovolnoye deposit   |
| Continuing operations for implementation of KND-M (fission neutron logging) at deposits of the Holding Company's uranium mining enterprises as well as for development of the geological exploration project for Dobrovolnoye deposit at different development stages throughout the lifecycle                     | Completed partially. Operations for implementation of KND-M are included into JSC Khiagda's investment program (IP) for 2018. The geological exploration project for Dobrovolnoye deposit is being developed by the third party outside ROSATOM   |
| Further implementation of new drill hole designs using NPPVC pipes provided the Holding Company's mining enterprises are interested.   | Completed. 20 drill holes were constructed at JSC Khiagda's deposits and 14 pilot drill holes were constructed at JSC Dalur's deposits  |
| Implementation of construction processes (subsoil reinforcement, vibration floatation and jet grouting)  | Completed. Pilot operations were performed for restoration of the runway in Chkalovsky airfield   |
| Execution of profitable agreements for traditional types of geological exploration and drilling services for customers outside the Holding Company as well as for new construction services both inside the Holding Company and for external customers to ensure that the enterprise achieves break-even operation | Completed. Execution of the profitable agreement for collection, study and review of file and archive materials on development, residual balance reserves and non-balance ore dumps of Zavitsinskoye deposit for evaluation of dump reserves of Pervomaysky Mining and concentration Works (the Customer is NYaU MIFI). Execution of the agreement for compiling reporting materials on exploration of Khokhlovskoye deposit Agreements for construction work executed with JSC Dalur |
| Continuing streamlining activities   | Completed. 28 streamlining activities were performed with savings of RUB 236 MM   |

**PLANS FOR 2018:**

- completion of 100% of drilling operations:
  - PJSC PIMCU 268.816 thousand ML
  - JSC Khiagda 49.158 thousand ML
  - JSC Dalur 127.663 thousand ML
- completion of the program for implementation of new process drill hole designs at JSC Khiagda and JSC Dalur;
- completion of 100% of geological exploration, drilling and construction (including LSP) operations at JSC Khiagda and JSC Dalur;
- integration of the Ready Polygon concept into the practice of deployment and liquidation of mining units of uranium deposits using in-situ leaching.

**LONG-TERM PLANS:**

- completion of the Holding Company's production program for drill hole construction within the set deadlines;
- development of construction competencies for construction of in-situ leaching polygons for the Holding Company and third party customers;
- continuing business diversification including entering external markets for provision of geological exploration and drilling services for solid minerals, development of competencies and provision of services for geological mathematical modeling, geological engineering surveys, rehabilitation of radiation environmental risk territories, engineering surveys, construction, etc.

## JSC VNIIPromtehnologii

JSC VNIIPromtehnologii is ARMZ Uranium Holding Co.'s engineering center.

Its core business lines are implementation of mineral mining projects in the EPCM format, environmental consulting and upgrades of existing production facilities.

### 2017 RESULTS:

| Plans declared in Report 2016   | Results  |
|---|--|
| In 2017, it is planned to reach break-even operation by orientation to the external market (outside the Company loop and the industry), as well as through the inventory of the JSC VNIIPromtehnologii's competencies, the optimization of production processes and the increase in labor productivity at the institute | Pending. In 2017, the enterprises' financial rehabilitation program was approved to ensure that it achieves the break-even point. Current expenses were audited and production costs and employees were cut with the required competencies preserved |

JSC VNIIPromtehnologii's key task for 2017 still remains implementing the approved plan for achieving the break-even point. Although the past year was quite complicated for the uranium mining industry, JSC VNIIPromtehnologii implemented some projects in its capacity of ARMZ Uranium Holding Co.'s engineering center.

In 2017, work continued with key customers being JSC Khiagda and JSC Dalur. Work was completed to design Mine No. 6 (Argunskoye and Zherlovoye fields) for PJSC PIMCU, the project was upheld and approved. This project is strategic both for PJSC PIMCU and Russian uranium industry in general. The project is to be launched as early as 2018.

In 2017, JSC VNIIPromtehnologii was gradually migrating to 3D processes to minimize costs and durations of design. Migration to development of all designs in 3D format is scheduled for 2018.

### PERFORMANCE FOR 10 YEARS:

- The key result of ten years of operations is creation of ARMZ Uranium Holding Co. Engineering Center based on JSC VNIIPromtehnologii as well as implementation of scientific and applied solutions of the institute in Holding Company's uranium mining and business diversification projects.

JSC VNIIPromtehnologii's management underwent material changes as well. In 2017, migration to the new organization structure was completed, the remuneration system was modified and harmonized, incentive components were developed for development of projects, quality and client focus standards were implemented.

### PLANS FOR 2018:

In 2018, JSC VNIIPromtehnologii's key objective is increasing its order portfolio, decreasing the share of internal intra-division customers in its revenues as well as developing the strategy for entering the external market to increase its revenues from its external counterparties. In 2018, migration to 3D design will be completed, a number of projects material for the industry will be implemented, designer workplaces will be refurbished and new laboratory is scheduled for commissioning.

## JSC The First Ore Mining Company (FOMC)

FOMC is developing Pavlovskoye lead-zinc field and is the subsoil user in the Bezmyannaya River basin in Novaya Zemlya Archipelago in the Arkhangelsk Region.

### 2017 RESULTS:

| Plans declared in the Report for 2016   | Results   |
|---|---|
| Completion of integrated field engineering surveys, process testing of semi-industrial designs and continuation of design operations  | Completed. Integrated field engineering survey operations were completed for construction of the mining and concentration works (the MRW) and engineering surveys were completed for construction of onshore facilities of the marine port complex.<br>Key process solutions were developed, process studies of semi-industrial designs were completed, the process regulation for lead and zinc ore refining was developed |
| Construction and startup (after completion of engineering surveys, design and other required operations) of the mining and concentration works, mining and processing of lead and zinc ores for further sales of lead and zinc concentrates | Pending. Prospective plans after completion of the project and receipt of positive expert conclusions for it  |
|   | The project is included into the Social and Economic Development of the Arctic Zone of the Russian Federation state program approved by resolution of the Government of the Russian Federation No. 366 dd. 4/21/2014 (as amended with resolution of the Government of the Russian Federation No. 1064 dd. 8/31/2017)  |

### PLANS FOR 2018 AND MID-TERM PLANS:

In 2018, FOMC plans to complete engineering surveys for construction of seaport facilities and submit results of such surveys for state expert examination. It is also planned to complete design work for MRW and seaport facilities and also submit the project for state expert examination. Further FOMC's plans after its receipt of the positive conclusion from FAU Glavgosekspertiza of Russian including commencing construction of the MRW and seaport facilities for the purposes of commercial operation of Pavlovskoye Field.

In 2018, FOMC plans to obtain the status of the priority investment project for Arkhangelsk Region to obtain tax benefits and other preferences in the course of project implementation.

FOMC's further prospective plans include organizing meetings and negotiations as well as executing relevant protocols and agreements (memorandums, contracts, etc.) with potential investors and/or product consumers of the MRW being created.

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

Elkon MMP, JSC is engaged in geophysical operations, exploration, mining and processing of uranium ores.

### 2017 RESULTS:

| Plans declared in Report 2016  | Results  |
|--|--|
| Preserving the «sleeping mode» for Elkon project until December 2017   | Completed. By ROSATOM's resolution, the sleeping mode is extended until December 2019  |
| Continued operations of Elkon MMP, JSC project operators and EGMK Project, JSC to preserve competences and previously developed project materials. | Completed. Operations of Elkon MMP, JSC project operators and EGMK-Project, JSC are supported with a view to preserve competences and previously developed project materials |
| If macroeconomic environment improves, it is planned to consider resuming the active phase of pre-design operations                                | Expecting improvement of the macroeconomic environment   |

### PLANS FOR 2018:

- preserving the «sleeping mode» for Elkon project until December 2019.

## LLC United Uranium Plants (LLC UUP)

UUP trades in natural uranium in the Russian market and also deals with intermediary, consulting and marketing activities.

### 2017 RESULTS:

| Plans declared in Report 2016  | Results  |
|--|--|
| Customers' approval of the structure and time schedules of material deliveries in 2018   | Completed. The amendment agreement for 2018 to the long-term agreement with JSC TENEX was executed               |
| Execution of the mid-term agreement with JSC TENEX for feedstock deliveries from 2018  | Completed. The long-term agreement with JSC TENEX was extended until 2030  |
| Extension of the long-term agreement with JSC TVEL until 2026  | Completed. The long-term agreement with JSC TVEL was extended by execution of the amendment agreement until 2026 |
| Conducting the observation audit of JSC Dalur jointly with representative of Fortum energy company (Finland) within the framework of interactions for control of JSC TVEL's supply chain by the nuclear fuel buyer | Completed. The observation audit of JSC Dalur was conducted jointly with Fortum's representatives                |

### PLANS FOR 2018:

In accordance with ROSATOM's resolution, UUP started the voluntary liquidation procedure with formation of JSC Atomredmetzoloto's Commercial Directorate and UUP's assignment to ARMZ of agreements with the former's customers being JSC TENEX and JSC TVEL as well as agreements related to sales to uranium feedstock customers.

## LLC ARMZ Service

LLC ARMZ Service is the authorized body for organization of procurement procedure for ARMZ Uranium Holding Co.'s enterprises.

### 2017 RESULTS:

| Plans declared in Report 2016   | Results   |
|---|---|
| Further consideration of the matter of applying the project for transfer of integrated functions for forming and supporting competitive procurement procedures for PJSC PIMCU's needs | Completed. Consideration of the project resulted into transfer of integrated functions for forming and supporting competitive procurements procedures to LLC PIMCU Services   |
| Further provision of procurement procedure organizer services to enterprises of the Company   | Completed. 477 procurement procedures were completed to satisfy the needs of the Holding Company's enterprises<br><br>The savings from competitive procurement procedures amounted to RUB 231.5 MM (5.05%) of budget prices of ARMZ Uranium Holding Co.'s enterprises   |
| Continued work on organization of centralized procurement for the needs of the Holding Company as a part of category management   | Completed. In accordance with ROSATOM's order No. 1/547-П dd. 6/20/2016 On Preparing and Conducting Centralized Procurement of MTR&E, Work and Services, the special clothing centralized procurement procedure was performed for JSC Khiagda, JSC Dalur, JSC RUSBURMASH and JSC VNIIPromtehnologii   |
| Continuing project activities as part of ARMZ Uranium Holding Co.'s new business development program  | Completed <ul style="list-style-type: none"> <li>Processing of Pyrite Cinders into Ferrosilicium Pilot Industrial testing was organized resulting into ferrosilicium output. Examination of PJSC PIMCU's RMZ was organized resulting into purchase of the furnace for installation in RMZ casting workshop for further pilot production tests</li> <li>Manufacturing of molybdenum products at PJSC PIMCU's idle production capacities. Examination of PJSC PIMCU's facilities was organized resulting into execution of the molybdenum feedstock processing agreement by and between PJSC PIMCU and MC SHIMKO GROUP, LLC. Under the agreement, the CRL developed the molybdenum product manufacturing process</li> </ul> |

Operations were also performed for coal sales and expansion of coal sales market. The entire volume of coal produced for commercial sales in the amount of 1.7 MT was sold. Operations for coal sale market expansion resulted into increasing of the number of buyers from three in 2016 to ten in 2017 ensuring coal sales growth by 29%.

### PLANS FOR 2018 AND THE FUTURE:

LLC ARMZ Service's business priority in 2018 is provision of services to the Holding Company's enterprises including authorized body services, services for development of the package of documents for conducting competitive procurement procedures as well as services for reviewing (approving) category strategies, including in ROSATOM; issuance of recommendation aimed at improving economic efficiency of procurement of MTR&E, works and services as well as formation of competitive environment for preparation and performance of procurement procedures, transport

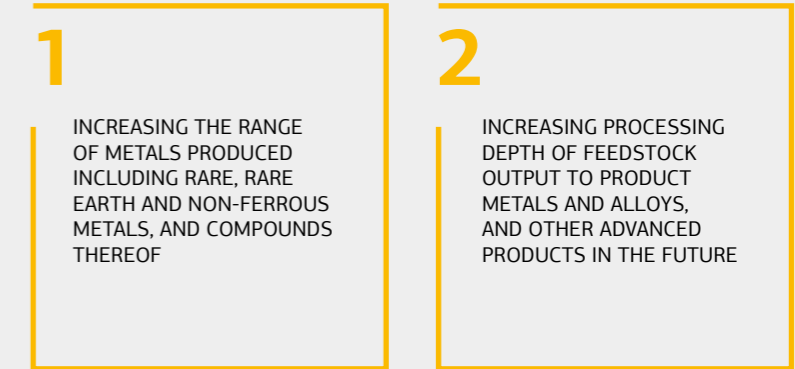
services, employee labor provision services and coal sale agency services.

Mid-term, consolidation of procurement procedures and development of the harmonized procurement approach within the framework of the Holding Company's enterprises is planned focusing on engaging immediate manufacturers to participation in competitive procedure by approving key terms and conditions of draft agreements to improve economic efficiency of procurement procedures and minimizing the risk of production process interruption.

## 4.1.3. Business Diversification

### 4.1.3.1. . Development of New Businesses

Development of promising business lines remains one of the priorities of ARMZ's strategy. The Mining Division has been proclaimed the center of responsibility for supplying the industry and the Russian Federation with uranium and other strategic metals. Within the framework of the set strategic objective to increase the non-uranium businesses' share in revenues to 30% by 2030, the division's business lines for feedstock production and manufacturing of different products develop in two directions:



Both directions are scheduled for development jointly with ROSATOM's adjacent divisions giving new opportunities to the division itself.

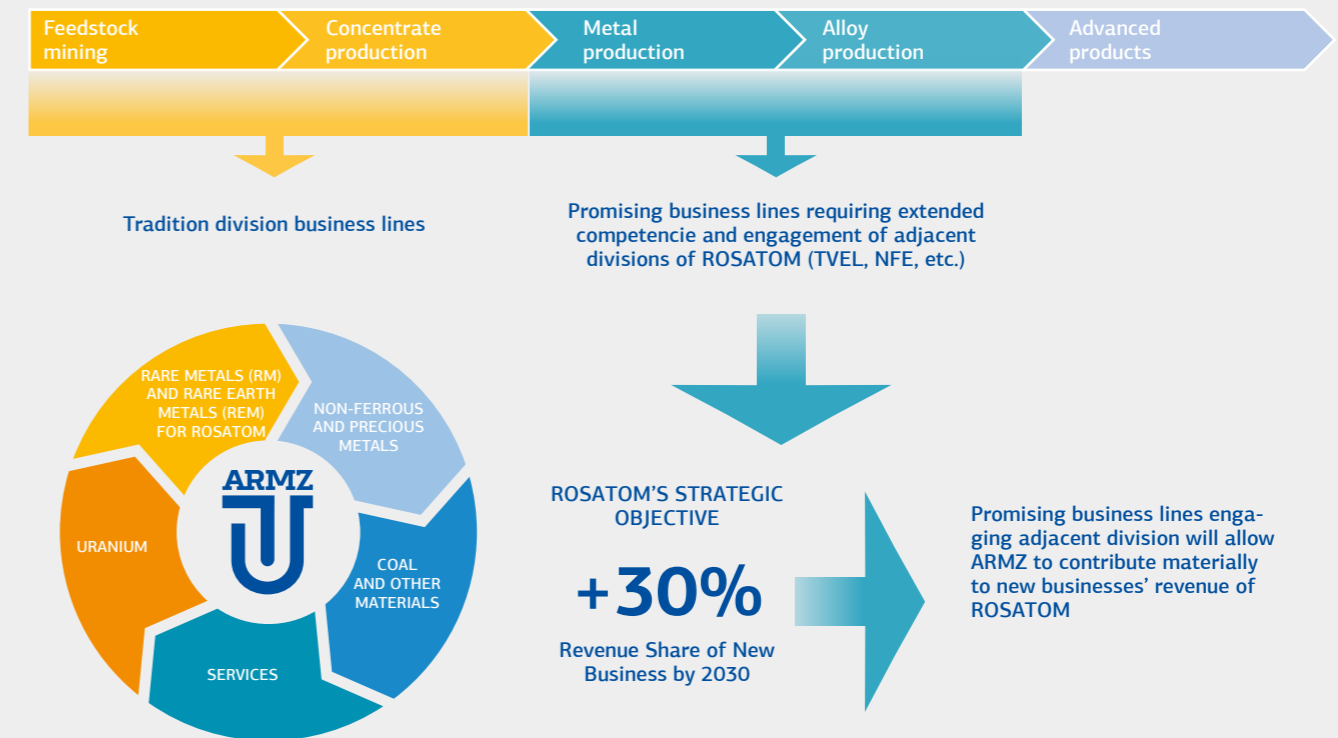


Figure 25. Mining Division – Center of Responsibility for Supply of Uranium and Other Strategic Metals

No product portfolio expansion is possible without expanding the new business development geography. Currently, JSC Atomredmetzoloto both independently and jointly with its partners is implementing several projects in different parts of Russia. In its traditional operating region being Trans-Baikal Territory, the division's migration from mining to production of increased energy value (sized) coal allowed increasing

the range of its consumers. Processing of manmade wastes from pyrite cinders allows solving environmental problems. Restoring lithium concentrate production at Zavitinskoye deposit will supply the country's new business lines with feedstock. Manufacturing of new products started due to increasing processing depth of the mineral resource base of scandium oxide and fluoride, and aluminum and

scandium master alloys in the future in the Kurgan Region in the Urals. Operations for a number of new large-scale projects implemented jointly with our partners from non-uranium industries are conducted in Novaya Zemlya (Pavlovskoye project for production of lead and zinc concentrates), the Tomsk Region (titanium and zirconium sands) as well as gold and silver in the gold and uranium deposit in South Yakutia.

#### NEW BUSINESS PROJECT GEOGRAPHY

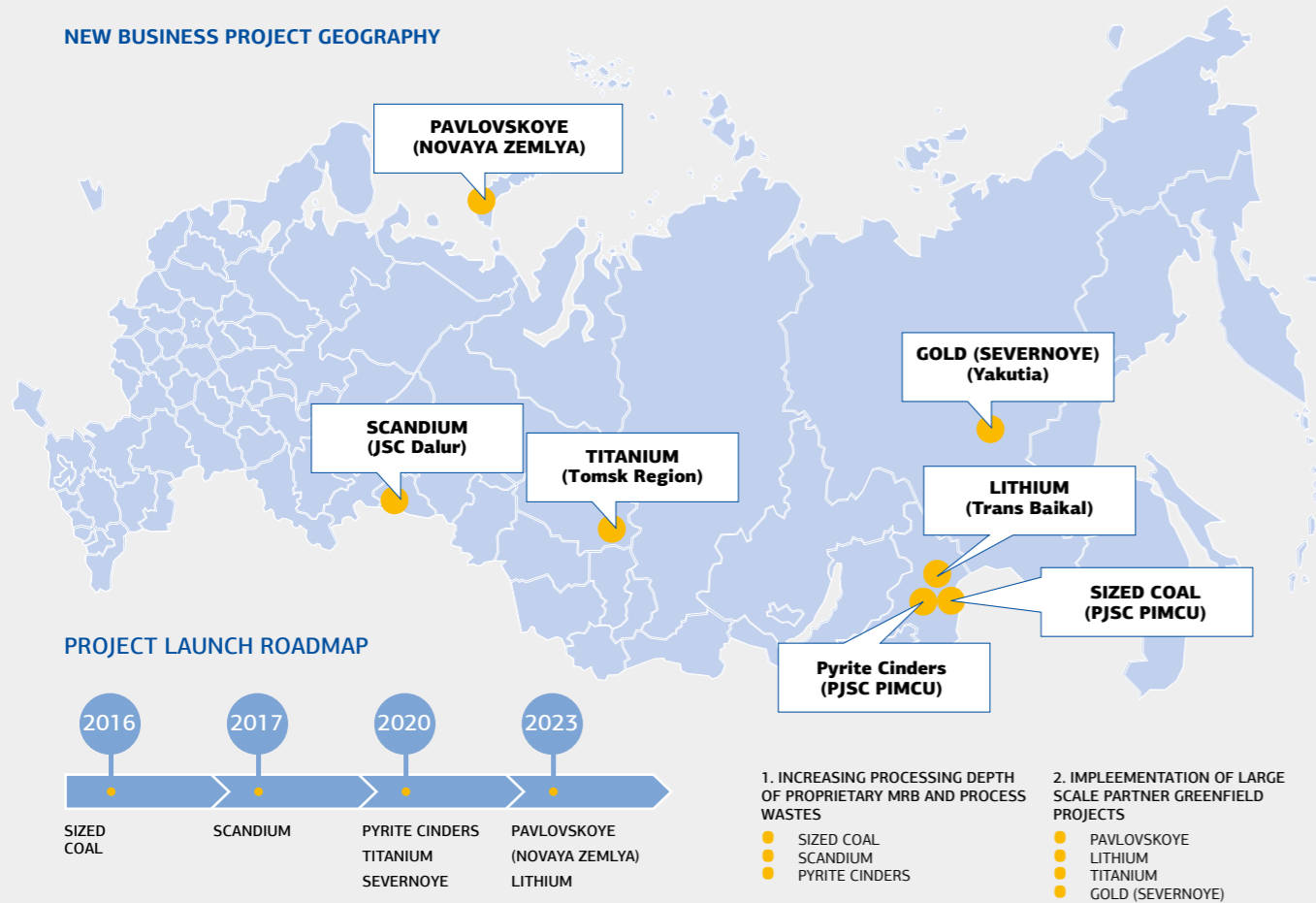


Figure 26. Product Portfolio of Existing and Emerging Businesses JSC Atomredmetzoloto

Considering its new product types, the Mining Division casts a wider glance at possible implementation of projects for production of other types of feedstock to satisfy current and future needs of ROSATOM. Here, the primary priority is mining metals used in the most advanced development

sectors of modern economy such as additive processes, robotics, energy accumulation, high temperature and renewable power, etc. Some relevant projects are being developed already including scandium, lithium, zirconium, titanium and other metals. To maximize use of feedstock production

competencies, developments concepts are considered and negotiations are conducted with potential consumers and partners from other industries regarding supplying them with feedstock (rare earth metals, boron, antimony, niobium, other metals and compounds thereof).

| ROSATOM'S NEW BUSINESS DEVELOPMENT PRIORITIES | PRODUCT LINES |    |    |    |    |    |    |     |    |    |   |         |    |    |
|---|---------------|----|----|----|----|----|----|-----|----|----|---|---------|----|----|
|   | Sc            | Zn | Pb | Li | Au | Ti | Zr | REE | Cu | Ag | B | Fe (B4) | Nb | Be |
| Additive processes                            | ☑             |    |    |    |    | ☑  |    |     |    |    |   | ☑       |    |    |
| Robotics                                      |               |    |    |    |    | ☑  |    | ☑   |    |    |   |         |    |    |
| Composite materials                           |               |    |    |    |    | ☑  | ☑  |     |    |    | ☑ |         |    |    |
| Power accumulators                            |               |    | ☑  | ☑  |    |    |    | ☑   |    |    |   |         |    |    |
| Integrated power structure engineering        |               |    |    |    |    |    |    | ☑   | ☑  | ☑  |   |         |    |    |
| VSTP based power systems                      |               |    |    |    |    |    |    | ☑   | ☑  |    | ☑ |         | ☑  |    |
| Renewable power                               |               |    |    |    |    |    |    | ☑   |    |    | ☑ | ☑       |    |    |
| Nuclear medicine                              |               |    |    |    |    |    |    | ☑   |    |    | ☑ |         | ☑  |    |
| Other ARMZ initiatives                        |               | ☑  |    |    | ☑  |    |    |     |    |    |   |         |    | ☑  |

Sc SCANDIUM  
 Zn ZINC  
 Pb LEAD  
 Au GOLD  
 Ti TITANIUM  
 Zr ZIRCONIUM  
 REE REE  
 Cu COPPER  
 Ag SILVER  
 B BORON  
 Fe (B4) HIGH PURITY IRON  
 Nb NIOBIUM  
 Be BERYLLIUM

■ Current division projects ■ Promising division projects □ Potential division projects

Figure 27. Mining Division's Potential for Participation in Supply of Feedstock for ROSATOM Strategic Initiatives

#### 4.1.3.2. Project for Load-Haul-Dump Machines for Underground Mining Operations

##### 2017 RESULTS:

| Plans declared in Report 2016  | Results   |
|--|---|
| Manufacture of ten load-haul-dump (LHD) machines at PJSC PIMCU's RMZ | Completed. 10 LHD machines manufactured.                            |
| Reconstruction of foreign machines using Russian analogue parts      | Completed<br>One narrow-cut LHD machine was restored/reconstructed. |
| Replacement of parts for the parts manufactured by RMZ               | Completed partially. Some hydraulic assemblies are imported         |

Table 12. PD-2E LHD Machine Manufacturing Statistics in 2015-2017

|                   | 2015 | 2016 | 2017 |
|-------------------|------|------|------|
| Machines Produced | 9    | 11   | 10   |

##### PLANS FOR 2018 AND MID-TERM PLANS:

- Continued manufacturing of PD-2E (3 pcs.) and PD-1E (3 pcs.) LHD machines

#### PROJECT FOR LOAD-HAUL-DUMP MACHINES FOR UNDERGROUND MINING OPERATIONS (GORTECH)

THE PROJECT for Organization and Deployment of Domestic Production Load-Haul-Dump Machines by PJSC PIMCU's mechanical repair plant (RMZ)

##### PROJECT OBJECTIVES :

- Creation of domestic production of accumulator and diesel load-haul-dump machines



Figure 28. Machine PD-2EE

**2017 RESULTS:**

- manufacturer testing started of the electric load-haul-dump machine PD-2EE designed for PJSC PIMCU's underground mining operations;
- the machine with improved technical and economic specifications was created:
- electric power consumption decreased to 30%;
- reducing hydraulic oil operating temperature will allow replacing it once every two years;
- planned reduction of maintenance and repair (M&R) costs to 40%;
- use of advanced ergonomics, control and measurement hardware. The machine has the system for automatic control of its hydraulic assemblies by processing input signals from its controls being electronic pedals and joysticks. The system is combined into the single information channel with the thrust electric drive control system. The visualization environment was developed allowing to see more detailed machine parameters;
- the machine has the device for remote equipment status monitoring. It allows the service personnel to receive information on operation of all PD-2EE systems under specific technical parameters for the last 20 days. If GSM communications are available in the mine, the data may be received online. Based on results of operations and analysis of data received from the recorder using the debugger kit, one may edit the executive program and its parameters;
- electric power drive is used instead of hydrostatic transmission;
- modular assemblies ensure accessibility for maintenance and repairs and allow further retrofitting the machine using power accumulator energy source based on lithium ion cells.



**Figure 29. JSC Dalur's Pilot Commercial Production Unit (Central Section of Dalmatovskoye Deposit)**

**PLANS FOR 2018:**

- certification of the products with Russian and foreign scandium oxide producers;
- completing development of design documents for creation of the master alloy pilot commercial production facility;
- commencing construction of the master alloy pilot production facility.

For details of scandium use, see Annual Report 2016.

**4.1.3.4. Project «Processing of Pyrite Cinders at PJSC PIMCU»**


**THE PROJECT** of the pilot hydro metallurgical workshop of PJSC PIMCU's central research and development laboratory aims at increasing processing depth of the existing manmade feedstock. Pilot production operations continue for processing pyrite cinders to manufacture finished products in the form of non-ferrous and precious metal concentrates, ferrous alloys and high-purity iron, pigments and coagulants.

**PROJECT OBJECTIVES :**

- increasing processing depth of the proprietary feedstock base;
- revenue diversification;
- solving environmental problems;
- creating new jobs at PJSC PIMCU.

**2017 RESULTS:**

| Plans declared in Report 2016  | Results   |
|--|---|
| Completion of the gold extraction pilot production operations  | Completed. Semi-commercial testing completed within the fully closed cycle. The commercial gold extraction process was developed with the end-to-end extraction degree in excess of 70%. Production of Dore gold is underway  |
| Commencement of design of the commercial gold extraction unit  | The gold extraction unit is planned to be designed within the framework of the integrated project for pyrite cinder processing to produce gold and iron containing products   |
| Engagement of partners for testing processes of additional commercial product manufacturing from pyrite cinders (iron oxide pigments, coagulants for mine water treatment, ferrous alloys, etc.) | Completed. The agreement was achieved with MC SHIMKO GROUP, LLC to organize the joint venture for production of ferrous alloys and molybdenum. The Collaboration Agreement was executed. Joint ferrosilicium pilot production operations started.<br>Negotiations are in progress with four other companies for implementation of different projects involving pyrite cinder processing |
|  | Laboratory studies were performed for deposition of zinc and copper pyrite cinders from leaching solutions  |
|  | Laboratory studies were completed for production of iron oxide pigments. Proper quality pigment prototypes were obtained  |
|  | Sample iron coagulant solutions were produced for use at waste treatment facilities   |



**BUSINESS CASE: 2017 IMPORT SUBSTITUTION NATIONAL FORUM**

In September 2017, the First Import Substitution 2017 National Forum held at Crocus Expo exhibition center saw presentation of prototypes of self-propelled mining machinery to be produced at PJSC PIMCU (Gortech Project) Models of mining machinery developed within the project framework were appraised highly by specialists and delegation of the Russian Federation Government lead by the Russian PM, Mr. D.A. Medvedev. In the course of the event, it was noted that the machinery is planned for production at new uranium mine six construction whereof started in Trans Baikal Territory. Assembly manufacturing of self-propelled mining machinery will satisfy PJSC PIMCU's proprietary needs and is scheduled for external market sales as well.

**For reference:** PD-2EE cargo capacity is 2.6 tonnes, its ladle volume is 1.16 cu.m., the dimensions are 6315x1500x1990 mm

**4.1.3.3. Project «Production of Associated Scandium at JSC Dalur»**

In 2017, JSC Dalur started producing high-purity scandium oxide.

**2017 RESULTS:**

| Plans declared in Report 2016   | Results   |
|---|---|
| Completion of construction and startup of pilot commercial production of scandium oxide   | Completed. In April 2017, the Central Section of JSC Dalur's Dalmatovskoye deposit saw the commissioning startup of the scandium oxide pilot commercial production unit with the capacity of 1.5 tpa  |
| Completion of R&D operations for development of the process for production of aluminum and scandium master alloys and commencement of creation of the master alloy pilot commercial production facility | Completed. Development of the aluminum-scandium master alloy production process was completed. The process ensures product quality at low production cost of aluminum and scandium master alloys. The process was successfully tested in at the Industrial site of JSC Dalur. The deadlines for commencement of the master alloy production facility construction were adjusted to 2018 |

For details of the project and market demand for its products, and its prospects, see Report 2016.

**PLANS FOR 2018:**

Within the framework of PJSC PIMCU's Pyrite Cinder Processing project, the following key objectives have been set:

- design of the commercial gold production unit;
- development of the program and process regulation for production of ferrous alloys from pyrite treatment processing products after gold extraction;
- organization of experimental production of ferrous alloys at PJSC PIMCU's production site;
- ferrous alloy pilot production operations;
- creation of the joint venture (PJSC PIMCU and its ferrous alloy production partner);

- launch of the ferrous alloy production plant;
- development of the methodology for semi-commercial testing of iron coagulants.



**4.1.3.5. Project «Creation of Lithium Carbonate Production based on Zavitsinskoye Deposit»**

**THE PROJECT** – Creation of Lithium Carbonate Production Project.

**PROJECT OBJECTIVES :**

- business diversification;
- ensuring import substitution of strategic feed and satisfaction of JSC TVEL's needs for creation of power accumulator production facilities;
- creating new jobs at PJSC PIMCU.

**2017 RESULTS:**

| Plans declared in Report 2016   | Results  |
|---|--|
| ROSATOM's approval and commencement of implementation of the project for creation of the lithium production facility based on feedstock sources of Zavitsinskoye deposit  | Completed. In May 2017, ROSATOM passed its positive resolution to start implementing the project   |
| Participation in the Russian Education and Science Ministry's competition for obtaining budget co-financing of R&D operations for development of commercial process for production of lithium concentrate and lithium carbonate | Completed. In March 2017, PJSC PIMCU won the Russian Education and Science Ministry's competition and received the budget subsidy for development of the Industrial process for lithium carbonate production |
| Start of design and survey operation for creation of pilot lithium concentrate and lithium carbonate production units   | Completed. In 2017, process development operations started and technical audit of sites for placement of pilot and commercial production facilities was performed  |

**PLANS FOR 2018:**

- completing the preliminary technical economic feasibility study for the project;
- formulation of the corporate model, obtaining ROSATOM's approval and creating the project operator joint venture.

**4.1.3.6. Project «Gold Mining Organization»**

**THE PROJECT** for creation of the gold ore mining and processing facility with production of base gold based on Severnoye deposit.



**PROJECT OBJECTIVES :**

- increasing processing depth of the proprietary feedstock base;
- increasing business scales;
- revenue diversification;
- development of Elkon gold and uranium ore hub.

**2017 RESULTS:**

| Plans declared in Report 2016   | Results   |
|---|---|
| Continued operations with the possibility of initiating one or several gold mining projects and commencing practical implementation thereof | Completed. In September 2017, ROSATOM passed its positive resolution to start implementing the project for organization of gold mining at Severnoye deposit |

**PLANS FOR 2018:**

- exploratory ditching and trenching;
- exploratory and hydrogeological drilling.

**4.1.3.7. Project for Organization of Titanium and Zirconium Concentrate Production at Tuganskoye Deposit**

**THE PROJECT** for creation of the mining and concentration works for production of zirconium and titanium ore concentrates based on Tuganskoye ilmenite and zircon sand deposit (Tomsk Region).

**2017 RESULTS:**

- initiation of the project, start of the due diligence procedure.

**PLANS FOR 2018:**

- Commencement of design work at the first production stage (0.575 mtpa).



**PROJECT OBJECTIVES :**

- import substitution of titanium and zirconium concentrates within the Russian Federation, including for ROSATOM and Rostec's consumers, and revenue diversification.

**4.1.4. ROSATOM Production System. Compliance with Product Quality Requirements**

**IMPLEMENTATION OF RPS PROJECTS**

In 2017, operations within the RPS framework, aimed at:

- scaling the RPS culture and ideology at the Holding Company's enterprises;
- identification and promotion of the production system leaders;
- creation of the RPS enterprise at JSC Khiagda.

- Circa 1,300 people were engaged into implementation of different RPS programs in 2017.
- 48 people were proclaimed RPS leaders.
- 1782 people were trained in RPS tools and methodologies.

**OVER RUB 450 BN**  
IS THE ACTUAL SAVINGS OF RPS ACTIONS  
TAKEN IN 2017

**RUB 1.3 BN**  
IS THE TOTAL ACTUAL SAVINGS  
FROM OPERATION PERFORMANCE  
IMPROVEMENT ACTIVITIES

## 2017 RESULTS:

- implementation of the project for improvement of value chain management performance named Products of the Nuclear Fuel Cycle Initial Stage (NFC IS) resulted into acceleration of the finished products shipping from JSC Khiagda's warehouse to the customer by 64% (from 30 to eleven days);
- implementation of process solutions and streamlining of treatment production processes at PJSC PIMCU resulted into additional production of 3275 tonnes of ore during implementation of the project for Application of Selective Ore Extraction during Development of Structural Accumulations at Mine No. 8;
- labor organization, loss reduction, operation standardization and accurate planning of work allowed PJSC PIMCU to accelerate the process of manufacturing oil radiators for PD-2E by 42% (from 111.22 to 64.61 hours) during implementation of the project named Process of Manufacturing Oil Radiators for PD-2E;
- dissemination of JSC Dalur's results under the project for Acceleration of Processes during Stripping and Preparation of Reserves allowed achieving the effect of RUB 8.3 MM at two units;
- JSC Dalur's further operations under the project for Replacement of Carbon Ammonia Salt for Waterless Ammonia in the Commercial Desorbate Deposition Cycle resulted into the savings of RUB 13.6 MM;
- the total actual annual savings from implemented activities for operation performance improvement exceeded RUB 450 MM.

## PLANS FOR 2018:

- continuing operations within the RPS framework in three key directions:
  - production;
  - business process performance;
  - management performance;
- acceleration of processes, reduction of pending reserves and unclaimed valuables at enterprises;
- acceleration of mining polygon construction;
- equipment and staff performance improvement;
- conducting theoretical and practical staff training by the Holding Company's licensed trainers within the framework of personal and electronic courses under programs approved by ROSATOM's Corporate Academy (over 2000 people);
- recertifying JSC Dalur's management systems for ISO compliance: ISO 9001:2015, ISO: 14001:2015 and auditing JSC Atomredmetzoloto, PJSC PIMCU and JSC Khiagda for compliance with the same standards.

## COMPLIANCE WITH PRODUCT QUALITY REQUIREMENTS

JSC Siberian Chemical Works is consumer of ARMZ Uranium Holding Co.'s enterprises (PJSC PIMCU, JSC Khiagda and JSC Dalur).

Products of uranium mining enterprises of PJSC PIMCU, JSC Khiagda, JSC Dalur must comply with Technical Specifications TU 95 1981-2009 for Uranium Oxide Concentrate and TU 95-2002 for Ammonium Polyuranate (yellow cake).

In 2017, there were no consumer claims against finished products of mining enterprises of PJSC PIMCU, JSC Dalur and JSC Khiagda. All product batches manufactured were compliant with technical specifications.

In December 2017, JSC Atomredmetzoloto, PJSC PIMCU and JSC Khiagda were given certificates of ISO compliance 9001:2015 – quality management system; ISO 14001:2015 – environmental management system.

## INTEGRATED ENERGY SAVINGS AND EFFICIENCY IMPROVEMENT PROGRAM

For implementation details of the Energy Savings and Energy Efficiency Program, see Report 2016.

## RESULTS OF IMPLEMENTING THE INCENTIVE SYSTEM IN 2017:

- staff KPIs (for process engineers, executives, specialists, etc.) include the energy savings and energy efficiency indicator.

In 2017, JSC Atomredmetzoloto spent 52,200 l of motor gasoline (the mean price per liter is RUB 41 – RUB 2,140,200.00).

Other power resources types (coal, fuel oil, natural gas) are not used at the Company. The Company rents its office premises. Under the office lease agreement, consumed power is included in the common list of municipal services and is paid for on a monthly basis under a separate bill. In the reporting period, the Company consumed electric power for the total amount of RUB 4.495 MM.

## 2017 RESULTS:

### PJSC PIMCU:

- activities for reduction of electric power consumption and capacity in the wholesale market during maximum hours in the Trans-Baikal Territory's power system;
- activities for reduction of capacity purchase costs;
- daily submission of the electric power consumption for the next day, compliance control and equipment operation balancing;
- implementation of the regulation on energy resource consumption planning;
- commissioning of the automated mill management system at the hydro metallurgical plant;

- replacement of light fixtures with energy saving ones at the mechanical repairs plant.

### JSC Dalur:

- partial replacement of low-efficiency light sources with LED lights;
- acquisition of control stations for VFD submersible pumps;
- automation of the central production site's street lighting operation;
- for the first time, ROSATOM has implemented its 4 MW power center with heat recuperation at the investor's expense.

### JSC Khiagda:

- reconstruction of the lighting system;
- upgrading of the pumping equipment control system;
- purchase and installation of the solar water heating system;
- reconstruction of the primary building's heating system;
- acquisition of control stations for VFD submersible pumps.

## BUSINESS CASE: IMPLEMENTATION OF THE ENERGY CENTER AT JSC DALUR

Business Case: Implementation of the Energy Center at JSC Dalur

For the first time, ROSATOM State Atomic Energy Corporation has implemented its 4 MW Power Center with heat recuperation. At the expense of the external investor, construction of the Energy Center was completed and its operation started in 2017 with electric powers sales at the price 10.9% below the market one. JSC Dalur, in addition to 10.9% decrease of the final price of consumed electric power, reduced its boiler gas consumption by 95%. Process communication of the investor's Energy Center ensure heat recuperation and results into saving without investments in the amount of RUB 6.2 MM (in 2017) and RUB 41.5 MM (scheduled for 2018-19). Under conditions of suppliers of last resort and power sale companies' monopoly on electric power prices, it is the precedent of competitive struggle for the major consumer who confirmed the potential of electric power price decrease by locating the Energy Center in its immediate proximity to rule out the grid component and to minimize losses.

Table 14. Energy Resource Savings versus the Baseline Year under Comparable Condition in 2015-2017, Million RUB, %

| Plant       | 2015<br>(baseline year 2009) |      | 2016<br>(baseline year 2015) |       | 2016<br>(baseline year 2015) |       |
|-------------|------------------------------|------|------------------------------|-------|------------------------------|-------|
|             |                              | %    |                              | %     |                              | %     |
| PJSC PIMCU  | 68,985                       | 9.5  | 210,278.58                   | 14.45 | 201,659                      | 13.85 |
| JSC Dalur   | 9,232                        | 14   | 1,442.72                     | 0.82  | 2,128                        | 1.20  |
| JSC Khiagda | 7,525                        | 24.9 | 16,385.14                    | 10.63 | 4,324                        | 2.80  |

## PLANS FOR 2018:

### For implementation of the incentive system:

Further implementation of the incentive system for creation of infrastructure, development and maintenance of the energy saving and energy efficiency culture, tasking line executives, employees, specialists and other service employees for the long term including:

- inclusion of the energy saving indicator into KPIs of top managers and chief specialists, process engineers, mechanics, etc. with the share of at least 10% for non-energy employees and 20% for energy employees.

### For energy savings and energy efficiency:

#### PJSC PIMCU:

- reduction of electric power consumption for heating of firefighting tanks in wintertime;
- quantitative adjustment of heating medium in input assemblies;
- replacement of low-efficiency light sources;
- streamlining or length reduction of surface trunk pipelines of compressed air grids.

#### JSC DALUR:

- acquisition of control stations for VFD submersible pumps;
- partial replacement of low-efficiency light sources with LED lights.

#### JSC KHIAGDA:

- reconstruction of intake and exhaust ventilation systems of JSC Khiagda's production site;
- reconstruction of heat stations of the heating system of JSC Khiagda's production site.

## RESULTS OF IMPLEMENTATION OF THE ENERGY SAVINGS AND ENERGY EFFICIENCY PROGRAM IN 2017:

Table 13. Results of Implementation of the Energy Savings and Energy Efficiency Program in 2017

| Plant                | Electric power |              | Motor gasoline* |              | Diesel fuel |              |
|----------------------|----------------|--------------|-----------------|--------------|-------------|--------------|
|                      | TDZh           | thousand RUB | TDZh            | thousand RUB | TDZh        | thousand RUB |
| JSC Atomredmetzoloto | 3.3            | 4,495        | 1.7             | 2,140        | 0           | 0            |

\* JSC Atomredmetzoloto procures transport services from LLC ARMZ Service



## 4.2. Financial Capital

### 4.2.1. Financial Management

#### PERFORMANCE FOR 10 YEARS:

- implementation of financial risk management mechanisms ensuring high level of working capital management performance and acceptable liquidity values;
- development of the production costs management system to improve financial performance and preserve liquidity under conditions of restricted working capital of the Holding Company, regular cost cutting activities and implementation of the cost cutting program;
- revision of the inventory management to allow reducing them to the minimum permissible level for several years continuously;
- creation of the harmonized system for prompt response to deviations from targets. Development of solutions for key business forks such as production or selling, proprietary capacities or outsourcing, profitability or liquidity. Implementation of consolidated annual and mid-term budgets for the entire Holding Company. Refining

of processes for informing the top management of key indicators of the Holding Company's financial and economic condition;

- development and implementation of the target tree focusing on customized targeting for key business lines, products and processes;
- proactive investment activities in terms of both corporate mergers and acquisitions, and development of proprietary production and feedstock potential (Apollo project for consolidation of foreign uranium assets, major projects for diversification of the mining business: Pavlovskoye, Lithium, Titanium, Lunnyoye and Severnoye gold; projects for large-scale refurbishment and retrofitting of the country's major existing uranium assets (PJSC PIMCU); projects for super-long-term development of domestic uranium mining (JSC Khiagda until 2054, JSC Dalur until 2036, EGMK, JSC up to 50 years);

- implementation of project management best practices;
- institutes of collegial investment decision taking bodies (IDTBs) allow comprehensively analyzing projects and ruling out voluntarist decisions;
- the system of internal and general industrial regulatory and methodological documents based on ROSATOM's Investment Policy;
- elements of the matrix management structure that allows engaging all required functional experts of the Management Company in the project;
- SIRIUS, the industrial automated system for investment project management.

#### 2017 RESULTS:

- Throughout the year, the Holding Company's performance was influenced by the following external factors:
- decreasing USD exchange rate;
- decreasing global natural uranium prices.

The combined impact of the above factors resulted into revenue and profit decreasing by RUB 5.6 bn.

- the unit cash cost of producing 1 kg of uranium was reduced by 2% versus 2016 actual by increasing the share of uranium production at enterprises producing uranium using in-situ leaching with lower production cost;
- the Holding Company's efficient management of working and loan

capital allowed, for the first time in many years, to obtain positive balance (profit) for interest income and expense and reduce the borrowings amount by 77% year on year;

- given high cost of working capital in financial market, operations continued to consolidate temporarily free cash of the Holding Company's companies on a daily basis resulting into surplus profit due to accelerated capital turnover;
- reduction of management and commercial expenses by 2% was ensured;
- implementation of the program for reduction of the Holding Company's inventories continued. Use of systemic management of

warehouse inventories resulted into two-fold reduction thereof within two years. We focus on the following:

- reducing the Holding Company's finished uranium product stockpiles;
- reducing the annual program for procurement of primary and auxiliary materials without compromising primary production;
- revision towards reduction of rated insurance provisions of valuables.

# 77%

REDUCTION OF BORROWINGS  
IN 2017

**In 2017, we were able to limit the growth of costs to the inflation level and reduce the unit production cost of uranium mining by 2% versus 2016 actual.**

**Such high results could not be achieved without streamlining the volumes and cutting the underground uranium mining costs at PJSC PIMCU, and increasing in-situ leaching production volumes at JSC Dalur and JSC Khiagda (+14% vs. 2016).**

**\* Unit production cost of uranium at effective prices (without depreciation, leasing or provisions).**

\*Specific production cost of uranium in current prices (without depreciation, leasing, reserves).

### 4.2.2. Financial Management Performance

Due to the lack of legislative requirements or other needs, JSC Atomredmetzoloto has not been preparing any consolidated financial statements under IFRS since 2016. Consolidated indicators from the financial performance statement and financial condition statement set forth below have been formulated based on data from individual RAS accounting statements of the Holding Company's enterprises under JSC Atomredmetzoloto's control and included into the budget consolidation framework.

As noted in previous annual reports, ROSATOM's strategic resolution passed in 2013 to spin off the international segment of uranium mining assets into the separate holding company (managed by Uranium One Group, JSC) resulted into inclusion of only Russian uranium mining and service companies into JSC Atomredmetzoloto's control framework.

For details, see JSC Atomredmetzoloto's Annual Report 2013.

As the process of legal transfer of foreign assets has not been completed yet, IFRS financial performance data set forth in previous annual reports include performance both of Russian and foreign subsidiaries of JSC Atomredmetzoloto.

This is why the financial indicators for the previous reporting periods presented in this Report may not coincide with the similar financial indicators presented in the reports for the previous years.

**Table 15. Consolidated Financial Performance States of JSC Atomredmetzoloto and Russian Companies under Its Control and within Its Consolidation Framework,\* Million RUB**

| Indicator                          | 2015    | 2016    | 2017    |
|------------------------------------|---------|---------|---------|
| Sales Revenue                      | 21,353  | 22,182  | 17,759  |
| Cost of Goods Sold (COGS)          | -15,703 | -15,967 | -17,161 |
| Gross profit (loss)                | 5,650   | 6,215   | 598     |
| Management and Commercial Expenses | -1,544  | -1,493  | -1,469  |
| Interest receivable                | 419     | 426     | 248     |
| Interest payable                   | -926    | -916    | -218    |
| Other income and expenses          | -4,340  | 930     | -6,809  |
| Profit (Loss) before Profit Tax    | -742    | 5,162   | -7,650  |
| Profit Tax                         | -779    | -557    | -226    |
| Net profit (loss)                  | -1,521  | 4,605   | -7,876  |

\* The consolidation framework includes JSC Atomredmetzoloto; PJSC PIMCU; JSC Dalur; JSC Khiagda; JSC VNIIPromtehnologii; JSC RUSBURMASH; LLC ARMZ Service; JSC Elkon MMP; and JSC EGMK Project.

In 2017, revenue decreased by RUB 4.4 bn versus 2016 on negative external factors (decreasing USD exchange rate and market prices of natural uranium). Decrease could have been greater (RUB -5.6 bn) but material contribution to the revenue in the amount of RUB

1.2 bn from uranium (+4%) and non-uranium sales as well as increasing share of in-situ leaching allowed mitigating the negative market from RUB -5.6 bn to RUB - 4.4 bn.

The bulk of net loss was formed by the amount of depreciation (RUB

6,115 MM) of financial investments into Mantra Resources Limited (owner of Mkuju River mine in Tanzania) due to revision of the asset's production program and changes to the uranium price forecast.

**Table 16. Consolidated Statement of Financial Position of JSC Atomredmetzoloto and Russian Companies under Its Control and within Its Consolidation Framework, Million RUB**

| Indicator                            | 2015          | 2016          | 2017         |
|--------------------------------------|---------------|---------------|--------------|
| Fixed Assets                         | 128,361       | 131,091       | 127,180      |
| Intangible Assets and R&D            | 6,181         | 6,468         | 6,432        |
| Property, Plant and Equipment (PP&E) | 31,244        | 33,132        | 32,742       |
| Fixed Financial Investments          | 86,604        | 86,812        | 83,111       |
| Other non-current assets             | 4,332         | 4,678         | 4,895        |
| <b>Current assets</b>                | <b>13,351</b> | <b>10,353</b> | <b>9,400</b> |

| Indicator                                 | 2015           | 2016           | 2017           |
|---|----------------|----------------|----------------|
| Reserves                                  | 5,016          | 4,393          | 2,787          |
| Receivables                               | 4,477          | 2,453          | 3,255          |
| Financial investments                     | 1,042          | 495            | 0              |
| Cash                                      | 2,648          | 2,833          | 2,826          |
| Other current assets                      | 169            | 180            | 532            |
| <b>TOTAL ASSETS</b>                       | <b>141,712</b> | <b>141,444</b> | <b>136,580</b> |
| <b>Capital and Reserves</b>               | <b>124,589</b> | <b>135,447</b> | <b>131,187</b> |
| Capital (Authorized, Surplus and Reserve) | 84,296         | 90,532         | 94,073         |
| Retained Earnings                         | 40,293         | 44,915         | 37,114         |
| <b>Fixed Liabilities</b>                  | <b>11,002</b>  | <b>50</b>      | <b>217</b>     |
| Borrowings                                | 10,878         | 0              | 0              |
| Other Fixed Liabilities                   | 124            | 50             | 217            |
| <b>Short-term liabilities</b>             | <b>6,121</b>   | <b>5,947</b>   | <b>5,176</b>   |
| Borrowings                                | 1,294          | 2,027          | 462            |
| Payables                                  | 3,433          | 2,515          | 3,291          |
| Income of future periods                  | 76             | 213            | 219            |
| Provisions for liabilities and charges    | 1,093          | 1,039          | 967            |
| Other liabilities                         | 225            | 153            | 237            |
| <b>TOTAL CAPITAL AND LIABILITIES</b>      | <b>141,712</b> | <b>141,444</b> | <b>136,580</b> |

Repayment of the bulk of borrowings in 2017 was due to efficient management of the Holding Company's proprietary sources subject to coverage of expenses aimed at financing of the Mining Division's investment program by the shareholder's (JSC Atomenergoprom) contribution to the authorized capital.

Table 17. Key Financial Performance Indicators of JSC Atomredmetzoloto in 2015-2017

| Indicator                             | 2015  | 2016  | 2017 | Change 2017/2016 |
|---------------------------------------|-------|-------|------|------------------|
| <b>Financial Stability Indicators</b> |       |       |      |                  |
| Gearing                               | 0.5   | 0.4   | 0.4  | 0.0              |
| <b>Liquidity Indicators</b>           |       |       |      |                  |
| Current Ratio                         | 2.2   | 1.7   | 1.8  | +0.1             |
| Quick Ratio                           | 1.3   | 1.0   | 1.2  | +0.2             |
| <b>Return on Sales Indicators, %</b>  |       |       |      |                  |
| Return on Sales                       | 26.5% | 28.0% | 3%   | - 25%            |

The main financial indicators are within the average regulatory values, which characterizes the Company as a financially stable entity capable of timely meeting its assumed obligations. Improving financial performance resulted from reduction of fixed assets formed due to depreciation of existing financial investments of JSC Atomredmetzoloto and systemic management of inventories that allowed reducing the stockpile of the Holding Company's finished uranium products.

Liquidity indicators confirm absence of money shortage risks and high level of solvency of the Company.

Return on sales depends directly on decreasing revenue in 2017.

### 4.2.3. Investments

The Holding Company's investment activities aim at achieving strategic objectives of ROSATOM and the Mining Division.

|  |   |
|--|---|
| Total investments of the Holding Company in 2017 | RUB 4.9 bn  |
| Key Investment Targets                           | Development projects of PJSC PIMCU, JSC Khiagda, JSC Dalur, JSC The First Ore Mining Company and investments into upkeep of operational production facilities |

Investments into development and upkeep of operational uranium mining enterprises amounted to RUB 3.9 bn and were aimed at:

- construction and installation work at production facilities, infrastructural and power facilities;
- design of production facilities;
- capital mining and preparatory mining operations;
- upgrades and refurbishment of production facilities;
- information and technical support;
- design and R&D;
- safety assurance;
- procurement of production and drilling equipment.

Year on year, investments in 2017 remained at the comparable level. In 2018, we are planning to increase the investment program by 54% due to accelerated upgrading and replacement of legacy equipment for PJSC PIMCU's uranium and coal business, construction of Mine No. 6 and development of new deposits at JSC Dalur and JSC Khiagda.

The structural changes performance of the Company's investment program result from diversification and development of non-uranium projects. Year 2017 saw further implementation of Pavlovskoye project aimed at creating the economically efficient production complex based on Pavlovskoye lead and zinc deposit including the mine and refinery, and further work on the non-uranium project for Organization of Associated Scandium Mining at JSC Dalur. Year 2018 will see launch of the project for gold mining at Severnoye deposit in the Elkon District.

In the structure of investment by key areas of the Company in 2017, investment in the development of the existing uranium mining enterprises continues to play the key part with 89% thereof accounted for by JSC Khiagda, PJSC PIMCU and

JSC Dalur (including non-uranium projects of the enterprises).

In 2017, investments into operations of uranium enterprises within the Holding Company framework were allocated as follows:

#### JSC Khiagda

The following operations have been performed (39% of the Holding Company's investment program):

- acidification of placer four at Khiagda deposit;
- physical launch of the mining and processing complex ensured at Vershinnoye Deposit;
- receipt of the nuclear site license for Istochnoye and Vershinnoye Deposits;
- receipt of the commissioning permit for Istochnoye Deposit (Placer No.1);
- execution of the agreement for purchase of primary power equipment for Dzhilinda substation;
- purchase of diesel fuel tanks for the consumption warehouse for Dzhilinda substation.

#### JSC Dalur

The following operations have been performed (19% of the Holding Company's investment program):

- completion of construction and commissioning of Unit No. 15 of Ust-Uksyansky section of Dalmatovskoye deposit;
- physical launch of the first stage of the pilot plant for 1.5 tpa of scandium oxide;
- receipt of the positive conclusion from FAU Glavgosekspertiza for Russia for the Pilot Production Site for Uranium ISL at Khokhlovskoye Deposit;
- approval of the exploratory scoping FS and reserve calculation report for the Khokhlovskoye

## 3.9

### RUB BN INVESTMENTS INTO DEVELOPMENT AND UPKEEP OF OPERATIONAL URANIUM MINING ENTERPRISES IN 2017

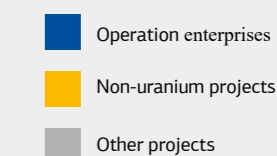
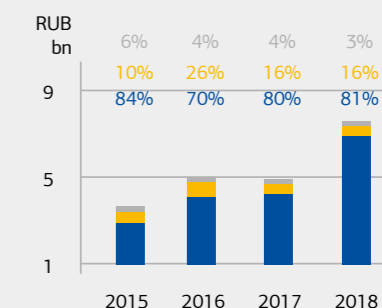


Figure 30. Investment Performance by Project Groups in 2015-2017 and Plans for 2018\*

\* Percentage changes result from re-grouping of projects, but the total investment amount of past years remains unchanged.

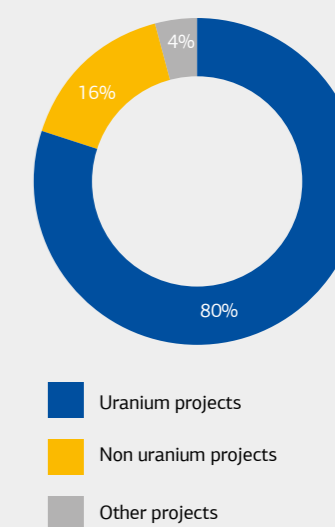


Figure 31. Figure Investment Project Groups in 2017

deposit by the State Reserve Commission;

- completion of construction and commissioning of Unit No. 14 of Ust-Uksyansky section of Dalmatovskoye deposit;
- receipt of the subsoil use license for Dobrovolnoye deposit and commencement of design work for the deposit;
- development of design documents for additional construction of Dalmatovskoye deposit and submission thereof for ROSATOM's review and assessment.

#### PJSC PIMCU

The following operations have been performed (31% of the Holding Company's investment program):

- completion of the first stage of reconstruction of Sredneye tailings' dump (compliance conclusion received);
- receipt of the positive conclusion for the operation scoping FS for deposits of Streltsovskoye ore field;
- startup of the ash dump at Krasnokamensk TPP;

- commissioning of the automated access control system suite at Mine No. 8;
- commissioning of the additional exploration Horizon No. 7 of Mine No. 8;
- operation startup of the plant for production of granulated explosive substances;
- start of initial operations for construction of Mine No. 6.

#### JSC THE FIRST ORE MINING COMPANY (FOMC) (PAVLOVSKOYE PROJECT)

The following operations have been performed (7% of the Holding Company's investment program):

- completion of the second stage of engineering surveys for the MRW;
- completion of semi-commercial testing of the deposit's ores for refinement process;
- development of the final report on key technical solutions.

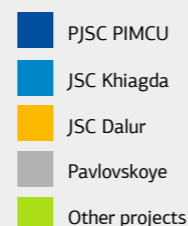
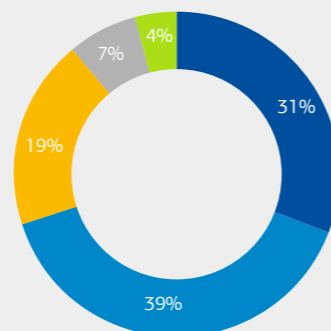


Figure 32. Key Investments of ARMZ Uranium Holding Co. in 2017

#### 2017 RESULTS:

Year 2017 saw further streamlining of uranium mining enterprises' investment programs including:

- streamlining of upkeep projects resulted into reduction of scheduled need for investments by 14% in 2018 to 2019 versus the initial need of the enterprises without reducing scheduled production volumes;
- reduction of the budget for PJSC PIMCU's Integrated Uranium Production Performance Improvement project was RUB 110 MM. (from RUB 134 MM to RUB 24 MM) due to application of a more efficient solution (construction of the explosive substance plant at PJSC PIMCU's site).

The following actions were taken in 2017 to improve economic efficiency and increase investment transparency:

- further operations for development of the Sirius Industrial information system for investment project management including the investment business unit's active

participation in implementation of new units of the system such as Risks, KPIs, etc;

- improvement of the Annual Investment Program Management Regulation, more stringent control of annual investment program planning accuracy and control of monthly investment payments. In this connection, the enterprises were granted additional powers for independent investment decision taking;
- further implementation of project management within the Holding Company. Based on ROSATOM's assessments of maturity and efficiency of the investment and project management system, JSC Atomredmetzoloto ranked second. In particular, highly appraised were template investment programs, Annual Investment Program Management Regulation, project approach to creation of project work teams with role assignment using the matrix control logic;

- the RPS project was implemented to improve investment project management process. RPS project resulted into acceleration of project data sheet drafting, improvement of card completion in the Sirius IS due to implementation of the template presentation for submission to review by the investment decision taking body (IDTB), follow-up of the project finance and economy model (FEM) and streamlining of the process of expert approval of materials.

Measures taken to improve the efficiency of investments and optimize the investment process within the division allowed to improve profitability, reduce the amount of equity and own sources of funding applied to current maintenance of equipment and infrastructure, Industrial sites, increase responsibility of staff of the division's entities for implementation of investment activities and achievement of their target financial indicators by the projects. The integral investment performance indicator was 102%.

#### PLANS FOR 2018 AND MID-TERM PLANS:

In accordance with the mid-term business plan, the investment program of JSC Atomredmetzoloto in 2018 to 2021 may amount to more than RUB 31.8 bn according to preliminary estimates. The key trend will be increased efforts for implementation of diversification projects («Pavlovskoye», «Processing of Pyrite Cinders at PJSC PIMCU», «Organization of Associated Scandium Production at JSC Dalur») and introduction of new optimization solutions to reduce the cost of uranium produced.

In relation to development of ARMZ's core uranium business, one of the key tasks on the Holding Company's mid-term agenda is construction PJSC PIMCU's Mine No. 6. Within the project implementation framework, working documents for the above-

ground part of the mine have developed, construction of the primary reducing substations has started and active negotiations with potential investors are underway.

Additionally, the near future will see commissioning of new uranium deposits at JSC Khiagda (Kolichikanskoye, Dybrynskoye) and JSC Dalur (Dobrovolny) primary operations for which have already begun.

Year 2018 will see completion of construction of the drainage duct of Urtuysky Strip Mine ensuring coal production in the next decade.

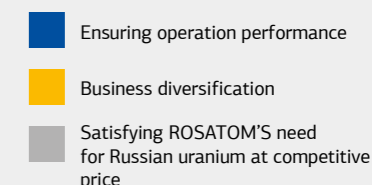
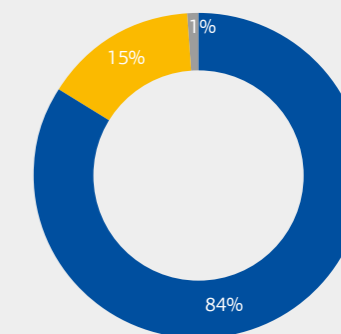


Figure 33. Mid-Term Investment Structure in 2017 to 2019

## 31.8 RUB bn.

THE AMOUNT OF JSC ATOMREDMETZOLOTO'S INVESTMENT PROGRAM FOR 2018 TO 2021 EXCEEDS

## 4.3. Intellectual Capital

#### PERFORMANCE FOR 10 YEARS

##### PJSC PIMCU:

- creation and implementation of the integrated process for development of lean uranium ores using geotechnological methods;
- development of scientific methodological recommendations for identification of stability parameters of the rock mass with filling of the developed space with solidifying filler by not more than 67%;
- streamlining of the uranium ore agitation stripping process allowing to reduce manganese dioxide by more than two times and cut feedstock ore treatment costs;
- creation of the geodynamical polygon of Streltsovskoye ore field;
- development of integrated geophysical methods for controlling the process of uranium ore heap leaching.

##### JSC Dalur:

- development and implementation of unique innovative mining and geological computer processes

- and software to allow improving development efficiency of Dalmatovskoye and Khokhlovskoye uranium deposits;
- development and implementation of the acidifier application process for drill hole in-situ leaching.

##### JSC Khiagda:

- development and implementation of the Khiagdit software suite to allow improving development performance of uranium deposits in Khiagda ore field;
- development and implementation of the new process drill hole design using new materials for casing pipes, filters and annulus hydro insulation;
- development of new processes and methods for repairs, restorations and performance recoveries of process drill holes.

##### JSC RUSBURMASH:

- Development and certification of the hardware and methodological new

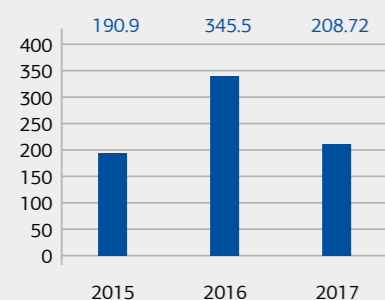
generation logging suite for direct identification of uranium in drill holes using the instantaneous fission neutron method.

##### JSC VNIIPromtehnologii :

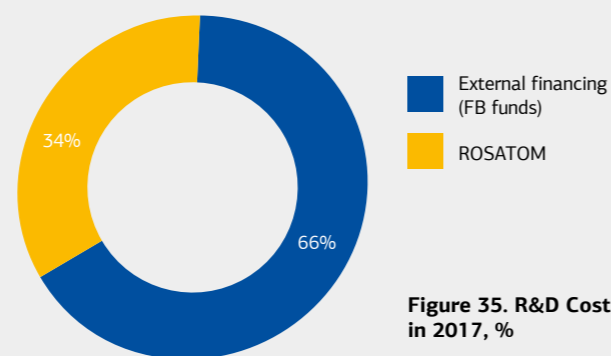
- development of process solutions for development of uranium deposits as well as mining security solutions;
- operations for assessment of statuses of underground nuclear explosion sites and development of activities for rehabilitation thereof;
- development of process solutions for burying of solid nuclear wastes and assessment of statuses and operation prospects of liquid industrial and nuclear waste pumping stations;
- integrated operations within the framework of activities set forth in the Federal Target Program for Assurance of Nuclear and Radiation Safety of Russian in 2016 and until 2030 aimed at creating the Harmonized National RAW Handling System.

## 4.3.1. Intellectual Capital Management

In 2017, the Holding Company's innovative costs amounted to RUB 208.72 MM of which RUB 135.9 MM for R&D including RUB 90.0 MM from external sources (under the subsidy of the Ministry of Education and Science of the Russian Federation).



**Figure 34. Implementation Costs of the Holding Company's Innovative Development Program in 2015-2017, Million RUB**



**Figure 35. R&D Cost Structure in 2017, %**

### Innovative Development Program

ARMZ's innovative development program is the integral part of ROSATOM's Innovative Development and Process Upgrading Program until 2030.

**Analysis**  
JSC Atomredmetzoloto's scientific and technical activities in 2012 to 2016 conducted in 2017 shows that ARMZ's R&D project portfolio in 2012 and 2016 is technologically and economically efficient.

**Table 18. Key Projects of the Holding Company in 2017**

**Scientific and technical support to development of uranium deposit using the underground mining development method (UMD).**

**Scientific and technical support to development of uranium deposit using the in-situ leaching (ISL).**

The key objectives of ARMZ's Innovative Development Program until 2030 are as follows:

- improving uranium mining performance at operational uranium mining enterprises;
- break-even operation of uranium mining enterprises;
- production diversification.

**Table 19. IPR in 2012-2016, pcs., %**

| IPR                  | 2012     | 2013     | 2014     | 2015      | 2016     | 2017      | Total, pcs. | Of which implemented |
|----------------------|----------|----------|----------|-----------|----------|-----------|-------------|----------------------|
| Invention patent     | 2        | 6        | 2        | 3         | 2        | 5         | 20          | 6                    |
| Utility model patent | -        | -        | -        | 1         | -        | -         | 1           | 1                    |
| PC certificates      | 1        | 1        | 5        | 9         | 4        | 11        | 31          | 31                   |
| Database             | -        | -        | -        | -         | 1        | -         | 1           | 1                    |
| Know how             | -        | -        | -        | -         | 2        | -         | 2           | 0                    |
| <b>TOTAL:</b>        | <b>3</b> | <b>7</b> | <b>7</b> | <b>13</b> | <b>9</b> | <b>16</b> | <b>55</b>   | <b>39 (70.9%)</b>    |

## KEY PROJECT 1

### SCIENTIFIC AND TECHNICAL SUPPORT TO DEVELOPMENT OF URANIUM DEPOSIT USING THE UNDERGROUND MINING DEVELOPMENT METHOD (UMD)

- Purchase and installation of 500 hydraulic thrust anchors by Atlas Kopco. The use of this type of reinforcement will significantly reduce the cost of fastening of mine workings and improve the safety of the production staff;
- The use of surfactants significantly increased uranium extraction;
- Laboratory studies confirm efficiency of the process for sintering of fine ore feedstock fractions for further processing using the heap leaching method developed by PJSC PIMCU's Central R&D Laboratory (CRDL) (uranium extraction is on the average 10% higher than that for leaching of non-sintered feedstock). Purchase of the sintering unit and stacker is scheduled for 2018 for pilot production operations;
- Year 2017 saw commencement of operations for total exclusion or replacement of pyrolusite in the process of hydro metallurgical processing of ore feedstock for cheaper acidifiers. Research operations imply development of the process for producing the alternative acidifier the feedstock for which would be pyrite cinders. The work is scheduled for completion in 2018 after semi-commercial testing.

## KEY PROJECT 2

### SCIENTIFIC AND TECHNICAL SUPPORT TO DEVELOPMENT OF URANIUM DEPOSIT USING THE IN-SITU LEACHING (ISL)

#### JSC Dalur

- Further implementation of innovative mining and geological computer processes and software developed by the Seversk Technological Institute of NRNU MEPhI. The implementation of the created program-informational complex serves a base for creating the «Smart Mine ISR» system and allows to achieve additional accuracy when counting the reserves, additional quality when designing producing blocks and additional efficiency when developing the Dalmatovskoye and Khokhlovskoye uranium deposits.

Intellectual property rights to the software suite belong to JSC Dalur and are protected with Rospatent's certificates.

Implementation of the software and information suite covering all aspects of the enterprise's business from geological exploration to decommissioning of units and environmental impact assessment allowed qualifying JSC Dalur's products as innovative as of 2016. Revenue from innovative product sales in 2017 amounted to at least RUB 2.3 bn.

- In 2017, pilot production operations will continue for development of new process drill hole designs. Taking into account the results of the completed works, a decision to implement the developed design of holes commercially which allowed to significantly reduce their capital construction costs. As of 2018, all newly constructed drill holes will have improved designs;
- Results of pilot production operations for implementation of integrated logging using the instantaneous fission neutron

logging method (KND-M) and impulse neutron-neutron logging method (INNK) for direct identification of uranium during mining preparatory operations at Khokhlovskoye deposit were approved by FBU GKZ in 2017. Currently, development of the project of exploration of Dobrovolnoye deposit is underway with inclusion of KND-M and INNK integrated logging methods into geophysical studies of drill holes. Operations at Dobrovolnoye deposit are scheduled for completion in 2019 to 2020;

- Pilot production operations continue for associated scandium extraction from uranium production mother liquors and creation of the advance aluminum and scandium master alloy production.

#### JSC Khiagda

- Pilot production work continued for development of new designs of process drill holes for operation under conditions of ubiquitous distribution of permafrost rocks;
- Work continued to adapt and implement the software suite developed by Seversk Technological Institute of NRNU MEPhI. 11 programs of the Khiagdit suite were granted Rospatent certificates confirming JSC Khiagda's intellectual property rights;
- Work continued to implement new methods of repair and restoration of process drill holes. Purchasing additional equipment to increase production volumes and improve performance of repair and restoration work is scheduled for 2018;
- April 2017 saw pilot testing of the ultrasonic equipment prototype for restoration and performance improvement of process drill holes;
- In 2017, pilot production operations were performed to implemented integrated logging using KND-M and INNK methods and AMK KND-M hardware at JSC Khiagda's facilities Work performed allowed successfully solving a number of problems for clarification of primary radiological specifications of ores and performance of process drill holes during mining preparatory operations at units B1.11 and B1.12 of Vershinnoye Deposit as well as for assessment of residual performance of operational unit X3.13 of Khiagda deposit. Year 2018 is planned to see further operations using AMK KND-M at JSC Khiagda's facilities for clarification of radiology of ore placer section B1 (Vershinnoye Deposit), assessment of residual reserves in placers being developed and certification of 3D modelling results in control drill holes.

## 4.3.2. Innovative Performance

### 2017 Results:

- receipt of 16 state security documents for intellectual property;
- five invention patents (PJSC PIMCU, JSC Dalur and JSC VNIIPromtehnologii);
- 11 PC software certificates (JSC Khiagda);
- 15 patent applications were submitted for state registration of intellectual property;
- 11 applications for PC software certificates (JSC Khiagda);
- four invention patent applications (JSC Dalur).

### Knowledge Management System (KMS)

- Three people participated in ROSATOM's training seminars (JSC Atomredmetzoloto and JSC VNIIPromtehnologii);
  - Within the framework of filling ROSATOM's scientific and technical information portal, we placed:
  - full-text copies of the book Russian Experience in Uranium Geotechnology and Creation and Development of the Domestic Nuclear Industry's Mineral Resource Base;
  - reviews of JSC VNIIPromtehnologii's scientific and technical reports for operation performed in 2016;
  - 5,839 documents from JSC VNIIPromtehnologii's scientific and technical information archive were digitized (engineering surveys and construction documents) amounting to over 700,000 pages;
  - The number of publications in peer-reviewed global nuclear power sources (annually per 100 researchers and developers):
- 2015 – 17.5;
  - 2016 – 7.5;
  - 2017 – 42.5.

## 4.3.3. Digital Economy Performance

Year 2017 saw first steps towards digitalization. JSC Khiagda is developing 3D models of developed active reserves of PJSC PIMCU, JSC Khiagda and JSC Dalur to allow compliance with the digital production standard in the future.

**THE SMART MINE PROJECT** is an example of business digitalization at JSC Khiagda within the framework whereof smart methods of modelling in-situ leaching processes are being developed. These include the IT system based on the digital model map of reserves and production operations.

Using integrated geological and mathematical methods, advanced video surveillance tools and smart sensors, the system will be tracking and adjusting production processes in real time.

The system will allow:

- rapidly and precisely localizing ore within the deposit, identifying ore body parameters and the best uranium mining mode, etc.;
- modelling drill hole operations;
- planning mining priorities, equipment repair time schedules, etc.

Scheduled for 2018 are pilot production operations to allow fairly assessing effects of the project.

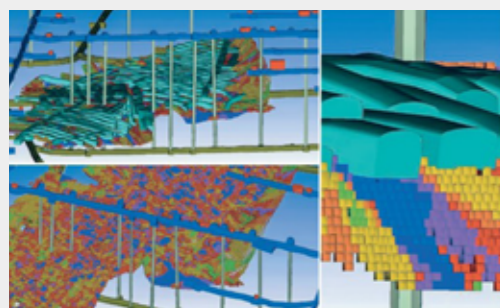


Figure 36. Flowchart of the Smart Mine

## 4.4. Natural Capital

### PERFORMANCE FOR 10 YEARS: PJSC PIMCU

- construction of the new sulfur acid workshop without pyrite cinder formation;
- reconstruction of TPP boiler units and implementation of more advanced dust containment equipment;
- construction of the new ash dump at the TPP;
- relocation of residents of Oktyabrsky township from the industrial zone to Krasnokamensk;
- reconstruction of the sealing curtain to minimize dissemination of contaminants in Shirondukuy ravine;
- reconstruction of Sredneye tailing dam. Extension of the main bund wall.

- implementation of the integrated management system (ISO 9001 and ISO 14001);
- regular environmental monitoring.

### JSC Khiagda

- construction of waste treatment facilities of the rotation camp;
- construction and startup of the sulfur acid production facility;
- switch of the coal boiler to standby (migration to heat production using the sulfur acid production facility) reducing air pollution emissions;
- creation of the remote control system of continuous operation of pumping equipment;

- construction of the solid household and production waste polygon;
- implementation of the Integrated Management System (ISO 9001 and ISO 14001);
- regular environmental monitoring.

### JSC Dalur

- implementation of the Integrated Management System (ISO 9001 and ISO 14001);
- regular environmental monitoring.

### 4.4.1. Natural Capital Management Environmental Policy

The environmental policy of JSC Atomredmetzoloto went into effect in 2013 and has since been a basis for implementation of the main statutes of the Constitution of the Russian Federation and other laws of the Russian Federation, the

International ISO 14001 standard and the environmental policy of ROSATOM. For ARMZ's Environmental Policy, see <http://www.armz.ru/development/environmental/>

For details of the Environmental Policy and its objectives, see Report 2014.

Class 6 radioactive waste were placed into Verkhnee and Sredneye tailings' dumps of PJSC PIMCU. Radioactive waste handling is compliant with requirements of Federal Law No. 190-FZ dd. 7/11/2011 on Radioactive Waste Handling and Amendment of Certain Laws of the Russian Federation.

### 4.4.2. Natural Capital Management Performance

#### 4.4.2.1. Protection of Land Resources and Biodiversity

In 2017, no recultivation work was performed by PJSC PIMCU. Construction work for reconstruction of Sredneye tailings' dump resulted into stripping of 85,000 cu.m of topsoil (42.5 ha) and respectively the same 42.5 ha of land was disturbed.

The technical stage of recultivation of the water drain trench from the system of Umykeykiye Lakes to Khara-Nur Lake was completed.

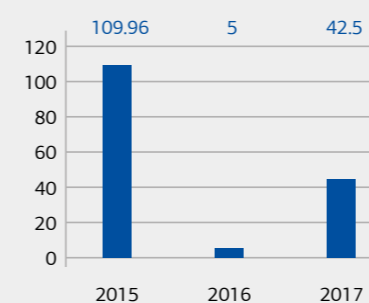


Figure 37. Total Number of Lands Disturbed at PJSC PIMCU in 2015-2017, ha

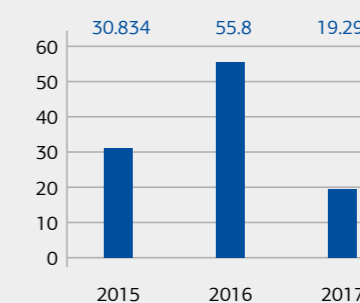


Figure 38. Total Number of Lands Disturbed at JSC Khiagda in 2015-2017, ha

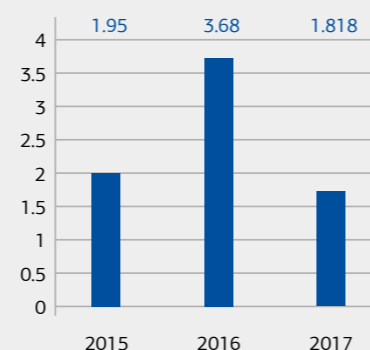
In 2017, JSC Khiagda disturbed 19.297 ha of land including:

- 13.0 of disturbed land area during development of mineral deposits (construction and development of operation units of Vershinnoye Deposit of Khiagda ore field);
- 6.1 ha of disturbed land area during construction;
- 0.197 ha of disturbed land area during placement of Industrial wastes (including construction ones) and solid domestic wastes.

JSC Dalur performed the following work associated with disturbing the topsoil:

- preparation of construction site (in the form of vegetation soil layer removal with the mean thickness of 0.2 m) to perform construction and installation at the following sites:
  - single-apartment residences;
  - operation units for ISL uranium mining at Khokhlovskoye uranium deposit;
  - operation unit of Central Placer of Dalmatovskoye uranium deposit.

All work was performed in compliance with the approved documents. The vegetation topsoil was fully used at the final stage of construction to improve the area around constructed facilities.



**Figure 39. Total Number of Lands Disturbed at JSC Dalur in 2015-2017, ha**

## 4.4.2.2. Water Resource Protection

### WATER INTAKE

**Table 20. Water Intake by Purposes and Holding's Companies, in 2015-2017, mcm**

| Plant   | 2015   | 2016   | 2017   |
|---|--------|--------|--------|
| <b>Water intake for production purposes</b>             |        |        |        |
| PJSC PIMCU  | 22.275 | 22.714 | 19.503 |
| JSC Dalur   | 0.048  | 0.051  | 0.053  |
| JSC Khiagda   | 0.156  | 0.188  | 0.159  |
| <b>Water intake for household and drinking purposes</b> |        |        |        |
| PJSC PIMCU  | 5.127  | 4.94   | 5.193  |
| JSC Dalur   | 0.058  | 0.052  | 0.052  |
| JSC Khiagda   | 0.035  | 0.037  | 0.047  |
| <b>Total water intake</b>                               |        |        |        |
| PJSC PIMCU  | 34.466 | 34.174 | 31.304 |
| JSC Dalur   | 0.106  | 0.103  | 0.105  |
| JSC Khiagda   | 0.195  | 0.228  | 0.215  |
| <b>Underground sources</b>                              |        |        |        |
| PJSC PIMCU  | 28.666 | 28.374 | 25.703 |
| JSC Dalur   | 0.106  | 0.103  | 0.105  |
| JSC Khiagda   | 0.195  | 0.228  | 0.215  |
| <b>Exceeding set limits</b>                             |        |        |        |
| PJSC PIMCU  | 0      | 0      | 0      |
| JSC Dalur   | 0      | 0      | 0      |
| JSC Khiagda   | 0      | 0      | 0      |

PJSC PIMCU reduced its mine water intake in the past period due to temporary conservation of mine two. Due to reduced water inflow to the stripping mine field during autumn and winter floods as well as in summertime, intake of stripping mine waters decreased and water drainage performance decreased versus 2016.

JSC Khiagda's reduced water consumption is associated with the following activities:

- creation of the system for remote control of continuous operation of pumping equipment for the first and second water elevators with automatic maintenance of the set level in reserve tanks (ruling out the possibility of overflow of such tanks, non-accountable water intake and occurrence of any leakages in the water supply area from the first to the second water elevators).

At JSC Dalur the change of water intake indicators in 2017 versus 2016 doesn't exceed 5%.

## EFFLUENT WATER DISCHARGE

**Table 21. Effluent Water Discharge at PJSC PIMCU in 2015-2017, mcm**

| Year/Water Volume               | 2015   | 2016   | 2017   |
|---------------------------------|--------|--------|--------|
| Effluent Water Discharge Volume | 11.724 | 11.375 | 11.039 |

## 4.4.2.3. Air Protection

**Table 22. Air Pollution Emissions in 2015-2017 by PJSC PIMCU, tonnes**

| Year/Pollutant                   | 2015            | 2016             | 2017              |
|----------------------------------|-----------------|------------------|-------------------|
| Carbon oxide                     | 796             | 1,006.318        | 894.113           |
| Sulfur dioxide                   | 5,059.0         | 5,248.446        | 6,021.38          |
| Nitrogen oxides (NO2 equivalent) | 1,594.0         | 1,796.751        | 1,666.098         |
| Specific pollutants (inorganic)* | 172.3           | 163.05           | 164.719           |
| Specific pollutants (organic)*   | 5,908.82        | 7,974.61         | 7,861             |
| <b>Total*</b>                    | <b>13,785.2</b> | <b>16,427.59</b> | <b>17,270.316</b> |

\* added instead of inorganic dust and other coal ash

**Table 23. Air Pollution Emissions in 2014-2017 by JSC Khiagda, tonnes**

| Year/Pollutant                   | 2015           | 2016           | 2017           |
|----------------------------------|----------------|----------------|----------------|
| Carbon oxide                     | 190.865        | 19.307         | 7.394          |
| Sulfur dioxide                   | 49.825         | 185.155        | 301.796        |
| Nitrogen oxides (NO2 equivalent) | 14.827         | 9.275          | 8.116          |
| Specific pollutants (inorganic)* | 1.035          | 0.002          | 28.521         |
| Specific pollutants (organic)*   | 18.911         | 6.387          | 0.25612        |
| Other                            | 13.115         | 15.9           | 2.645          |
| <b>Total</b>                     | <b>288.578</b> | <b>236.026</b> | <b>343.639</b> |

\*added instead of inorganic dust and other coal ash

**Table 24. Air Pollution Emissions in 2015-2017 by JSC Dalur, tonnes**

| Year/Pollutant                   | 2015          | 2016          | 2017          |
|----------------------------------|---------------|---------------|---------------|
| Carbon oxide                     | 8.104         | 8.094         | 6.261         |
| Sulfur dioxide                   | 0.000416      | 0.0071        | 0.006         |
| Nitrogen oxides (NO2 equivalent) | 2.898         | 3.009         | 2.247         |
| Specific pollutants (inorganic)* | 0.664         | 0.959         | 0.664         |
| Specific pollutants (organic)*   | 0.00032       | 0.006         | 0.162         |
| <b>Total</b>                     | <b>13.013</b> | <b>13.142</b> | <b>10.396</b> |

\*added instead of inorganic dust and other coal ash

## JSC Dalur, JSC Khiagda

Given the closed process cycle, no effluent water containing hazardous chemical and radionuclides was discharged. Domestic effluent water from the sewage system is remove to waste treatment facilities of the SPV under the agreement.

In 2017, PJSC PIMCU recorded increase of sulfur acid and sulfur dioxide emissions by 3.234 and 772.934 tonnes, respectively, due to increase of sulfur acid production by 7% versus 2016.

Due to reduction of coal burnt at the TPP in 2017 versus 2016, nitrogen oxide and carbon oxide emissions have decreased. The quantity of coal burnt by the TPP in 2016 was 715,395.91 tonnes of conventional fuel versus 704,392.43 tonnes of conventional fuel in 2017.

Thermoelectric power plants' soot and fuel oil ash emissions (vanadium equivalent) have increased by 56% and 78%, respectively. Increased carbon (soot) formation is associated with changes to physical and chemical properties of coal supplied to the TPP such as higher coal ash-content (the maximum ash-content in 2016 was 17.1% versus 18.2% in 2017) and combustibles in fly-ash content (3.32% in 2016 versus 5.24% in 2017).

The reduction of overall emissions versus 2016 is connected with a change to receiving heat energy due to a surplus of heat that appears during the production of sulfuric acid. In this connection, the coal boiler was switched to standby resulting into emission reduction (including in terms of carbon oxide and nitrogen oxides).

Increasing sulfur dioxide and sulfur acid emissions are associated with increase of sulfuric acid production by 38%

Overall, the enterprise's pollutant emissions show no material increases or decreases except for CO (due to reduction of boiler emissions) associated, in its turn, with increase of the mean ambient temperature in the past year.

#### 4.4.2.4. Waste Management

Table 25. Waste Generation of all Hazard Classes in 2015-2017, tonnes

| Hazard Class   | Year | PJSC PIMCU    | JSC Dalur | JSC Khiagda |
|--|------|---------------|-----------|-------------|
| Hazard class I   | 2015 | 2.158         | 0.032     | 0.1         |
|  | 2016 | 2.769         | 0.199     | 0.039       |
|  | 2017 | 2.539         | 0.174     | 0.143       |
| Hazard class II  | 2015 | 0.846         | 0.144     | 0.286       |
|  | 2016 | 0.031         | 0.22      | 0.554       |
|  | 2017 | 1.111         | 1.006     | 0.501       |
| Hazard class III   | 2015 | 155.12        | 0.518     | 7.646       |
|  | 2016 | 104.79        | 1.038     | 2.5         |
|  | 2017 | 122.42        | 1.604     | 5.769       |
| Hazard class IV  | 2015 | 2,001.6       | 77.852    | 514.1       |
|  | 2016 | 1,547.1       | 39.452    | 187.9       |
|  | 2017 | 1,453.1       | 42.8      | 480.2       |
| Hazard class V   | 2015 | 23,508,303.42 | 11.623    | 1,455.03    |
|  | 2016 | 24,268,198.8  | 24.927    | 180.6       |
|  | 2017 | 22,509,520.4  | 17.049    | 59.9        |
| Total  | 2015 | 23,510,463.14 | 90.169    | 1,479.77    |
|  | 2016 | 24,287,844.4  | 65.809    | 371.57      |
|  | 2017 | 22,511,099.54 | 62.670    | 546.513     |
| Wastes used at the enterprise and located at facilities in operation, tonnes   | 2015 | 26,345,843.3  | 0         | 1,000.9     |
|  | 2016 | 24,286,078.27 | 0         | 249.522     |
|  | 2017 | 4,537,903.29  | 0         | 41.883      |
| Wastes transferred to SPV contractors for disposal and decontamination, tonnes | 2015 | 9,883.321     | 23.048    | 471.68      |
|  | 2016 | 8,979.67      | 27.053    | 0           |
|  | 2017 | 17,969,493.01 | 21.198    | 352.08      |
| Exceeding set limits   | 2015 | no            | no        | no          |
|  | 2016 | no            | no        | no          |
|  | 2017 | no            | no        | no          |

\* Due to waste removal streamlining, they were transferred to contractor SPVs in 2017.

#### PJSC PIMCU :

- reduction of hazard class I waste generation (mercury lamps) by 0.23 tonnes due to replacement of mercury lamps for LED ones in the previous years and reduction of the number of mercury lamps used at the business units;
- occurrence of new hazard class II wastes (Waste Lead Accumulators, Undamaged and Containing Electrolyte);
- vanadium catalyst for sulfur acid production, under the new Federal Catalog of Waste Classes is hazard class IV (former class III);
- pyrite cinders, under the new Federal Catalog of Waste Classes, are hazard class V (former class IV);

#### JSC DALUR :

- increased formation of class II and III wastes results from higher consumption of repair materials for the motorcar fleet.

#### JSC KHIAGDA :

- increase of hazard class I wastes (mercury lamps) generation by 0.104 tonnes due to replacement of mercury lamps with LED ones;
- increase of hazard class IV wastes generation by 273.8 is due to increase of unsorted residential waste (excluding bulky ones), garbage and sand contaminated with oil and oil products. Increased generation of hazard class IV wastes is due to increased production volume and increased use of relevant chemicals;

- decreasing generation volumes of ash and slag mixture from coal burning;
- decreasing generation volumes of kitchen foodstuff wastes;
- decrease of hazard class V waste generation by 120.7 is due to decreasing quantity of coal used for operations of the redundant coal boiler.

#### 4.4.2.5. Environmental Costs

Table 26. Holding Company's Environmental Protection Costs in 2017, RUB'000

| Measures  | PJSC PIMCU         | JSC Dalur        | JSC Khiagda       |
|---|--------------------|------------------|-------------------|
| Air Protection  | 46,834.137         | 194              | 1,044             |
| Protection of Water Resources                           | 58,465.784         | 370              | 961.873           |
| Subsoil Protection                                      | 48,128             | -                | -                 |
| Waste Management  | 46 932             | 390.62           | 1,899.427         |
| Sustainable Use, Protection and Rehabilitation of Lands | 75,323.89          | 98               | 11,259            |
| <b>Total</b>  | <b>398,871.497</b> | <b>6,618.182</b> | <b>22,977.529</b> |

The 'total' costs of environmental protection comprise the current expenditure for environmental protection, the investments in fixed

assets aimed at protecting the environment and rational use of natural resources, and the costs of the integrated management system.

Data for 2016 have been adjusted subject to investments into fixed assets for performance of work for recultivation of Sredneye tailings' dump and construction of ash dump at PJSC PIMCU; RUB 288 MM in the data set forth in Report 2016 do not include investments into fixed assets.

Reduction of the amount in 2017 is due to reduction of construction costs as the bulk of expenses occurred in 2016.

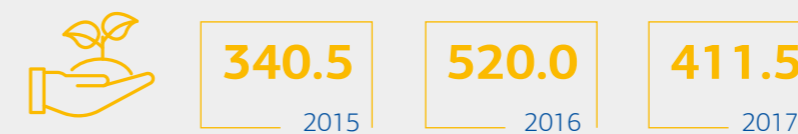


Figure 40. Holding Company's Total Environmental Protection Costs in 2015-2017, Million RUB

\* Data for 2016 are recalculated taking into account the data related to investments in fixed assets aimed at protecting the environment and rational use of natural resources.

#### 4.4.2.6. Community Relations in Environmental Protection

The Holding Company's employees have always been active participants of environmental protection events, preservation of valuable natural objects and restoration of forests.

In Krasnokamensk, over 600 PJSC PIMCU's employees and their family members participated in spring environmental subbotniks for area cleaning and planting.

JSC Khiagda is contacted by students of universities and colleges from Chita

and Ulan-Ude who wish to complete their environmental traineeship.

Environmental matters of the enterprise are reflected in the Khiagda Vestnik newspaper and at the enterprise's web site.

JSC Dalur's staff participated in the Green Spring All-Russian Environmental Subbotnik. Jointly with administration of Uksyanskoye village circa 400 pines were planted, 265 decorative shrubs were bought and planted in the areas

of the enterprise, Uksyanskaya and Peshano-Koledinskaya middle-schools, 11 information posters were manufactured and installed in littered areas, several events and activities were performed for improving and planting at adjacent settlements, production and recreation areas

**24 April - 2 May** – the Ecology and Us environmental subbotnik was conducted;

**on 17 May** – the Give Nature a Chance event was conducted;

**5 June - 5 August** – My Village and My City photo exhibitions had been conducted to promote national, spiritual and environmental values of the home village and city



JSC Dalur is the award-winner of the Environmental Culture: Peace and Harmony Project for Environmental Culture in Industry and Energy.

### Ensuring Radiation Safety

In the reporting period, the individual effective dose at the Holding Company's enterprises did not exceed 20 mSv for any single worker. No individual doses in excess of 100 mSv had been recorded from 2013 until 2017.

**Table 27. Average Effective Dose in 2015–2017, mSv**

|                        | Mean Effective Dose in 2015 | Mean Effective Dose in 2016 | Mean Effective Dose in 2017 |
|------------------------|-----------------------------|-----------------------------|-----------------------------|
| PJSC PIMCU             | 3.42                        | 3.53                        | 3.44                        |
| JSC Dalur              | 1.46                        | 1.58                        | 1.50                        |
| JSC Khiagda            | 1.16                        | 1.05                        | 1.08                        |
| JSC VNIIPromtehnologii | 1.33                        | 1.31                        | 1.20                        |

The level of annualized effective dose for staff employed at radiation hazard sites of PJSC PIMCU (underground mines, hydro metallurgical plant) remains at the same acceptable level. No INES level 2 and higher events.

#### 2017 RESULTS:

PJSC PIMCU performed targeted operations to improve the radiation situation in mining works including:

- insulating concrete and wood partitions were installed at underground mines one and eight (20 pcs.);
- ventilation doors DV-1000 (four) were restored and commissioned;
- based on results of individual dosimetry control, timely staff rotation was conducted within units with uranium content exceeding 0.5%.

The following actions were taken to improve the radiation situation at PJSC PIMCU HMP:

- cleaning and washing for removal of radioactive dust from intake and exhaust vent ducts of several production buildings;
- capital repairs of feedstock hoppers B and C including replacement of hopper sheet lining, inspection of RC support structure, repairs of protective structures and fences at the LCS feeder transition assembly and re-welding of weld joints;
- capital repairs of crusher SMD-111 and SMD-111A including replacement of crusher plates (lining), crusher, replacement of fixtures and adjustment of crusher work openings;

- current repairs of the packaging assembly including cleaning of the hopper, pressurization restoration, repairs of the ventilation system and repairs of assemblies with replacement of elements and bearings.

In the past year, no decommissioning or liquidation of nuclear or radiation hazard facilities were performed by operators.

### OCCUPATIONAL SAFETY

#### INJURIES

In 2017, there were no accidents subject to investigation in accordance with federal norms and regulations at JSC Atomredmetzoloto.

In the reporting year, there were four Industrial accidents at the plants managed by JSC Atomredmetzoloto. No fatal injuries occurred

#### 2017 RESULTS:

**Table 28. Injuries at JSC Atomredmetzoloto's Enterprises for 2002–2017, cases.**

|        | 2015 | 2016 | 2017 |
|--------|------|------|------|
| Target | 0.7  | 0.6  | 0.54 |
| Result | 0.23 | 0.44 | 0.28 |

The following actions were taken to ensure safe working conditions:

- improvements of the general safe labor culture with key focuses here aimed at active promotion of safe labor and development of the safety culture;
- PJSC PIMCU's Mine No. 8 commissioned the automated system for staff alcohol testing;
- all operator subsidiaries developed and enacted regulations on actions of business units' executives and specialists for examination of their staff for intoxication;
- work is underway to improve the system for exchange of safety information to ensure maximum staff coverage and improve employees' awareness;
- all operator subsidiaries implemented the monthly assessment of business units' executives regarding organization of occupational safety and health operations;
- within the framework of migration to international safety management standards, PJSC PIMCU implemented the project for development of the safety culture, system and practice

for management of occupational safety and health. The program for analysis of results of completed behavior safety audits, Regulation on Safety Culture Management System and safety culture self-assessment methodology were developed.

**Table 29. Fatal Injury Frequency Rate (FIFR)**

| 2015 | 2016 | 2017 |
|------|------|------|
| 0.02 | 0    | 0    |

**Table 30. Lost Days Rate (LDR)\***

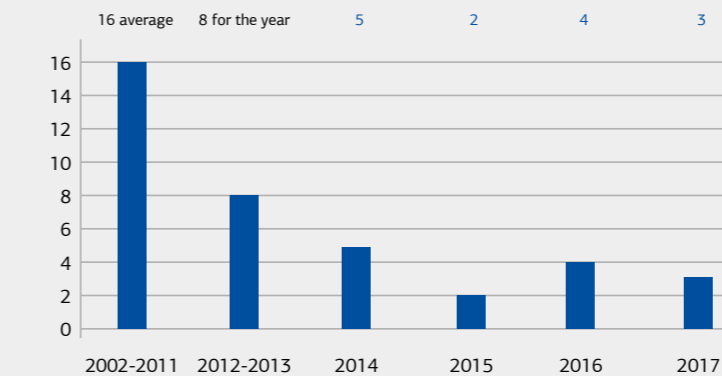
| 2015 | 2016  | 2017 |
|------|-------|------|
| 9.85 | 17.67 | 27.4 |

**Table 31. Occupational Disease Rate (ODR)\*\***

| 2015 | 2016 | 2017 |
|------|------|------|
| 0.75 | 0.93 | 0.56 |

\* LDR data have been calculated as follows: Number of lost days from accidents and occupational diseases/number of man-hours worked) \* 200,000.

\*\* ODR data have been calculated as follows: The total number of occupational diseases for the year/number of man-hours worked) \* 200,000.



**Figure 41. Injury occurrence dynamics at the enterprises of JSC Atomredmetzoloto for 2002–2017, no. cases.**

#### PLANS FOR 2018 AND THE FUTURE:

- ensuring functioning of the electronic occupational safety and health room for conducting trainings, briefings and knowledge on occupational safety and health, education and attestation of engineers and technicians;
- revising and improving criteria for assessing preventative operations by executives of the Company's occupational safety and health, and fire safety business units within the framework of the Personal Responsibility Regulation;
- assessing PJSC PIMCU's safety status within its business units in accordance with the Regulation on Internal Audit of Business Units/ Workshops' Occupational, Industrial, Radiation, Environmental and Fire Safety Activities.



## 4.5. Human Capital

### PERFORMANCE FOR 10 YEARS:

- implementation of the single harmonized remuneration system at the Holding Company's enterprise;
- implementations of the Record performance management system;
- development and implementation of the Career and Succession Planning process;
- migration of all Holding Company enterprises to the information and analysis HR management system based on SAP ERP HCM;
- the ROSATOM Person of the Year annual industrial recognition program;
- the ROSATOM Cares for Your Opinion annual engagement survey shows increase of the employee engagement from 42% to 66%;
- the team of highly promising young business troubleshooters was formed;
- annual professional mastery competitions are held at the Holding Company's enterprises;
- the annual division professional mastery contest under the World Skills methodology is held with its winners

participating in the annual industrial worker championship Atom Skills within the Mining Division's combined team;

- mass cultural and sporting events are held for employees and their children.

### 4.5.1. HR Policy Management System

The HR policy of JSC Atomredmetzoloto is aimed at creating effective HR management system that would increase the efficiency of the Holding Company. Employees of the Company are JSC Atomredmetzoloto's key asset.

Their involvement in implementation of the corporate strategy, qualification and responsibility determine its long-term competitiveness. The company, strictly following the requirements of the labor Code of the Russian Federation, brings

social orientation to its personnel policy, is committed to providing its employees with favorable conditions for successful work and professional growth.

### 4.5.2. HR Policy Management Performance

#### 4.5.2.1. Human Capital Features

##### NUMBER OF EMPLOYEES

Table 32. Average Headcount Dynamics of the Company in 2015-2017, persons.

|      | JSC Atomredmetzoloto | PJSC PIMCU | JSC Dalur | JSC Khiagda | JSC VNIPIprom-<br>tehnologii | JSC<br>RUSBUR-<br>MASH | LLC ARMZ<br>Service | TOTAL |
|------|----------------------|------------|-----------|-------------|------------------------------|------------------------|---------------------|-------|
| 2017 | 151                  | 4,720      | 448       | 527         | 272                          | 440                    | 99                  | 6,657 |
| 2016 | 149                  | 5,137      | 443       | 496         | 352                          | 597                    | 100                 | 7,275 |
| 2015 | 151                  | 5,961      | 446       | 451         | 389                          | 685                    | 100                 | 8,183 |

The trend toward decreasing staff number continued in 2017 albeit at decreasing rates ensured due to development of the mineral resource base and new businesses.

Key changes to average staff number in the reporting year occurred at the following enterprises:

- PJSC PIMCU (-417 people) due to reduction of mining volumes, conservation underground mine 2, migration to the five-days working week and increased duration of the working week for certain employees based on results of the special labor conditions assessment, transfer of dormitories to the municipal administration of Krasnokamensk and exclusion of the housing and utility department from the enterprise;

- JSC RUSBURMASH (-157 people) due to reduction of drilling volumes and absence of geological projects;
- JSC VNIPIpromtehnologii (-80 people) due to decreasing revenue under design contracts requiring, in its turn, organizational actions to streamline staff number;
- JSC Khiagda (+31 people) due to commencement of operations at production facilities of Istochnoye Deposit;
- JSC Dalur (+4 people) due to creation of the new associated scandium production facility.

Staff number change trends in operation regions are characterized with material reduction of staff number in the Trans-Baikal Territory (-545 people):

- PJSC PIMCU (-417);
  - JSC RUSBURMASH (-96 people);
  - JSC VNIPIpromtehnologii (-33 people);
  - JSC Khiagda (+1).
- Staff number fluctuations in other operation regions are primarily due to its changes at JSC RUSBURMASH:
- Moscow (+4);
  - Kurgan Region (+20);
  - Irkutsk Region (-37);
  - Trans-Baikal Territory (-96);
  - Republic of Buryatia (-48).

### REGIONAL STAFF NUMBERS

Table 33. Average Headcount Dynamics in Key Operation Regions in 2015-2017, persons

| Key Operation Regions  | 2015         | 2016         | 2017         |
|------------------------|--------------|--------------|--------------|
| Moscow                 | 637          | 603          | 562          |
| Kurgan Region          | 581          | 595          | 619          |
| Irkutsk Region         | 91           | 39           | 2            |
| Trans-Baikal Territory | 6,432        | 5,747        | 4,996        |
| Republic of Buryatia   | 442          | 290          | 478          |
| <b>Total:</b>          | <b>8,183</b> | <b>7,275</b> | <b>6,657</b> |

In 2018 and the near future, the average staff number is planned to grow due to development of new production and business diversification expected at PJSC PIMCU (due to transfer of 1,109 people from Alliantransatom, JSC as of 10/1/2017), at JSC Dalur (startup of the territorial remote experimental section of Dobrovolnoye deposit), at JSC Khiagda (start of development of Vershinnoye Deposit) and at JSC RUSBURMASH (growth of drilling and geological exploration).

Table 34. Average Staff Number Trends by Classes in 2015-2017, persons

| Classes           | 2015         | 2016         | 2017         |
|-------------------|--------------|--------------|--------------|
| Executives        | 1,089        | 997          | 981          |
| Specialists       | 1,514        | 1,426        | 1,283        |
| Service Employees | 52           | 31           | 37           |
| Workers           | 5,529        | 4,821        | 4,356        |
| <b>Total:</b>     | <b>8,183</b> | <b>7,275</b> | <b>6,657</b> |

Workers dominate the average staff number with their share decreasing for the last three years from 67.6% (2015) to 65.4% (2017) due to reduction of worker job positions at PJSC PIMCU from 4,461 (2015) to 3,401 (2017) and creation of advanced jobs at JSC Khiagda and JSC Dalur.

Table 35. Personnel Distribution by Employment Type in 2015-2017, persons

| Personnel Distribution by<br>Employment Contract and<br>Employment Type | 2015  | 2016  | 2017  |
|---|-------|-------|-------|
| Actual number of staff on the payroll as of Reporting Period End        | 7,725 | 6,957 | 7,347 |
| Employed under indefinite term employment contracts                     | 7,278 | 6,690 | 6,957 |
| Employed under fixed term employment contracts                          | 447   | 267   | 390   |
| Part-time employees   | 41    | 51    | 89    |

Personnel Distribution by employment type shows increasing share of part-time employees from 3.8% in 2016 to 5.3% in 2017 with JSC VNIPIpromtehnologii accounting for the bulk whereof where year 2017 saw staff number reduction activity.

The share of fixed term employment contract employees in the total actual number of staff on the payroll as of the end of the reporting period increased from 0.7% in 2016 to 1.2% in 2017 due to the growing number of executed fixed term employment agreements at JSC RUSBURMASH.

### GENDER AND AGE STAFF STRUCTURE

Table 36. Staff Allocation by Gender in 2015-2017, persons

| Staff Allocation of Gender | 2015  | 2016  | 2017  |
|----------------------------|-------|-------|-------|
| <b>Men</b>                 |       |       |       |
| Number                     | 5,432 | 4,878 | 5,472 |
| % of total number          | 70.3% | 70.1% | 74.5% |
| <b>Women</b>               |       |       |       |
| Number                     | 2,293 | 2,079 | 1,875 |
| % of total number          | 29.7% | 29.9% | 25.5% |

Year 2017 saw further decrease of the share of young specialists from 42.0% as of 12/31/2015 to 33.8% as of 12/31/2017. The main reason for decrease of the young professionals' share was a preference given to keeping the more highly qualified and experienced employees during layoffs and/or the reduction of number of employees at PJSC PIMCU and JSC VNIPIpromtehnologii as well as transfer of 1,109 employees whose average age is 47.3.

## AGE ALLOCATION OF STAFF

**Table 37. Distribution of Company Personnel by Age in 2015-2017, persons**

| Age Allocation of Staff | 2015  | 2016  | 2017  |
|-------------------------|-------|-------|-------|
| <b>under 35</b>         |       |       |       |
| Number                  | 3,244 | 2,615 | 2,480 |
| % of total number       | 42.0% | 37.6% | 33.8% |
| <b>36 to 50</b>         |       |       |       |
| Number                  | 2,763 | 2,688 | 1,970 |
| % of total number       | 35.8% | 38.6% | 40.4% |
| <b>Over 50 years</b>    |       |       |       |
| Number                  | 1,718 | 1,654 | 1,897 |
| % of total number       | 22.2% | 23.8% | 25.8% |

## HR LIQUIDITY

**Table 38. Personnel Liquidity in 2015-2017, persons**

| Personnel Liquidity     | 2015        | 2016        | 2017        |
|-------------------------|-------------|-------------|-------------|
| JSC Atomredmetzoloto    | 11.2        | 20.2        | 8.6         |
| PJSC PIMCU              | 29.3        | 18.5        | 18.1        |
| JSC Khiagda             | 16.2        | 14.3        | 16.9        |
| JSC Dalur               | 15.7        | 12.0        | 9.4         |
| JSC RUSBURMASH          | 64.4        | 58.0        | 63.7        |
| JSC VNIPIpromtehnologii | 47.5        | 27.5        | 54.7        |
| ARMZ Service, LLC       | 29.9        | 28.9        | 25.2        |
| <b>Total:</b>           | <b>31.3</b> | <b>21.7</b> | <b>21.8</b> |

## PERSONNEL LIQUIDITY BY GENDER

**Table 39. Staff Liquidity by Gender in 2015-2017, persons, %.**

| Personnel by Gender                                | 2015  | 2016  | 2017  |
|--|-------|-------|-------|
| <b>Men</b>   |       |       |       |
| Men dismissed/resigned due to any reasons, persons | 1,959 | 1,045 | 1,023 |
| % of AVERAGE STAFF NUMBER                          | 25.4% | 15.0% | 13.9% |
| <b>Women</b>                                       |       |       |       |
| Men dismissed/resigned due to any reasons, persons | 606   | 531   | 428   |
| % of average of number of employees                | 7.8%  | 7.6%  | 5.8%  |

**Table 40. Number of Dismissed/Resigned Employees by Operation Regions in 2015-2017, persons**

|                        | 2015         | 2016         | 2017         |
|------------------------|--------------|--------------|--------------|
| Moscow                 | 238          | 184          | 203          |
| Kurgan Region          | 103          | 79           | 92           |
| Irkutsk Region         | 64           | 50           | 73           |
| Trans-Baikal Territory | 1,942        | 1,172        | 985          |
| Republic of Buryatia   | 218          | 91           | 98           |
| <b>Total:</b>          | <b>2,565</b> | <b>1,576</b> | <b>1,451</b> |

Year 2017 saw further decrease of the share of young specialists from 42.0% as of 12/31/2015 to 33.8% as of 12/31/2017. The main reason for decrease of the young professionals' share was a preference given to keeping the more highly qualified and experienced employees during layoffs and/or the reduction of number of employees at PJSC PIMCU and JSC VNIPIpromtehnologii as well as transfer of 1,109 employees whose average age is 47.3.

Deceleration of staff number decrease at PJSC PIMCU allowed keeping the total Holding Company's staff liquidity at the level not exceeding 22% in 2016 to 2017.

In this connection, the total staff liquidity level at JSC RUSBURMASH and JSC VNIPIpromtehnologii increased versus 2016 to 63.7% and 54.7%, respectively.

In accordance with the applicable Russian labor legislation, employees are notified of a substantial change of their working conditions at least 2 months before the event.

## 4.5.2.2. Remuneration System

Remuneration is paid to employees according to the Unified Standard Remuneration System of ROSATOM's organizations (USRS), which allows for a unified approach to the formation of wages in the Holding Company and stable income of employees.

Under conditions of fluctuating product prices and sales on which the revenue depends currently, the share of total payroll costs remains at the level of 30% to 37% among other things due to the fixed (guaranteed) portion of the employee wage exceeds 75%.

**Table 41. Wages and Insurance Contributions in 2015-2017, thousand RUB**

| Indicator                                 | 2015      | 2016      | 2017      |
|---|-----------|-----------|-----------|
| Payroll, total                            | 5,489.855 | 5,204.010 | 4,959.312 |
| including:                                |           |           |           |
| Payroll                                   | 4,266.722 | 4,034.232 | 3,865.782 |
| Vacation Provision Accrual                | 726.346   | 671.341   | 638.767   |
| Annual Bonus Provision Accrual            | 483.553   | 483.894   | 447.602   |
| Payroll of Civil Law Contract Employees   | 13.233    | 14.542    | 7,161     |
| Taxes (Insurance Contribution) on Payroll | 1,618.373 | 1,534.339 | 1,475.251 |

The structure of payroll costs did not change despite reduced staff number and remained proportional to 2016.

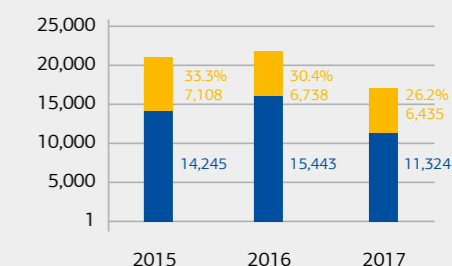
The average monthly wage amount for the Holding Company overall increased by 4.3% year on year to RUB 62.0 thousand in 2017.

## AVERAGE MONTHLY WAGE

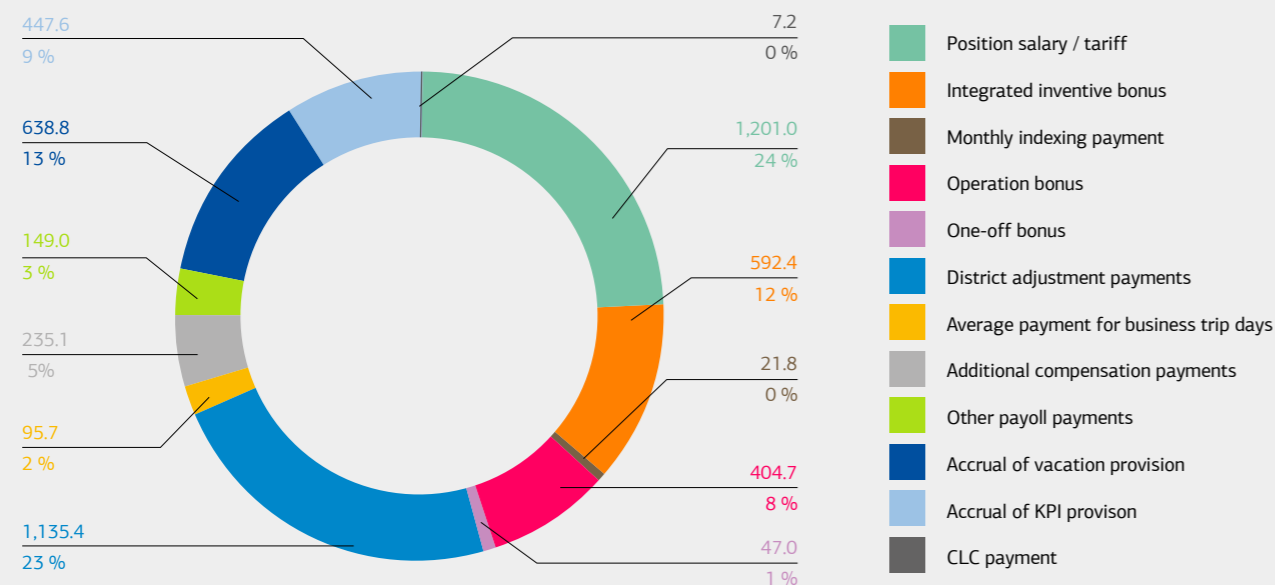
**Table 42. Average Monthly Wage at Enterprises of the Company in 2015-2017, RUB**

|                         | 2015   | 2016    | 2017    | Relative share, 2017/2016, % |
|-------------------------|--------|---------|---------|------------------------------|
| PJSC PIMCU              | 43,125 | 45,316  | 48,393  | 106.8%                       |
| JSC Khiagda             | 58,513 | 60,919  | 63,202  | 103.7%                       |
| JSC Dalur               | 39,105 | 40,832  | 43,309  | 106.1%                       |
| JSC RUSBURMASH          | 63,591 | 70,688  | 65,799  | 93.1%                        |
| JSC VNIPIpromtehnologii | 10,924 | 112,672 | 118,235 | 104.9%                       |

Wages at PJSC PIMCU, PJSC Khiagda and PJSC Dalur grew due to indexation of wages as of 9/1/2017 by setting the monthly indexing payment or changing its amounts and at JSC VNIPIpromtehnologii due to retirement payments on reduction of staff number.



**Figure 42. Share of Payroll Costs in Revenue in 2015-2017, Million RUB**



**Figure 43. Structure of Payroll Costs (exclusive of Insurance Contributions) in 2017, million RUB, %**

The wage structure showed growth of the share of one-off bonus payments from 0.5% in 2016 to 0.9% in 2017, monthly indexing payment from 0.1% to 0.4% and payment of business trip days from 1.6% to 1.9% on the average. At the same time, the share of operation bonus payment decreased from 9.1% to 8.1% and the share of compensation payments decreased from 5.0% to 4.7%.

In 2017, all Holding Company's enterprises removed restriction on grades and positions for bonuses for critical tasks (CTs) as well as bonus payment amount to employees for CTs per one achievement and for the year in total which resulted into increase of CT bonus payment cases from 594 in 2016 to 959 in 2017 and increase of one-off bonus payment amounts from RUB 20.4 MM to RUB 28.5 MM.

As of 1/1/2017, there were changes to the salary structure at JSC Khiagda and JSC Dalur and operating bonus payments were introduced for the employees of the production divisions. Operating bonus payment recipients were 826 employees whom over 7.5 thousand bonuses were paid in 2017 for the total amount of RUB 30.2 MM.

In 2018 to 2019, the following actions to improve remuneration system performance at the Holding Company's enterprises are planned:

- harmonizing wage matrices at PJSC PIMCU, JSC RUSBURMASH and JSC VNIIPromtehnologii;
- revising target matrices for operating bonuses and target amount of operating bonuses, including by increasing the operating bonus amount by

not more than 20% of the IAI transferred to the operating bonus;

- increasing the share of variable payment in the wage structure to 25% by 2019;
- implementation of project bonuses.

The minimum basic wage (the amount of salary set for the employee, integrated additional incentive and monthly indexing payout) at all the Holding Company's enterprises exceeded the subsistence minimum for capable population set forth in the operating regions.

#### MINIMUM WAGE AMOUNT IN OPERATING REGIONS

**Table 43. Ratio of the subsistence minimum for capable population in the operating region and the initial level wage, RUB.\***

| Region   | 2015   | 2016   | 2017   |
|--|--------|--------|--------|
| <b>The minimum base wage (subject to regional ratios and northern bonuses) at the Holding Company's enterprises in the operating regions</b> |        |        |        |
| Moscow   |        |        |        |
| JSC RUSBURMASH   | 50,000 | 45,000 | 45,000 |
| JSC VNIIPromtehnologii   | 26,890 | 25,000 | 35,800 |
| Kurgan Region  |        |        |        |
| JSC Dalur  | 10,499 | 10,500 | 10,500 |
| JSC RUSBURMASH   | 15,112 | 11,007 | 11,007 |
| Irkutsk Region   |        |        |        |
| JSC RUSBURMASH   | 29,700 | 38,254 | 38,254 |
| Trans-Baikal Territory   |        |        |        |
| PJSC PIMCU   | 8,746  | 12,600 | 12,600 |
| JSC Khiagda  | 13,049 | 13,647 | 15,312 |
| JSC RUSBURMASH   | 16,974 | 16,974 | 16,974 |
| JSC VNIIPromtehnologii   | 15,150 | 18,375 | 64,500 |
| Republic of Buryatia   |        |        |        |
| JSC Khiagda  | 15,129 | 15,129 | 16,974 |
| JSC RUSBURMASH   | 18,900 | 23,510 | 23,510 |
| <b>Subsistence Minimum Amount for Capable Population set forth in the Regions (as of Q4 2015)</b>  |        |        |        |
| Moscow   | 17,296 | 17,487 | 18,453 |
| Kurgan Region  | 9,418  | 9,864  | 10,371 |
| Irkutsk Region   | 10,410 | 10,450 | 10,450 |
| Trans-Baikal Territory   | 10,633 | 11,023 | 11,254 |
| Republic of Buryatia   | 9,859  | 10,005 | 10,489 |

\* The operating regions – is the constituent of the Russian Federation where the Holding Company operates: Moscow, Trans-Baikal Territory, Kurgan Region, Republic of Buryatia, Irkutsk Region

### 4.5.3. HR Professional Development

Personnel training and development is one of the Company's HR policy priorities.

#### 2017 RESULTS:

To ensure timely, continuous and targeted development of knowledge and formation of new skills, actions were taken to train and upgrade the Holding Company's employees using different forms of education (external, internal and remote ones).

In 2017, the Company continued developing the remote form of education (1,264 man-courses completed). Twelve employees of the Holding Company's enterprises trained under RPS programs were successfully certified by ANO ROSATOM Corporate Academy. 484 persons were trained under the Executive School

Program and 97 persons were trained under the Business Performance Management Program. Within the HR School framework two HR directors successfully completed their certification under the HR Management Program at ANO ROSATOM Corporate Academy.

Based on PJSC PIMCU's Course Training Complex, course training was organized and conducted in the following jobs: Mining Breakage Face Worker, Timber Man, Mining Worker for Fire Prevention and Firefighting, Elevator (Tower) Operator, Pump Unit Operator, Electrician for Maintenance and Repairs of Equipment, Track Builder, Elevator (Tower) Cradle Worker, Shunter, etc. 2,411 people were trained in total.

Within the implementation framework of the Career and Succession

Management Industrial Project, career roadmaps and requirement profiles were developed for positions up to the specialist level. Succession plans for key positions in the Holding Company were drafted resulting into promotions of five employees in 2017.

#### ARMZSkills

For the first time in March 2017, the ARMZSkills divisional professional mastery contest was conducted under the World Skills methodology in four competencies: Chemical Analysis, Welding Processes, Dosimetry, Network and System Administration where 59 participants and experts from the Holding Company's enterprises participated. The contest was the selection one for formation of the team that took part in the second Industrial professional mastery Atom Skills

2017 championship of the ROSATOM State Atomic Energy Corporation in Ekaterinburg.

**PLANS FOR 2018:**

- expanding the list of programs for training localization at the Holding Company's enterprises;
- implementation of training plans and programs aimed at developing managerial skills of senior, middle and junior managers;;
- holding the second divisional professional mastery ARMZSkills contest under the World Skills methodology in six competencies: Laboratory Chemical Analysis, Welding Processes, Dosimetrist, Special Motorcar Driver, Engineering Design, Network and System Administration;
- drawing up succession plans for all critical positions in the division;

- development of mentorship for transfer of critical knowledge.

**TALENT POOL**

In 2017, 67% of employees appointed to Top 1000 positions were selected from the senior and middle management talent pool. 63% of employees included in senior, middle and line management talent pool were promoted to a new position.

**CHANGE LEADERS 2.0 CONFERENCE**

One of the most important events aimed at minimizing the risks of the employees' destructive behavior was the second Change Leaders 2.0 conference. In Krasnokamensk, the conference was held for more than 100 employees of PJSC PIMCU and JSC RUSBURMASH's business units. During the conference in the form of live communication and dialog, participants, jointly with PJSC PIMCU

and Holding Company's executives, were discussing changes at the enterprises and plans for the future. Special attention was paid to the following problems. In the course of brainstorming and master classes, Change Leaders were looking for solutions and actively developing projects within their teams to be used for solution of critical problems at enterprises.

**4.6.1. Social Investment Management**

Social capital management and establishing partnerships in operating regions is the part of the Mining Division strategy. ARMZ strives towards recognition and fair appraisal of its employees' achievements. The Company is sure that additional social protection initiatives for its employees allow them to feel comfortable. Therefore, the Company provides its employees with the full set of statutory social guarantees and allows them to use additional social programs.

Internal social investment programs have the following priorities:

- employee development, job and qualification upgrading of employees;
- corporate culture formation;
- recreation and health rehabilitation of employees and their family members;
- attracting and supporting the youth including educational programs;
- sporting events;

- provision of pecuniary aid;
- aid to veterans;
- implementation of children programs.

**4.6.1.1. Work with Youth and Students**

**CHANGE SUPPORT TEAM**

In 2017, the members of the change support team (CST) who are the most active employees of the Holding Company such as increasing the level of awareness of values and strategic objectives at the division's enterprises, introduction of new employees to the corporate culture and assistance to organization of events dedicated to the 10th anniversary of the Holding Company.

**AFTERBURNER 2017**

The Afterburner 2017 international forum of young power and production employees had been held from 9 until 15 July 2017 in Kaluga Region. The Afterburner is a unique project, a consortium of inter-corporate and inter-industry scale. Development of Hard-to-Access Areas and Pure Energy Projects where employees of the Mining Division took part ranked the first and second within the forum framework.

**THE 19TH FESTIVAL OF YOUNG PEOPLE AND STUDENTS**

The Festival had been held since the 15th until the 19 of October in Sochi. Seven people participated in the Future Industries science and education stream at the Festival. Participants were analyzing current global challenges and trends, and forecasting how the world, technologies, business and social environment would change in the near decades. The result of this large work were young people's initiatives for improvement of social life to become foundations of the Global Declaration of the World's Young People. The document would reflect key values of the future: longevity and high quality of life, development of new territories and space as well as security and equal rights for everyone. Afterburner and the Festival have an important objective in common. It is promoting ROSATOM State Atomic Energy Corporation's brand as the international leader in innovations, technologies and leadership.



**Table 44. Training Hours per Person by the Company's Enterprises, man-hours**

| Category                | 2015  | 2016  | 2017  |
|-------------------------|-------|-------|-------|
| JSC Atomredmetzoloto    | 21    | 14.32 | 22.8  |
| PJSC PIMCU              | 18    | 24.86 | 15.91 |
| JSC VNIPIpromtehnologii | 31.22 | 29.47 | 19.25 |
| JSC Dalur               | 68.8  | 67    | 93.8  |
| JSC RUSBURMASH          | 12    | 95    | 18.66 |
| JSC Khiagda             | 82    | 76.3  | 55.8  |
| JSC Atomredmetzoloto    | 26.3  | 18.5  | 19.75 |
| PJSC PIMCU              | 36.19 | 38.02 | 31.3  |
| JSC VNIPIpromtehnologii | 39.8  | 33.76 | 29.79 |
| JSC Dalur               | 24.2  | 40.1  | 93.1  |
| JSC RUSBURMASH          | 28    | 60    | 86.17 |
| JSC Khiagda             | 83    | 64.3  | 39.6  |

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**4.6. Social Capital**

**PERFORMANCE FOR 10 YEARS:**

- formation of ROSATOM's CTG to allow increasing tax proceeds of the regional budget of Trans Baikal Territory;
- use of increased proceeds of the regional budget to take actions aimed at improving quality of life in Krasnokamensk, financing of waste treatment facilities of the first and second stages, airport, Krasnokamensk to Matsievskaya

motorway, Dauria Culture Club, construction of the Sporting Facility, commerce and entertainment center, reconstruction of the children park, etc.;

- kindergarten for 240 places (with the swimming pool, gym and a unique playground) opened in Krasnokamensk;
- commissioning of the apartment block for 60 apartments in Krasnokamensk;

- Chita to Krasnokamensk flights of Aero service airline from Chita. Procurement of the new L-410 airplane;
- reconstruction of the Argun gym in Krasnokamensk;
- inauguration of the advanced school for 270 places in Uksyanskoye Village of Dalmatovsky District of Kurgan Region.

**Literature club**

Since 2017, ARMZ has been hosting its Literary Club, the platform where anyone can be a speaker, a place for exchange of knowledge and development of public speaking skills. Within the Literature Club framework, the Creation and Development of the Mineral Resource Base of Domestic Nuclear Industry book and the Uranium Geotechnology were presented.

**What? Where? When?**

Within the framework of the Holding Company's tenth anniversary, the intra-divisional championship for the What? Where? When? game was held. Seven teams represented the Holding Company's enterprise. The game included three tours of ten question each. The key topic of the question was history of the nuclear industry including creation of its feedstock complex. The players also made good use of their general knowledge of thermodynamics and molecular physics and, of course, there were humorous general logic and intellect questions. JSC Khiagda's team became the absolute.

### 4.6.1.2. Implementation of Children Programs

#### NUCKIDS-2017

The Holding Company supported staging of the Just A Summer Rain musical created by participants of ROSATOM's Nuclear Kids International Creative Children Project. Dauria Culture Club (Krasnokamensk) hosted the selection tour in which 50 children of PJSC PIMCU's employees and 30 children of Krasnokamensk resident took part. Five participants entered the final.

#### ROSATOM SCHOOLCHILD

On the threshold of the jubilee date, the ROSATOM Schoolchild Collect a Bag of "Excellent" Scores Industrial project with 42 registered participants from comprehensive schools of Moscow and Moscow Region.

In June, the celebration dedicated to the Russia Day was held where 109 schoolchildren, winners of the ROSATOM Schoolchild contest, were given valuable prizes.

#### «Pack Your Schoolbag!»

In May Krasnokamensk hosted the Pack Your Schoolbag celebration in the course of which 240 future first-graders were given schoolbags with PJSC PIMCU and JSC Atomredmetzoloto's logos.

#### Trans Urals Navigator Technological Job Orientation Park

Within the implementation framework of the project senior schoolchildren from Uksyanskaya Comprehensive School visit JSC Dalur's production sites on an annual basis.

Year 2017 also saw the following events hosted in Krasnokamensk:

- PJSC PIMCU's I Am For Healthy Living quest game;
- the Best Voice City Contest dedicated to the People's Unity day;
- the first Smart Boys and Smart Girls game championship;
- completion of tests from the All-Russian Physical Education and Sporting Complex I Am Ready to Labor and Defense;
- contest of drawings and artworks named Our Glorious Victory in which more than 200 children and adults participated;
- traditional track and field competition for schoolchildren and college students;
- the theatrical contest It's Good to Live Without the War;
- Spring and Winter songs soiree program;

### 4.6.1.3. Sporting Events

#### ARMZ SPARTAKIAD

On 23 September 2017, Krasnaya Presnya Stadium in Moscow hosted ARMZ's Fifth Anniversary Spartakiad. Participating in it were combined teams of the managing company and of all

the Holding Company's enterprises as well as family members of employees of organizations from the Moscow Region. For the fourth year in a row, PJSC PIMCU's combined team ranked

the first. Combined teams of ARMZ and JSC RUSBURMASH ranked the second, the JSC VNIIPromtehnologii's team ranked the third.

### 4.6.1.4. Support to Retired Veterans

Table 45. Number of Registered Unemployed Retirees in 2015-2017, persons.

| Number of registered unemployed retirees | 2015  | 2016  | 2017  |
|--|-------|-------|-------|
| <b>Total</b>                             | 3,172 | 2,998 | 2,463 |
| of which                                 |       |       |       |
| Nuclear Industry Honorary Retirees       | 1,169 | 1,183 | 1,103 |
| Nuclear Industry Honorable Retirees      | 2,003 | 1,815 | 1,360 |

Since June 2017, unemployed retirees registered with JSC Atomredmetzoloto have been entitled to partial (not exceeding 90%) reimbursement of the cost of travel vouchers bought independently. Since 2017, two nuclear industry honorary retirees have exercised this right.

Year 2017 saw start of PJSC PIMCU and PIMCU Veteran Council's new social project, PJSC PIMCU's Veteran Soiree hosting monthly warm and friendly meetings of PIMCU's business units veterans with young employees, students of sponsored schools and creative studios of Dauria Culture Club. Presentation of the Creation and Development of the Domestic Nuclear Industry's Mineral Resource Base monograph written by veterans and published for the tenth anniversary of ARMZ Uranium Holding Co.



### EVENTS HOSTED BY THE PUBLIC VETERAN ORGANIZATION OF JSC ATOMREDMETZOLOTO IN 2017:

- meetings of representatives of the veteran organization with the Company's management on the Victory Day and Nuclear Energy and Industry Employee Day (to receive pecuniary aid and gratitude for many years of good faith labor, large contribution to development of nuclear industry and in connection with the 10th anniversary of incorporation of ARMZ Uranium Holding Co.). Invitations to the celebration concert at the Russian Army Theater were also issued;
- inclusion of memoirs of veterans, Alexander S. Babkin, Vladimir G. Fomenkov, Yuri S. Borozdin, into the ROSATOM's Living History section of ROSATOM's electronic library, www.memory.biblioatom.ru;
- lecture What Is Atom about peaceful uses of nuclear power. Nikolai P. Petrukhin, the veteran of nuclear industry and representative of the veteran organization of JSC Atomredmetzoloto, shared his knowledge, professional experience and wisdom with students of Moscow school 1317.



### 4.6.1.5. Trade Unions and Collective Bargaining Agreements

Currently, there are three collective bargaining agreements in force within the Holding Company (PJSC PIMCU, JSC VNIIPromtehnologii and JSC Dalur) and two trade union organization (PJSC PIMCU and JSC VNIIPromtehnologii). At JSC Dalur, employee interests are represented

by the Staff Board, which takes active participation in interaction with the employer.

The share of trade union organization members in the total staff number of the Holding Company exceeded 45% as of 12/31/2017.

Enterprises' transfers to trade union organizations' account for hosting sporting and cultural events within the authorized activities framework of the trade union decreased from RUB 11.3 MM (in 2016) to RUB 8.7 MM (in 2017).

Still, other trade union upkeep costs (payroll, stationery, office equipment, motorcars, cleaning, communications, etc.) increased by 1.8 times in 2017 versus the actual level in 2016 and the share of production planning section (PPS) functioning costs within total transfers to accounts of trade union organization increased from 9.5% in 2015 to 26.0% in 2017.

Table 46. Number of Employees Covered with Collective Bargaining Agreements and Being Trade Union Members in 2015-2017, persons

|   | 2015  | 2016  | 2017  |
|---|-------|-------|-------|
| Number of Employees covered with Collective Bargaining Agreements | 6,300 | 5,651 | 6,040 |
| Number of Trade Union Organizations within the Holding Company    | 3     | 3     | 3     |
| Number of Trade Union Organization Members                        | 4,539 | 3,748 | 3,357 |

Table 47. Upkeep Costs of the Holding Company's Trade Union Organizations, Million RUB, %

|  | 2015     | 2016     | 2017    |
|--|----------|----------|---------|
| Transfers to accounts of trade union organization for hosting sporting and cultural events     | 10,199.9 | 11,280.7 | 9,358.0 |
| PPS Functioning Costs  | 1,076.3  | 1,851.8  | 3,281.0 |
| Share of PPS functioning costs in total transfers to PPS accounts of trade union organizations | 9.5%     | 14.1%    | 26.0%   |

#### PLANS FOR 2018:

- hosting the corporate spartakiad among the Holding Company's enterprises dedicated to the 50th anniversary of the primary uranium mining enterprise PJSC PIMCU;
- hosting contests, the Best ARMZ Employee and What? Where? When?;
- hosting the uranium-related quest for schoolchildren within the framework of the ROSATOM Schoolchild: Collect a Bag of "Excellent" Scores Industrial program;
- hosting presentation of job-related books within the Literature Club framework and promotion of ROSATOM's Industrial library;
- organization of change support teams at the Holding Company's enterprises.

Engagement is emotional and intellectual condition motivating employees to work as efficiently as possible.

## 4.6.2. Social Capital Management Performance

RUB 212.9 MM were spent on events and social obligations in 2017.

Within the structure of social costs (SCs), the share of private retirement insurance increased from 22.7% in 2016 to 24.0% in 2017 and the share of hot catering costs for rotational staff increased from 3.7% to 7.4%. On the other hand, the share of voluntary healthcare insurance of employees decreased from 19.6% to 18.2%

and the share of gratuitous travel to vacation, medical, etc. locations decreased from 17.7% to 16.5%.

Unit social payment costs excluding the payment of gratuitous travel to the vacation location increased, for the Holding Company overall, from RUB 23.9 thousand per employee in 2016 to RUB 26.5 thousand in 2017.

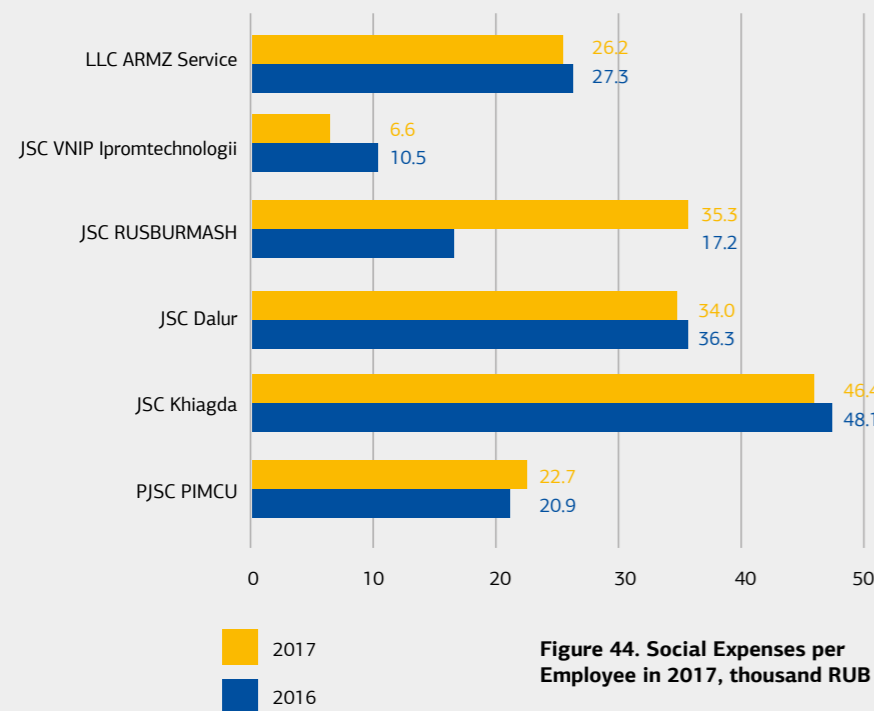


Figure 44. Social Expenses per Employee in 2017, thousand RUB

Year 2018 is forecast to see increase of social costs to RUB 262.6 million and increase of unit social payment costs to RUB 33.3 thousand per employee p.a.

PJSC PIMCU is expected to show the largest growth as the share of private retirement insurance costs there will exceed 40% of the enterprise's SC structure and the total amount thereof may increase by 1.7 times versus the

actual level of 2017 due to material increase of employee retirements.

### PERSONNEL ENGAGEMENT

In keeping with the tradition, the employees of the Company took part in the annual industry nomination program «ROSATOM's Person of the Year», which is intended to recognize the best industry employees' achievements

### BUSINESS CASE: PROMOTION OF RPS PROJECTS AMONG PIMCU'S EMPLOYEES

Year 2017 saw implementation of the integrated PR project Promotion of Implementation of Performance Improvement Projects within the Framework of ROSATOM Production System among PJSC PIMCU's Employees. Creating the constantly positive internal information field, forming positive images of RPS leaders, using hotlines, hosting contests and information meetings with employees, etc. allowed increasing employees' activity for development, submission and implementation of RPS projects and SR. Actions taken within the internal communications domain resulted into increase of the number of implemented RPS projects from 16 in 2016 to 144 in 2017 (nine-fold increase!) and increase of the number of SRs submitted from 207 in 2016 to 826 in 2017 (four-fold increase!).

at the very top level of ROSATOM's management.

In 2017, JSC Khiagda participated in the annual engagement level survey ROSATOM Cares About Your Opinion for the first time. Based on results obtained from the enterprises, action plans were developed to increase employee engagement level.

### PLANS FOR 2018:

Implementation of talent pool development programs «ROSATOM Wealth», «ROSATOM Capital» and «ROSATOM Talents» as well as carrying out new selective measures with a view to form the pool of high-potential middle and junior managers for preparation to work on key positions and projects.

Table 48. Personnel Engagement in 2015-2017, %

|                        | 2015      | 2016      | 2017      |
|------------------------|-----------|-----------|-----------|
| JSC Atomredmetzoloto   | 83        | 85        | 83        |
| PJSC PIMCU             | 46        | 54        | 59        |
| JSC RUSBURMASH         | 68        | 69        | 76        |
| JSC Khiagda            | -         | -         | 58        |
| <b>Division Total:</b> | <b>54</b> | <b>62</b> | <b>66</b> |

## 4.6.3. Contribution to Development of Operation Areas

Infrastructural investments are an important aspect of the Holding Company's social responsibility as the Holding Company's enterprises are located in different regions of the Russian Federation, Kurgan Region, Republic of Buryatia and Trans-Baikal Territory. The Company takes into account the possible social and economic consequences of the decisions

made and closely cooperates with all the stakeholders.

### TRANS-BAIKAL TERRITORY

Since 2013, ROSATOM has been using the Consolidated Taxpayer Group (CTG). PJSC PIMCU's participation in the CTG results into material additional profit tax transfers to the budget of the Trans-

Baikal Territory. In 2017, the Territory's additional income amounted to RUB 246 MM. Subsidies are preserved for air carriage along the Chita to Krasnokamensk to Chita route to maintain the airline ticket prices at the level accessible to residents of the city.

### BUSINESS CASE: CO-FINANCING OF FIBER OPTIC LINE CONSTRUCTION

On 2 June 2017, ROSATOM and the Government of Yakutia Republic executed the protocol for implementation of the Collaboration Agreement of 2012, the framework whereof provided for co-financing of the fiber optic line (FOL) construction along the route Sosnovo-Ozerskoye-Romanovskoye-JSC Khiagda's Production Site. JSC Khiagda contributed RUB 41 MM.

In January 2018, PJSC Rostelecom announced completion of the FOL construction. The last stage

saw laying of 91 kilometers of communication lines at the section from Romanovka village to the final destination, JSC Khiagda's mine. The total FOL length was 218 km. The sum of joint investments with Rostelecom, PJSC was RUB 123 MM.

Implementing the project will allow JSC Khiagda to accelerate information exchange between its production site in Bauntovsky Evenki District and its office in Chita. In the near future, videoconferencing will become possible between the enterprise's

business units and video surveillance will be organized to improve process safety. Prospects opened for implementation of the Smart Mine Project, the system for automation of all levels of production processes. One of activities within the Smart Mine Project framework was the Smart Helmet project to allow controlling physical condition of the employee, its location, pulse and body temperature.

In August 2017, cooperation of the Government of the Trans-Baikal Territory and JSC Atomredmetzoloto resulted into inauguration of the last reconstructed section of the regional motorway from Krasnokamensk to Matsievskaya with solid asphalt pavement. It is a reliable way for delivery of cargo to Krasnokamensk, an alternative to the railway increasing attractiveness of the Krasnokamensk Priority Social and Economic Development Area (PSEDA).

In 2017, creation of Krasnokamensk PSEDA accelerated. As of December 2017, the following PSEDA residents were registered:

- ATOMSPECCEMENT;
- Azbuka Zdorovia medical clinic;
- Krasnokamenskpromstroy, LLC implementing the project for Construction of the General Construction Cement 100 kt Production;
- Krasnokamensk Antimony Works, LLC planning creation of the new hydro metallurgical production facility for processing of antimony floatation concentrate to produce refined metallic antimony with the rated capacity up to 5,000 tpa

JSC Atomredmetzoloto supports creating new production facilities of the mining and adjacent industries in Krasnokamensk PSEDA. Development thereof will contribute materially to creation of substitute jobs for specialists dismissed from PJSC PIMCU, diversification of economy and social sphere of Krasnokamensk.

### REPUBLIC OF BURYATIA

JSC Khiagda's participation in the project for construction of the high-speed communication line in Bauntovsky District of Republic of Buryatia was the important milestone in 2017.

In furtherance of the subsoil license for deposits of Khiagdinskaya Group as well as for development of its operation area JSC Khiagda executed the Agreement for Assurance of Sustainable Social and Economic Development of Bauntovsky Evenki District of Republic of Buryatia with the administration of the municipality on 24 March 2017. Within the framework of the process, financial aid was provided to the district's social programs for the total amount of RUB 5 MM. Assistance was provided to repairs of local roads, the ATV was purchased to deliver food to remote settlements of the district, equipment was procured for preschools, and heating systems of local

settlements were repaired under the co-financing program.

In December 2017, the provisional process bridge across Vitim River constructed by and the expense of JSC Khiagda in 2009 was officially integrated into the regional motorway from Romanovka to Bagdarin and granted to Republic of Buryatia. The bridge is 233 meters long and over seven meters wide with two lanes, a walkway and lighting. Any vehicles may use the bridge as its cargo capacity is 62 tonnes. The construction cost amounted to RUB 200 MM.

### KURGAN REGION

In the Kurgan Region, JSC Dalur relying on the principles of business social responsibility is providing support to its operation areas within Dalmatovsky and Shumikhinsky Districts. The legal framework for the relationship is the agreement on social and economic partnership of the enterprise and Kurgan Region administration.

**Table 49. Taxes paid by key enterprises of ARMZ Uranium Holding Co. to regional and local budgets in 2015-2017, million RUB**

| Regional and Local Budgets  | ARMZ Uranium Holding Co.'s Enterprises | 2015         |              | 2016         |            | 2017         |              |
|-----------------------------|--|--------------|--------------|--------------|------------|--------------|--------------|
|                             |  | Company      | CTG          | Company      | CTG        | Company      | CTG          |
| Kurgan Region               | Total inclusive of                     | 128          | 196          | 145          | 45         | 158          | 81           |
|                             | JSC Dalur                              | 121          | 171          | 136          | 43         | 146          | 67           |
|                             | JSC RUSBURMASH                         | 7            | 25           | 9            | 2          | 11           | 14           |
| Republic of Buryatia        | Total inclusive of                     | 151          | 234          | 196          | 115        | 230          | 245          |
|                             | JSC Khiagda                            | 139          | 203          | 184          | 112        | 221          | 232          |
|                             | JSC RUSBURMASH                         | 12           | 31           | 12           | 3          | 8            | 13           |
| Trans-Baikal Territory      | Total inclusive of                     | 847          | 1,680        | 785          | 618        | 713          | 728          |
|                             | PJSC PIMCU                             | 793          | 1,594        | 736          | 580        | 675          | 687          |
|                             | JSC RUSBURMASH                         | 25           | 50           | 20           | 6          | 13           | 15           |
|                             | JSC Khiagda                            | 29           | 36           | 25           | 30         | 25           | 25           |
|                             | JSC VNIPIpromtehnologii                | -            | -            | 4            | 2          | 1            | 1            |
| Irkutsk Region              | Total inclusive of                     | 4            | 14           | 5            | 7          | 1            | 0            |
|                             | JSC RUSBURMASH                         | 4            | 14           | 5            | 7          | 1            | 0            |
| Arkhangelsk Region          | Total inclusive of                     | 3            | 5            | -            | 1          | -            | -            |
|                             | JSC RUSBURMASH                         | 3            | 5            | -            | 1          | -            | -            |
| Amur Region                 | Total inclusive of                     | 3            | 1            | 0            | -          | 0            | 1            |
|                             | JSC RUSBURMASH                         | 3            | 1            | 0            | -          | 0            | 1            |
| Republic of Sakha (Yakutia) | Total inclusive of                     | -            | -            | 2            | 3          | 0            | 0            |
|                             | JSC RUSBURMASH                         | -            | -            | 2            | 3          | 0            | 0            |
| <b>Total:</b>               |  | <b>1,136</b> | <b>2,130</b> | <b>1,133</b> | <b>788</b> | <b>1,102</b> | <b>1,057</b> |

#### FINANCIAL ASSISTANCE FROM STATE AUTHORITIES

**Table 50. Subsidies to PJSC PIMCU in 2015-2017, million RUB**

| Type  | 2015  | 2016    | 2017  |
|---|-------|---------|-------|
| The subsidy from the Ministry of Education, Science and Youth Policy of the Trans-Baikal Territory for partial reimbursement of costs of organizing and ensuring recreation and health rehabilitation of children as per the resolution of the Government of the Trans-Baikal Territory | 1.49* | 11.96** | 5.45  |
| Subsidy from the federal budget for reimbursement of radioactive waste handling costs   | -     | -       | 80.00 |

\* As per the Report on Intended Use of Subsidies, 7.02 million RUB were reimbursable for 2015. As of 12/31/2015, PJSC PIMCU had outstanding subsidies in the amount of 5.53 million RUB.

\*\* In 2016, subsidies were received as per the Report on Intended Use of Subsidies for 2016 in the amount of 6.43 million RUB and the indebtedness on subsidies for 2015 was repaid by the Ministry of Education, Science and Youth Policy of the Trans-Baikal Territory in the amount of 5.53 million RUB.

**Table 51. Regional Tax Benefits granted to PJSC PIMCU in 2015-2017, million RUB**

| Type   | 2015 | 2016 | 2017 |
|--|------|------|------|
| Property tax on power transmission lines and structures being integrated process parts thereof | 5.66 | 6.22 | 6.06 |

**Table 52. Regional Tax Benefits granted to JSC Dalur in 2015-2017, Million RUB**

| Type   | 2015 | 2016  | 2017  |
|--|------|-------|-------|
| Property tax associated with implementation of the investment project at the territories included into the consolidated registry of investment sites within the Kurgan Region  | 0.82 | 11.38 | 19.74 |
| Property tax on power transmission lines and structures being integrated process parts thereof.  | 0.88 | 0.61  | 4.00  |
| Profit tax for organization making specific investments  | 1.07 | 35.04 | 15.59 |
| Transport tax associated with implementation of the investment project at the territories included into the consolidated registry of investment sites within the Kurgan Region | 0    | 0     | 0.03  |

**Table 53. Regional Tax Benefits granted to JSC Khiagda in 2015-2017, million RUB**

| Type  | 2015 | 2016  | 2017   |
|---|------|-------|--------|
| Property tax associated with implementation of the investment project in accordance with Law of Republic of Buryatia No. 868-IV of 5/8/2009 On State Support to Investments within Republic of Buryatia | 0    | 47.26 | 200.28 |

JSC RUSBURMASH and JSC VNIPIpromtehnologii did not receive financial assistance from the state from the state authorities in 2015-2017.

#### INFLUENCE ON LOCAL POPULATION IN OPERATION REGIONS

Development of its operation areas plays an important part in achievement of its strategic objectives by ARMZ Uranium Holding Co. The Company, given its business geography, includes creating stable new jobs, improving its positive image and reinforcing public thrust into its key objectives.

#### MINIMUM WAGE AMOUNT IN OPERATING REGIONS

The minimum wage (taking into account regional coefficients and northern allowances) in all enterprises of the Holding Company exceeds the subsistence minimum set forth in its operation regions for capable population.

In keeping with the social responsibility principles, the Holding Company carries out the primary recruitment of employees (including executives) from among representatives of the local population. Over half of senior managers of ARMZ Uranium Holding in regions of operation is hired from local population. In the reporting period, the Holding Company did not exert any influence connected with the necessity of resettlement of residents.

**Table 54. Ratio of the subsistence minimum for capable population in the operating region and the initial level wage, RUB.\***

| Region   | 2014   | 2015   | 2016   |
|--|--------|--------|--------|
| <b>The minimum base wage (subject to regional ratios and northern bonuses) at the Holding Company's enterprises in the operating regions</b> |        |        |        |
| Moscow   |        |        |        |
| JSC RUSBURMASH   | 45,000 | 50,000 | 45,000 |
| JSC VNIPIpromtehnologii  | 23,450 | 26,890 | 25,000 |
| Kurgan Region  |        |        |        |
| JSC Dalur  | 9,840  | 10,499 | 10,500 |
| JSC RUSBURMASH   | 15,112 | 15,112 | 11,007 |
| Irkutsk Region   |        |        |        |
| JSC RUSBURMASH   | 17,940 | 29,700 | 38,254 |
| Trans-Baikal Territory   |        |        |        |
| PJSC PIMCU   | 9,088  | 8,746  | 12,600 |
| JSC Khiagda  | 12,116 | 13,049 | 13,647 |
| JSC RUSBURMASH   | 16,974 | 16,974 | 16,974 |
| JSC VNIPIpromtehnologii  | 12,877 | 15,150 | 18,375 |
| Republic of Buryatia   |        |        |        |
| JSC Khiagda  | 14,047 | 15,129 | 15,129 |
| JSC RUSBURMASH   | 16,682 | 18,900 | 23,510 |
| <b>Subsistence Minimum Amount for Capable Population set forth in the Regions (as of Q4)</b>   |        |        |        |
| Moscow   | 14,330 | 17,296 | 17,487 |
| Kurgan Region  | 8,146  | 9,418  | 9,864  |
| Irkutsk Region   | 9,178  | 10,410 | 10,450 |
| Trans-Baikal Territory   | 9,053  | 10,633 | 11,023 |
| Republic of Buryatia   | 8,659  | 9,859  | 10,005 |

\* The operating region – is the constituent of the Russian Federation where the Holding Company operates.

### INVESTMENTS INTO SOCIAL INFRASTRUCTURE AND CHARITY

ARMZ Uranium Holding Co. exerts material influence on social and economic development of its operation areas not only by participating in the CTG and forming the income base of regional and local budgets but also by implementing integrated social and charitable programs.

Key charity priorities are as follows:

- support to educational programs and projects;
- cultural and educational initiatives, and preservation of cultural heritage;
- support to environmental activities;
- promoting massive and amateur sports, and healthy way of life;
- support to patriotic values and patriotic upbringing.

In 2017, spending of JSC Atomredmetzoloto on charitable aid to companies and individuals amounted to RUB 7 million.

### KEY SOCIAL PROJECTS IMPLEMENTED AT THE COMPANY'S EXPENSE

#### Social project contest in Krasnokamensk

- Social Entrepreneur Day;
- contest of charitable and social projects providing for provision of grants to:
  - social entrepreneurs operating within the City of Krasnokamensk municipality, up to RUB 150 thousand;
  - NPO, up to RUB 200,000;
  - PJSC PIMCU's volunteers, RUB 50,000 each.



#### Program for support to educational institutions in the Kurgan Region.

The Dalur profile class was inaugurated based on Uksyanskaya Comprehensive School for children of enterprise employees to commemorate the 10th anniversary of the Holding Company.

RUB 3.0 million were dedicated for outfitting specialized classes and purchasing laboratory suites for studying and project activities in physics for schools in Uksyanskoye Village of Dalmatovsky District, Trud and Znanie Villages of Zverinogolovskoye District within the framework of the program.



Publication of the Illustration Perception Atlas book sets for dissemination among specialized children institutions of Krasnokamensk (Trans-Baikal Territory) and Dalmatovo (Kurgan Region)

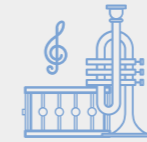


### Volunteer Initiatives of JSC Atomredmetzoloto's Employees 10 GOOD DEEDS TO ARMZ'S 10TH ANNIVERSARY

For the celebration of the Company's jubilee, employees initiated and implemented the 10 Good Deeds to ARMZ's 10th Anniversary program at their own cost and expense.



The Exhibition Window event for procurement of the exhibition window for exhibits of Privokzalnaya School Museum in Volokolamsk.



The Concert event for visiting the concert in the Music Hall proceeds from which were transferred to the Beacon House children hospice.



The Batteries event for disposal of waste batteries.



The Light Bulbs event for disposal of waste light bulbs.



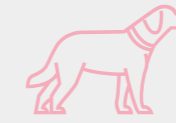
The Clever Decorations project for hosting the fair and exhibition jointly with Safe House and Maria's Children Art Center funds.



The Aleksin Orphanage project for procurement of creative kits for the orphans.



The Good Things project for collection of things for the needy.



The Alma event for collection of things for the Alma animal orphanage.



The Numismatics project for support to the patriotic and educational Numismatics Club.



Old Age is for Joy Project for collection of New Year presents for the elderly at retirement homes.



In 2017, all the Holding Company's organizations installed Good Deed Boxes for collection of things for orphans.

Over 100 employees of JSC Khiagda responded to the plea to help unwanted children. The enterprise used the funds collected to purchase children clothing, educational games and essential things for babies. Some presents were sent to Orphanage 1 in Chita and some of them were sent to Territorial Children Hospital in Chita treating orphans.

By the beginning of the school year, employees of JSC VNIPIromtehnologii used their own funds to procure school bags and utilities for children from Elatomsky Orphanage for Retarded Children in Kasimovsky District of Ryazan Region.

JSC Atomredmetzoloto does not provide assistance to commercial organizations, donations to political parties or takes part in state policy development and lobbying.

#### PLANS FOR 2018:

JSC Atomredmetzoloto will continue to provide charitable assistance to individuals and legal entities in accordance with the approved regulations and budget of the Company.

In 2018, the fifth annual social project contest is scheduled in Krasnokamensk.

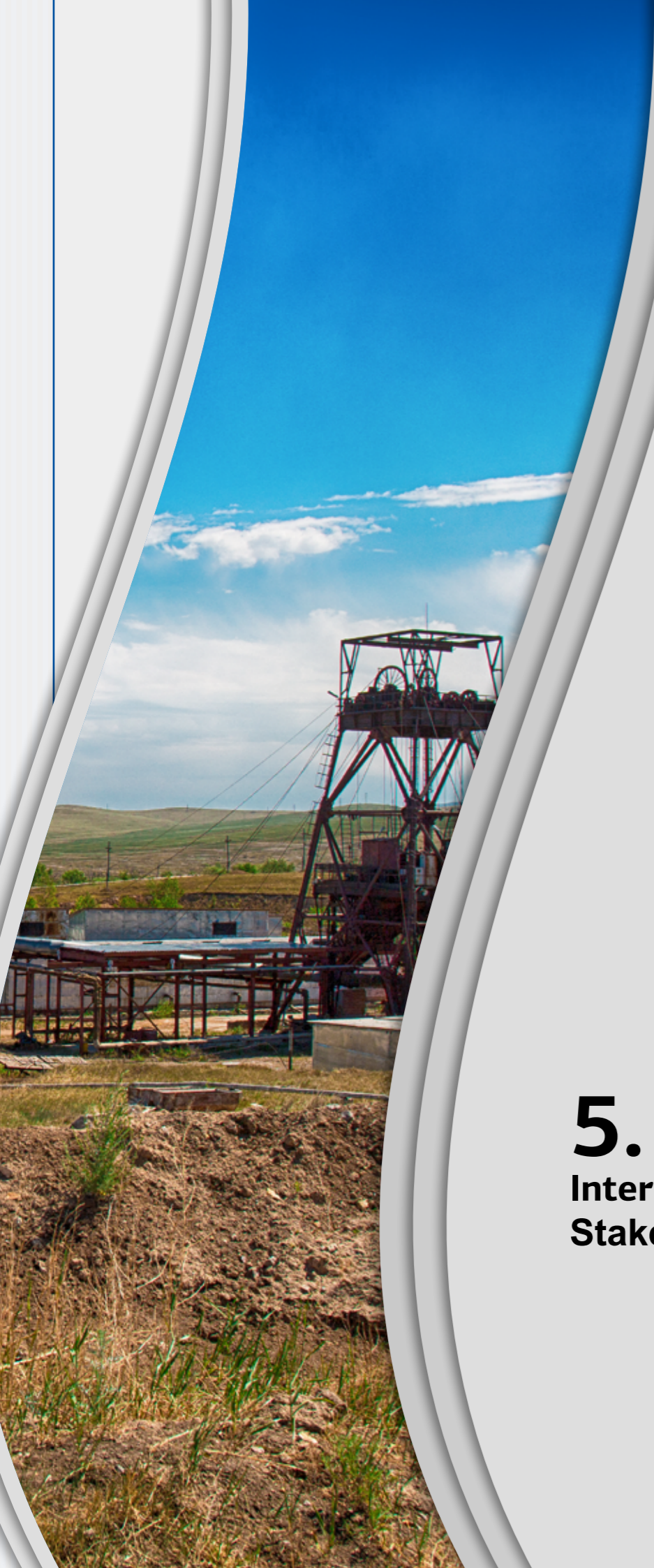
#### RESOLUTION OF DISPUTES WITH LOCAL COMMUNITIES

Provision of nuclear power development public acceptability is one of the priority strategic tasks of ROSATOM. JSC Atomredmetzoloto carries out activities in this area guided by the information openness principle.

In case of any issues arising during interaction with the public, the Company will be guided by RF legislation and requirements of ROSATOM.

No complaints about the impact on local community have been received at JSC Atomredmetzoloto.





# 5. Interaction with Stakeholders

## 5.1. Stakeholder Definition

JSC Atomredmetzoloto is working continuously to develop the stakeholder relation system. The Company studies their needs carefully and strives to build mutually beneficial relations based on the principle of active, regular and positive dialog.

ARMZ strives towards precise compliance with corporate social

responsibility principles. Striving to strike a balance between achieving its strategic objectives to supply natural feedstock to ROSATOM on the one hand and achieving social objectives on the other hand, ARMZ defines the range of persons interested in its decisions and actions to understand its influence and possible actions in response to them.

The Company stands for regular open communications with its stakeholders to ensure better understanding of their expectations and use the target approach to setting the corporate social responsibility agenda.

For the ranking stakeholder map, see JSC Atomredmetzoloto's Annual Report 2016, page 93.

G102-40  
G102-42

## 5.2. Stakeholder Relations

JSC Atomredmetzoloto builds its relations with its stakeholders on the business social responsibility principle.

The Company adheres to the systemic approach to resolution of social issues and social investment management contributing to reduction of social risks, assurance of long-term beneficial relations with its operation regions and reinforcing its image of the socially responsible Company.

In its business, JSC Atomredmetzoloto uses different stakeholder communications including general Shareholders Meetings, congressional and exhibition events, presentations, mass media notifications, hotlines for employees, federal communication projects and regional projects of the Holding Company.

To reinforce its positive image, JSC Atomredmetzoloto participates in some major international exhibitions such as:

- the Annual Symposium the World Nuclear Association;
- Saint Petersburg International Economic Forum (SPIEF-2017);
- ATOMEXPO 2017 International Forum;
- ATOMEX 2017 International Nuclear Industry Supplier Forum;
- Arctic the Territory of Dialog International Arctic Forum;
- Import Substitution 2017 National Forum;
- Russian Coal and Mining exhibition in Novokuznetsk, etc.

### BUSINESS CASE: ATOMREDMETZOLOTO, ATOMFLOT AND VOSTOKUGOL AGREE ON COOPERATION IN THE ARCTIC DURING THE ARCTIC THE TERRITORY OF DIALOG INTERNATIONAL ARCTIC FORUM

JSC Atomredmetzoloto, FSUE Atomflot and MC LLC VostokUgol executed the agreement on cooperation for integrated development of the Arctic Zone of the Russian Federation. The agreement

provides for mutually beneficial partnership and cooperation in a number of matters including ensuring failsafe and environmentally friendly icebreaker escort of ships along the Northern Marine Route tracks as well

as joint development of polymetallic, coal and other deposits including design and construction of mining and concentration enterprises in the Arctic Zone of the Russian Federation.

## 5.3. Commitment to Human Rights Protection

Protection of human rights is one of key principles of ARMZ's business. The Company tolerates no infringement of human rights in any forms in employee, business partner and other stakeholder relations.

In its business, the Holding Company strives to protect human rights as much as possible, demonstrates responsible attitude to its employees and guarantees that their labor is voluntary and duly rewarded.

In relation to upholding human rights, ARMZ relies on the following:

- Constitution of the Russian Federation and Russian laws;
- generally acceptable principles and rules of international law set forth in declarations, conventions and recommendations of the International Labor Organization and other international organizations;

- United Nations Universal Declaration on Human Rights
- Principles of the United Nations Global Compact
- UN Governing principles of entrepreneurship in relation to human rights, etc.

## 5.4. Public Reporting System

The Holding is the key organization of ROSATOM in terms of reporting. To increase its business transparency and expand interaction with all its stakeholders, the Holding Company has been publishing integrated annual reports every year since 2008.

In 2017, the Company approved the internal regulatory document,

Public Annual Reporting Standard of JSC Atomredmetzoloto for the first time. It sets forth general requirements to public annual reports and the public reporting system, the Report drafting procedure and contents including public reporting indicators and their data sheets.

The functional responsibility for drafting the public annual report rests with the public and local authorities relations department. The President of the Annual Report Drafting Team is the Deputy Director General for Business Strategy and Development, Ms. M.I. Liborakina.

### PLANS FOR 2018:

- upgrading of the information collection process for public reporting purposes due to adoption of JSC Atomredmetzoloto's Public Annual Reporting Standard;
- review of best practices of integrated report drafting.

## Approval of JSC Atomredmetzoloto's Public Annual Reporting Standard

### Our awards and achievements in 2017 in the field of the public reporting (for quality of 2016 report):

#### Federal Contests:

- Diploma for Contribution to Promoting Sustainable Development Principles in Annual Accounts of the Fourteenth Annual Contest of Annual Reports hosted by Expert RA International Rating Agency;
- Top 5 (best quality) annual reporting among almost 100 major Russian companies

according to Expert RA International Rating Agency.

#### International Contests:

- Golden award for Annual Report of Companies with Revenue not exceeding USD 100 Million at the LACP 2017 Spotlight Awards Global Communications Competition hosted by the League of American Communications Professionals (LACP);

- TOP 100 (rank 36 ahead of all nuclear companies) report drafting among global majors participating in the LACP contest;
- Golden award at the international marketing communication contest MarCom Awards 2017.

## 5.5. Interaction with Stakeholders when drafting the Report

### Dialogues with Stakeholders when Drafting the Report

ARMZ strives to ensure compliance of its reporting information with requests from stakeholders. In accordance with international standards, AA1000SES, GRI SRS and IIRS, such interaction has the form of dialogs with stakeholders. [Dialog No. 1](#). «Discussion of the draft concept of JSC Atomredmetzoloto Annual Report 2017, held in the form

of survey of stakeholders in November 2017.

[Dialogs No. 2–3](#) Performance for Ten Years: New Prospects of Sustainable Development of 24 January 2018.

[Public Consultations No. 4](#) «Discussing the draft 2017 annual report of JSC Atomredmetzoloto» of 25 April 2017.

In total, 11 proposals for revision of the draft report and improvement of interaction with stakeholders were received from stakeholders during the dialogue. They have all been taken into account during follow-up on the Report.

For details of past events, see JSC Atomredmetzoloto's web site at [www.armz.ru](http://www.armz.ru).

**Table 55. Accounting of the most significant stakeholder proposals put forward in dialogues when drafting 2017 Report**

| Stakeholders' proposals based on results of dialogs with stakeholders   | Proposing stakeholder class     | Accounting of proposals   |
|---|---------------------------------|---|
| Clarifying the priority topic of the report as Performance for Ten Years: New Prospects of Sustainable Development                                      | Scientific and Expert Community | Taken into account in the Report Details section and during Report drafting         |
| Conducting the factor analysis of the Holding Company's financial performance   | Scientific and Expert Community | Taken into account in section 4.2. Financial Capital                                |
| Provide more details on the Company's sustainable development activities  | Stakeholders                    | Taken into account in section 2.5. Sustainable Development Agenda                   |
| Detailing information on the Smart Mine digital modelling project   | Stakeholders                    | Taken into account in section 4.3.3. Digital Economy Performance                    |
| Focusing on disclosure of the qualitative component of JSC Atomredmetzoloto's contribution to ROSATOM's generation and development of operation regions | Local Communities               | Taken into account in section 4.3.6. Contribution to Development of Operation Areas |

## 5.6. Public Assurance Statement on Report

### Background

The management of JSC Atomredmetzoloto (hereinafter referred to as the ARMZ Uranium Holding Co. or Company) has suggested that we should assess its integrated public annual report 2017 (hereinafter referred to as the Report) from the standpoint of completeness and materiality of information disclosed in it and assess efficiency of the Company's management response to wishes and comments of stakeholders.

For this purpose, the Company provided us and our representatives with a possibility to participate and put forward our comments in four meetings with stakeholders, which were held:

- in November 2018. remote survey of stakeholders to discuss the draft concept of JSC Atomredmetzoloto's annual report 2017 and update essential topics;

- 1/24/2018 Dialogs No. 2 and 3 Performance for Ten Years: New Prospects of Sustainable Development;
- 4/25/2018 Public consultations to discuss the draft annual report.

Within the framework of the events we were allowed to express our opinion freely.

### Draft Report Assessment Procedure

Our conclusions are based on the comparative analysis of two versions of the Report (the draft Report for public consultations and the final version of the Report) and materials provided to us based on results of dialogs conducted and consultations (minutes, stakeholder comment accounting tables) as well as on comments received from management and employees of the Holding Company during event conducted for public endorsement of the Report.

Verification of the information in the Report as well as compliance of the Report with both Russian and international reporting systems is not the matter of public endorsement.

We comply with ethical requirements to independence and fairness of appraisals, and express our personal expert's opinion and not the opinion of the companies whose representatives we are. All participants of public consultations were absolutely free to express their opinion. We confirm that

we have received no remuneration from the Company for participation in the public endorsement procedure.

Our work results are executed in the form of this Statement of public endorsement containing judgments, in respect of which we have reached overall agreement.

During the evaluation, we took the following criteria into account:

- the Report's focus on the requirements of the chosen accounting standards for sustainable development (AA1000SES and GRI SRS);
- application of key reporting principles;
- materiality of the topics set forth in the Report;
- completeness and balance of the information including coverage of three key sustainable development topics such as economy, environment and social relations;

- response to stakeholders' wishes;
- persuasiveness and cohesiveness of the data presented.

## Assessments, Comments, and Recommendations

We evaluate the Report positively in terms of its structure and contents. JSC Atomredmetzoloto prepared and informative and well-structured Report meeting our expectations. It is important that the Company voluntarily committed to prepare the Report and for the 10th consecutive year, it has been demonstrating that it strives to reach public and environmental satisfaction and is prepared to engage in open dialogue with stakeholders about various issues concerning

its activities. We can see that the Company's management realizes the importance and prospects of engaging stakeholders.

An obvious advantage of the Report is that it was prepared in compliance with international standards (Global Reporting Initiative (GRI SRS), AA1000 Institute of Social and Ethical Accountability standards, and International Integrated Reporting Standard (IR 1.0). The integrated nature of the Report allows fully disclosing

information on the Company's core business and its performance in terms of sustainable development.

We are not aware of any facts that could undermine the accuracy of the data included in the Report. We view the information disclosed in the Report as sufficient both in terms of compliance with international public reporting standards and taking into account stakeholder comments made at the Report preparation stage.

## Materiality of the Information

The Report touches on all topics that are considered essential by the stakeholders.

We note that the Company's methodology for assessment of materiality of topic based on international standards allows the

Company to consider opinions of all its stakeholders.

The priority topic of the report, [Performance for Ten Years: New Prospects of Sustainable Development](#) is disclosed throughout the Report with overview tables of performance for ten

years attached to each chapter and subsection. We acknowledge that during dialogues, the Company suggested that stakeholders should generate recommendations for the priority topic disclosure in the Report. We believe that all material information on the priority topic has been disclosed.

## Balance and Completeness of the Information

We believe that the Report discloses the information in full. Sufficiently complete information is disclosed on a balanced basis. Virtually all aspects of the Company's business influencing

economy, social sphere and the environment, and being of interest to stakeholders. For better compliance with the completeness principle, the Report provides references to governing

documents and additional public information sources including the ones in the corporate web site.

We are aware of no omissions of material information.

## The Company's response to stakeholder recommendations

When drafting the Report, one remote and three live events were held for stakeholders. We note that the Company involves stakeholders regularly in its annual report drafting and responds to all questions received during public dialogues. The

Company's management records all stakeholder comments, suggestions and recommendations, analyzes them and responds to them positively.

Thus, in the course of drafting the Report, the Company demonstrated that it was willing to respond to

stakeholders' suggestions and recommendations and deal with the issues raised.

We note high quality of preparation and organization of face-to-face dialogues, in which representatives of a wide range of stakeholders took part.

## Signatures of Endorsers:

| Name                       | Organization and Position  | Signature   |
|----------------------------|--|---|
| Andrey G. Anosov           | Deputy Head of the Dalmatovsky District Administration   |    |
| Aleksandr S. Babkin        | Veteran of Labour, Honoured Geologist of the Russian Federation  |    |
| Chimita B. Badmadordzhieva | Executive Secretary of the Editorial Board of the «Gornyak Priargunya» (Priargunye Miner) newspaper  |    |
| Vladimir I. Barilenko      | FSBU of HE «Financial University under the Government of the Russian Federation», Professor of the Department of Accounting, Account Analysis and Audit                                |    |
| Nadezhda A. Bendyuzhik     | Director, MBGEI «Uksyanskoe Secondary School»  |    |
| Valery N. Govorukhin       | First Deputy Director General for Strategic Communications, Technoexport, JSC  |    |
| Sergey S. Golovachev       | Consultant in the Communications Department of ROSATOM State Corporation   |    |
| Bair D. Dashiev            | Deputy Head of the Local Administration of Bauntovsky Evenkiysky District Municipality   |    |
| Vladislav V. Duba          | Head of the Lithium Programme of Stans Energy Corp.  |    |
| Aleksandr A. Morozov       | Director for Science, Technology and Innovation Development of PIMCU, Deputy Chairman of the Krasnokamensk and Krasnokamensky Municipal District Council of the Trans-Baikal Territory |    |
| Larisa A. Sizykh           | Deputy Head of Krasnokamensk and Krasnokamensky Municipal District of the Trans-Baikal Territory   |    |
| Natalya Y. Khairova        | Head of Vitimskoe, JV  |   |
| Alan V. Khasiev            | Chairman of the Coordination Council   |  |
| Yulia Y. Shipelova         | Head of Logistics Support Department at PIMCU  |  |
| Vadim F. Yakupov           | Editor of the «Slava Trudu» (Glory to Labour) newspaper  |  |

# Appendices

## Appendix 1. Information about the Report

### Contents of the Report

The public annual report of JSC Atomredmetzoloto for 2017 (hereafter referred to as the Report) is the 10th integrated report of the Holding Company.

#### Report Scope

JSC Atomredmetzoloto's business operations from 1/1/2017 until 12/31/2017.

The report covers all main companies within the Holding Company's management structure.

JSC Atomredmetzoloto Annual Report 2016 was published at the Company's web site at [www.armz.ru](http://www.armz.ru) (Shareholders and Investors > Information Disclosure > Annual Reports) in July 2017.

#### Federal Regulations:

- Federal Law No. 208-FZ dd. 12/26/1995 On Joint-Stock Companies;
- Federal Law No. 402-FZ dd. 12/6/2011 «On Accounting»;
- CBR Regulation No. 454-П dd. 12/30/2014 «On Information Disclosure by Issuers of Securities»;
- CBR Letter No. 06-52/2463 dd. 4/10/2014 «On the Corporate Governance Code».

#### International Public Reporting Standards:

- International stakeholder relation standards series AA1000 (Institute of Social and Ethical Accountability);
- Integrated Reporting Standard of the International Integrated Reported Council (IIRC);
- Sustainable Development Reporting Standard of the Global Reporting Initiative (GRI);
- ISO 26000:2010 Social Responsibility Manual, etc.

#### ROSATOM's Regulatory Documents:

- ROSATOM's Harmonized Industrial Public Reporting Policy approved by Order of ROSATOM No. 1/1069-П dd. 11/11/2015;
- Harmonized Methodological Guidelines on Public Reporting of ROSATOM and Its Organizations approved by Order of ROSATOM No. 1/671-П dd. 7/18/2017

#### JSC Atomredmetzoloto's Regulatory Documents:

- JSC Atomredmetzoloto's Public Annual Reporting Standard

**Scope:**  
GRI SRS Core

### Priority Topic of the Report: Performance for Ten Years: New Prospects of Sustainable Development

#### STANDARDS AND REGULATORY REQUIREMENTS USED IN THE COURSE OF REPORT DRAFTING

##### Process of Drafting and Identifying the Contents of the Report

The Report was drafted in close cooperation with stakeholders.

In November 2017, remote dialog was held to discuss the concept of the Report.

On 24 January 2018, two dialogs were held to discuss the priority topic.

On 25 April 2018, public consultations were held to discuss the draft Report.

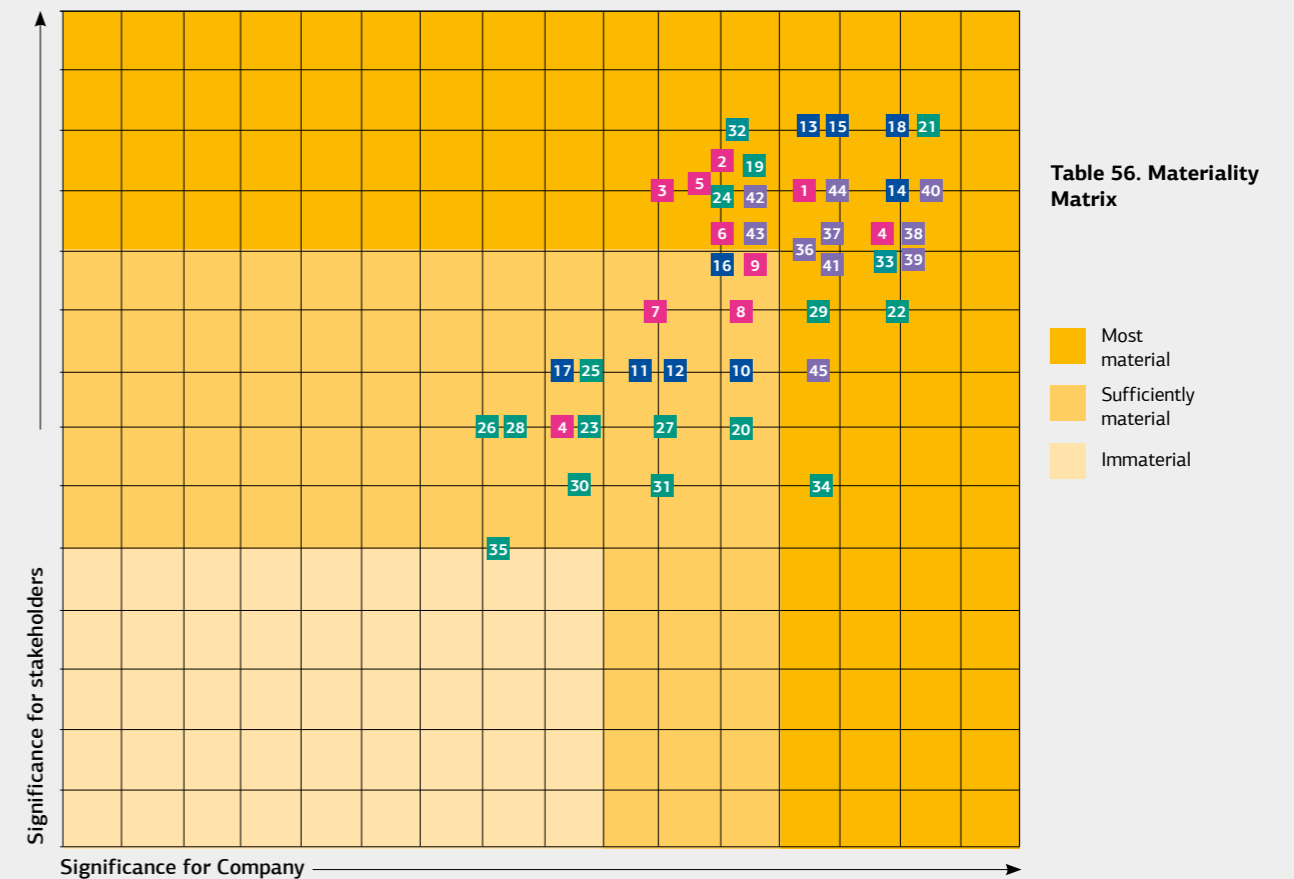
For details, see the Dialogs with Stakeholders during Report Drafting section.

### Process of Identifying Materiality of Information

In accordance with the International Integrated Reporting Standard and Sustainable Development Manual GRI SRS, representatives of the Holding Company's stakeholders were surveyed in November 2017 to prioritize material topics.

Survey resulted into adjustment of material topics of the Holding Company's business for further disclosure thereof in the Report with some topics proclaimed immaterial (Suppliers, Labor Remuneration, Indentured Labor, Local Communities, Partner Relations, etc.); some topics

combined with others (Indentured and Child Labor, Marketing and Labeling, etc.); some topics clarified (Claims – Claims against Infringement of Human Rights); and new topics arising (Digitalization).



#### ECONOMY TOPICS

- 1 Financial performance
- 2 Market presence
- 3 Indirect economic effects
- 4 Procurement
- 5 Business stability
- 6 Innovations
- 7 Corporate governance
- 8 Diversification
- 9 Investments

#### ENVIRONMENTAL TOPICS

- 10 Materials
- 11 Power consumption
- 12 Water consumption
- 13 Emissions and wastes
- 14 Product safety
- 15 Environmental compliance
- 16 Environmental investments
- 17 Biodiversity
- 18 Emergency readiness

#### SOCIAL TOPICS

- Approaches to labor organization and good faith labor
- 19 Employment
  - 20 Employee and management relations
  - 21 Labor health and safety
  - 22 Training and education
  - 23 Equal opportunities
  - 24 Social security
  - 25 Claims
- Human rights
- 26 Non-discrimination
  - 27 Freedom of association
  - 28 Child and indentured labor
  - 29 Safety
  - 30 Right of indigenous peoples
  - 31 Claims against human rightinfringement

#### Society

- 32 Influence on operation area
- Product liability
- 33 Consumer health and safety
  - 34 Marketing and labeling
  - 35 Consumer privacy
- Specific Topics
- 36 NFC Location
  - 37 Global uranium markets
  - 38 Development strategy
  - 39 Value chain
  - 40 Future forecast
  - 41 Feedstock base development
  - 42 Performance management
  - 43 Risk management
  - 44 Labor and industrial
  - 45 Industry digitalization

There are no material changes to scopes of material topics compared with previous reports.

The performance indicators provided in this Report belong to the following perimeters:

- production figures are presented according to the data on assets: PJSC PIMCU, JSC Dalur,

JSC Khiagda, JSC RUSBURMASH and JSC VNIPIpromtehnologii;

- environmental performance indicators: PJSC PIMCU, JSC Dalur, JSC Khiagda;

- staff and labor safety performance indicators JSC Atomredmetzoloto, JSC Dalur, JSC Khiagda, JSC RUSBURMASH,

JSC VNIPIpromtehnologii and LLC ARMZ Service;

- financial performance indicator: for the reporting consolidation scope in accordance with RAS requirements.

## Authentication of Information

The final version of the Report has been approved by the Director General of the Company and its Board of Directors.

## Disclaimer Regarding Forecast

The Report contains forecast declarations regarding production, finance, economy and social indicators of the Company's further development. Implementation of our assumptions and intentions depends immediately on the political, economic, social, and regulatory situation. For this reason, the actual Company's performance may be different from the forecast.

### VERIFICATION OF THE REPORT

- Financial Audit – Nexia Pacioli Group of Companies
- Inspection by the Internal Control and Audit Service
- Public Endorsement

## Appendix 2. Table of GRI Disclosures

| Element of Reporting                        | Page in the Report | Reporting Element | Page in the Report | Reporting Element | Page in the Report |
|---|--------------------|-------------------|--------------------|-------------------|--------------------|
| <b>GRI 102. General Disclosures</b>         |                    |                   |                    |                   |                    |
| 102-1                                       | 9                  | 102-18            | 29                 | 102-41            | 87                 |
| 102-2                                       | 9                  | 102-19            | 30                 | 102-42            | 95                 |
| 102-3                                       | 106                | 102-20            | 30                 | 102-43            | 97                 |
| 102-4                                       | 9                  | 102-21            | 30                 | 102-44            | 97                 |
| 102-5                                       | 9                  | 102-22            | 30                 | 102-45            | 101                |
| 102-6                                       | 10                 | 102-23            | 30                 | 102-46            | 100                |
| 102-7                                       | 7                  | 102-24            | 30                 | 102-47            | 101                |
| 102-8                                       | 7                  | 102-25            | 30                 | 102-48            | 101                |
| 102-9                                       | 13                 | 102-26            | 30                 | 102-49            | 101                |
| 102-10                                      | 29                 | 102-27            | 30                 | 102-50            | 100                |
| 102-11                                      | 11                 | 102-28            | 30                 | 102-51            | 100                |
| 102-12                                      | 9                  | 102-29            | 30                 | 102-52            | 100                |
| 102-13                                      | 9                  | 102-30            | 30                 | 102-53            | 106                |
| 102-14                                      | 3                  | 102-31            | 30                 | 102-54            | 100                |
| 102-15                                      | 35                 | 102-32            | 30                 | 102-55            | 102                |
| 102-16                                      | 21                 | 102-40            | 95                 |                   |                    |
| <b>GRI 102. Ethics and Good Faith</b>       |                    |                   |                    |                   |                    |
| 102-16                                      | 21                 | 102-17            | 39                 |                   |                    |
| <b>GRI 102. Remuneration and Incentives</b> |                    |                   |                    |                   |                    |
| 102-35                                      | 31                 | 102-36            | 31                 |                   |                    |
| <b>GRI 103. Management Approaches</b>       |                    |                   |                    |                   |                    |
| 103-1                                       | 100                | 103-2             | 100                | 103-3             | 100                |
| <b>GRI 201. Economic Performance</b>        |                    |                   |                    |                   |                    |
| 201-1                                       | 7                  | 201-3             | 86                 | 201-4             | 91                 |
| 201-2                                       | 71                 |                   |                    |                   |                    |
| <b>GRI 202. Market Presence</b>             |                    |                   |                    |                   |                    |
| 202-1                                       | 91                 | 202-2             | 92                 |                   |                    |
| <b>GRI 203. Indirect Economic Impacts</b>   |                    |                   |                    |                   |                    |

|  |           |       |    |       |    |
|--|-----------|-------|----|-------|----|
| 203-1  | 92        | 203-2 | 92 |       |    |
| <b>GRI 204. Procurement</b>                      |           |       |    |       |    |
| 204-1  | 41        |       |    |       |    |
| <b>GRI 205. Anticorruption Policy</b>            |           |       |    |       |    |
| 205-1  | 39        | 205-2 | 39 |       |    |
| <b>GRI 301. Materials</b>                        |           |       |    |       |    |
| 301-1  | 71        |       |    |       |    |
| <b>GRI 302. Energy</b>                           |           |       |    |       |    |
| 302-1  | 60        | 302-4 | 60 |       |    |
| <b>GRI 303. Water</b>                            |           |       |    |       |    |
| 303-1  | 72        |       |    |       |    |
| <b>GRI 304. Biodiversity</b>                     |           |       |    |       |    |
| 304-2  | 71        | 304-3 | 75 |       |    |
| <b>GRI 305. Emissions</b>                        |           |       |    |       |    |
| 305-1  | 73        | 305-4 | 73 | 305-6 | 73 |
| 305-2  | 73        | 305-5 | 73 | 305-7 | 73 |
| 305-3  | 73        |       |    |       |    |
| <b>GRI 306. Effluents and Waste</b>              |           |       |    |       |    |
| 306-1  | 73        | 306-2 | 74 | 306-3 | 73 |
| <b>GRI 307. Environmental Compliance</b>         |           |       |    |       |    |
| 307-1  | 75        |       |    |       |    |
| <b>GRI 401. Employment</b>                       |           |       |    |       |    |
| 401-1  | 80        |       |    |       |    |
| <b>GRI 402. Labor Management Relations</b>       |           |       |    |       |    |
| 402-1  |           |       |    |       |    |
| <b>GRI 403. Occupational Health and Safety</b>   |           |       |    |       |    |
| 403-2  | 7, 32, 76 | 403-3 | 76 | 403-4 | 76 |
| <b>GRI 404. Training and Education</b>           |           |       |    |       |    |
| 404-1  | 84        | 404-2 | 83 | 404-3 | 83 |
| <b>GRI 405 Diversity and Equal Opportunities</b> |           |       |    |       |    |
| 405-1  | 79        | 405-2 | 79 |       |    |
| <b>GRI 406. Non-Discrimination</b>               |           |       |    |       |    |
| 406-1  | 89        |       |    |       |    |
| <b>GRI 413. Local Communities</b>                |           |       |    |       |    |
| 413-1  | 93        | 413-2 | 89 |       |    |
| <b>GRI 415. Publicity Policy</b>                 |           |       |    |       |    |
| 415-1  | -         |       |    |       |    |
| <b>GRI 416. Consumer Health and Safety</b>       |           |       |    |       |    |
| 416-1  | 60        | 416-2 | 60 |       |    |
| <b>GRI 417. Marketing and Labeling</b>           |           |       |    |       |    |
| 417-1  | -         | 417-2 | 60 | 417-3 | 60 |
| <b>GRI 418. Customer Privacy</b>                 |           |       |    |       |    |
| 418-1  | 60        |       |    |       |    |
| <b>GRI 419. Socioeconomic Compliance</b>         |           |       |    |       |    |
| 419-1  | 60        |       |    |       |    |

## Appendix 3. Conclusion of the Internal Control Directorate



ATOMREDMETZOLOTO,  
JOINT-STOCK COMPANY

### Conclusion on Results of Internal Non-Financial Audit of Atomredmetzoloto, JSC's Annual Report 2017 Data

The internal non-financial audit of the drafting process of Atomredmetzoloto, JSC's public annual report 2017 (the Report) has been completed in furtherance of clause 9 of Attachment 2 to order of Atomredmetzoloto, JSC's Chief Executive Officer No. 003/316-M of 12/26/2017 On Organization of Work for Drafting Atomredmetzoloto, JSC's Annual Report for 2017.

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

Year 2017 is the jubilee year for ARMZ Uranium Holding celebrating its 10th anniversary and the Report has been supplemented with authentic historical references.

The Report provided reflects both general information on key events and 2017 Results and detailed information on priorities to which Atomredmetzoloto, JSC'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;
- social investments;
- protection of natural resources and biodiversity.

The information set forth in the Report reflects fully the main facts and achievements of the Mining Division in 2017 in all material respects.

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

Audit findings allow concluding that the public reporting process is efficient and that the public reporting procedure of Atomredmetzoloto, JSC is compliant with

Director, Internal Control

N.V. Sytnik

## List of Abbreviations and Terms

|             |   |
|-------------|---|
| COGS        | Cost of Goods Sold  |
| CPS         | Central Production Site   |
| CSP         | Corporate Social Program  |
| CSR         | Corporate Social Responsibility   |
| CTs         | Critical Tasks  |
| D&S         | Design and Survey   |
| EBITDA      | Earnings Before Interest and Tax  |
| EPCM        | Engineering, Procurement, Construction, Management  |
| ERP         | Enterprise Resource Planning  |
| FBU GKZ     | Federal Budget Institution State Commission for Mineral Reserves                              |
| FIFR        | Fatal Injury Frequency Rate   |
| FS          | Feasibility Study   |
| GRI         | Global Reporting Initiative   |
| HMP         | Hydro Metallurgical Plant   |
| HPP         | Heat Power Plant  |
| IAEA        | International Atomic Energy Agency  |
| IDTB        | Investment Decision Taking Body   |
| IFRS        | International Financial Reporting Standards   |
| ISL         | In-Situ Leaching  |
| IT          | Information Technology  |
| KPI         | Key Performance Indicator   |
| LDR         | Lost Days Rate  |
| LSP         | Local Sorption Plant  |
| M&A         | Mergers And Acquisitions  |
| MRB         | Mineral Resource Base   |
| NEC         | Nuclear Energy Complex  |
| NFC         | Nuclear Fuel Cycle  |
| NPP         | Nuclear Power Plant   |
| NRNU Mephi  | National Research Nuclear University Mephi  |
| ODR         | Occupational Disease Rate   |
| OHL         | Overhead Lines  |
| PSEDA       | Priority Social And Economic Development Area   |
| RAS         | Russian Account Standards   |
| R&D         | Research And Development  |
| REM         | Rare Earth Metals   |
| RPS         | Rosatom Production System   |
| RRO         | Repair And Restoration Operations   |
| RW          | Radioactive Wastes  |
| SAP ERP HCM | System Analysis And Program Development Enterprise Resource Planning Human Capital Management |
| SBU         | Standalone Business Unit  |
| SCs         | Subsidiary Companies  |
| SCs         | Social Costs  |
| SDGs        | Sustainable Development Goals   |
| SVF         | Screen Vibration Feeder   |
| TPO         | Pilot Production Operations   |
| TTO         | Pilot Technological Operations  |
| USRS        | Unified Harmonized Remuneration System  |

## CONTACTS

|   |   |
|---|---|
| Full Company Name   | Atomredmetzoloto, Joint-Stock Company   |
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| Name of the Registering Authority, Registration Number and Date | Moscow Registration Chamber, NO. 004.997 of 2/22/1995   |
| OGRN  | 1027700043645   |
| INN   | 7706016076  |
| KPP   | 997550001/770901001   |
|   | <a href="http://www.armz.ru">http://www.armz.ru</a>   |
| Registrar Details   | Registrar R.O.S.T., Joint-Stock Company<br>Registrar Details:<br>OGRN 1027739216757, INN 7726030449<br>Location: Moscow, 18/13 Stromynka Street<br>Phone/Fax: +7 (495) 771-73-36. |



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