STATE ATOMIC ENERGY CORPORATION ROSATOM ENGINEERING DIVISION

Be Digital

Annual Report '17

Nowadays, maintaining the leadership depends largely on the company's integration into the emerging digital economy. Our Engineering Division is making good progress while keeping this track.

V. I. Limarenko – CEO of Rosatom State Corporation Engineering Division

Table of Contents

Information on the Report

The annual public report for 2017 (hereinafter – the Report) of the Rosatom State Corporation Engineering Division (Engineering Division, Division, Company) discloses financial and non-financial results of theperformance in the reporting year. The report is issued in Russian and English.

(GRI 102–52) The integrated annual report is issued on an annual basis. This is the third report for the Division and the tenth report for JSC ASE EC. Following the results of 2017, the integrated report of the Division, a booklet (short report) of the Division according to the results of the year, reports of subsidiaries have been issued.

High-priority topics of the Report were determined in the course of a dialogue on the determination of significant issues by JSC ASE EC management together with the key stakeholders' representatives.

New items "Materials" and "Training" and "Education" were included in material topics of the Report, while Procurement practices, Environmental Compliance and Supplier Environmental Assessment were excluded from the report.

The report is prepared in compliance with GRI principles.

Standards and Regulations

The Report is developed according to the following regulatory documents.

International standards and guidelines

- AA1000 series standards (Institute of Social and Ethical AccountAbility).
- Global Reporting Initiative Sustainability Reporting Standads (GRI SRS) (GRI SRS).
- Integrated Reporting International Standard (International <IR> Framework).

Regulatory and legal framework of the Russian Federation.

- Federal Law No. 208-FZ dated. 26.12.1995 "On Joint Stock Companies".
- Letter by the Bank of Russia No.06-52/2463 dd. 10.04.2014 "On the corporate management code".
- Federal Law No. 5485-1-FZ dd. 21.07.1993 "On state secret".
- Federal Law No.98-FZ dd. 29.07.2004 "On Commercial Secret".
- Federal Law No. 149-FZ dated 27.07.2006 "On information, information technologies and information security".
- Federal Law No. 402-FZ of 06.12.2011 "On accounting".

High-priority topics of the Report – "Digital Transformation of the Engineering Division" and "Training and Professional Development of the Personnel under the Conditions of Digital Transformation".

Rosatom State Corporation Regulatory documents

- Policy of Rosatom State Atomic Energy Corporation in the area of public accountability.
- Public annual reporting model standard for Rosatom State Atomic Energy Corporation's key organizations (in view of public accountability).
- Ethical code of the Rosatom State Atomic Energy Corporation.

Regulatory documents of the Engineering Division

- Regulation on JSC ASE EC Stakeholders Commission.
- Regulation on JSC ASE EC Public Accountability Committee.
- Company standard STO 8841271.012–2016 "Procedure for elaboration of the Rosatom State Atomic Energy Corporation's public annual report for the reporting period".

Level of Application of GRI Guideline

(GRI 102–54)

This report has been prepared in accordance with the GRI Standards: Comprehensive option.

GRI Content Index, table of compliance with Standard <IR> see in Appendix 1 of the Book of Appendices.

For the Table of disclosure of public reporting indicators of the Engineering Division and Rosatom State Corporation, see Appendix 2 of the Book of Appendices. For the full information about the Report, including the process of the content determination thereof, see section "Additional information"/Information on the report. All appendices hereto are given in the Book of Appendices, see http://www.atomstroyexport.ru/invest/report/.

About the Engineering Division (GRI 102-1, 102-2, 102-3, 102-5)

The Rosatom State Corporation Engineering Division includes four key organizations: JSC ASE EC (Nizhny Novgorod) – managing company, JSC ASE (Nizhny Novgorod), Atomenergoproekt (Moscow), JSC ATOMPROEKT (Saint Petersburg).

Our Mission

Our business involves the area of complex engineering construction project management based on the extensive record of nuclear project implementation, it creates a stakeholder value and ensures achievement of its objectives on the Russian and international markets.

Our Vision

We seek to establish a competitive business that is successful in implementation of construction projects and complex engineering construction management projects and is focused on the shareholder value maximization.

Our Values

Our values comply with these of the ROSATOM and aim to execution the mission and maintain the sustainable growth. (GRI 102-16)

Safety • Responsibility for the result • Efficiency • One team • One step ahead • Respect

Engineering Division's Competitive Advantages

- Representation of references on the Russian and foreign markets.
- Available safe standard designs based on GenIII/III+ VVER reactors with competitive advantages such as in terms of such parameters as LCOE, CAPEX and construction deadlines.
- Extensive network of management of NPPs and other complex engineering facilities construction projects.
- Complex industrial technological Multi-D platform to ensure capital construction project management.
- Management team and operation personnel's extensive expertise based on many years' experience in NPP and other complex engineering facilities construction.
- Own design capacities.
- Outstanding engineering and technological infrastructure.

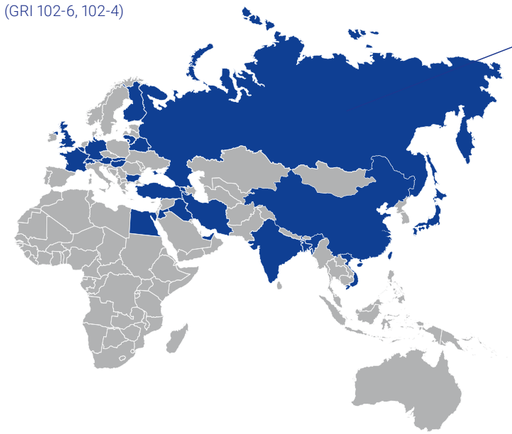
Membership in Associations (GRI 102-13)

- Federation of employers of atomic industry, power engineering and science of Russia".
- Association of innovative design.
- European Utility Requirements.
- Self-regulatory organization NPO "Association of organizations conducting engineering survey during architectural design, construction, modernization, overhaul of nuclear facilities "SOYUZATOMGEO".
- Self-regulatory organization NPO "Association of organizations carrying out architectural design of nuclear facilities "SOYUZATOMPROEKT".
- National Association of engineers-consultants in the construction field".
- Czech nuclear forum.
- Association "Self-regulatory regional industry federation of employers "Association of Nizhny Novgorod developers" (since 2017).

For information about JSC ASE EC organizational structure and operating assets of the companies within the management scope of JSC ASE EC, see Appendices 6 and 7 of the Book of appendices.

International Footprint

(GRI 102-6, 102-4)



23 countries of the world where the company runs business

11 main business core projects

13 countries where the company has branches and representative offices

(GRI 102-4, 102-7)

Russia	● ● ● ● ○ ○	*Finland*	● ○	*Iraq*	●
Iran	● ● ● ○	*Austria*	●	*Lithuania*	●
China	● ● ● ○	*Armenia*	●	*UAE*	●
Hungary	● ● ○ ○	*Belgium*	●	*France*	●
Bangladesh	● ● ○	*Bulgaria*	● ○	*Switzerland*	●
Belarus	● ● ○	*Great Britain*	●	*Japan*	●
Egypt	● ● ○	*Germany*	●	*Vietnam*	○
India	● ● ○	*Jordan*	●	*Slovakia*	○
Turkey	● ● ○				

Our Markets

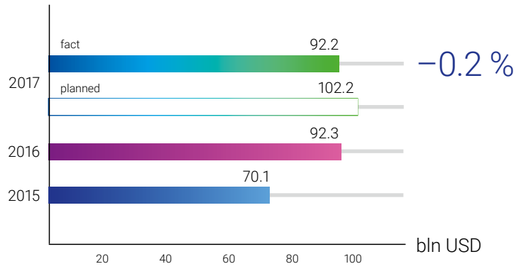
The Engineering Division renders project management services in the area of complex engineering facilities construction and upgrading, including:

- ● Core Business
  Design and construction of nuclear power plants
- ● Maintenance Services
- ● Construction and upgrading of radioactive waste management and spent nuclear fuel facilities, decommissioning of nuclear radiation facilities
- ● Project Management Consulting (PMC) Services using project management tools based on the Multi-D digital platform

- ○ Branch office
- ○ Representative office

Financial and Operational Highlights 2017

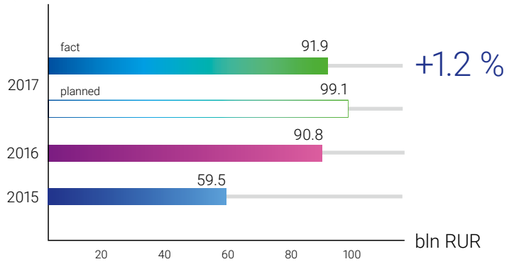
10-year Portfolio of Overseas Orders (traditional products and diversification)



–0.2 %

The dynamics is the consequence of the signature of contracts under new projects and implementation of the current contracts.In mid-term contractation of new powerful NPP is planned driving project portfolio up.

10-year Portfolio of New Products* (outside the scope of the Corporation)

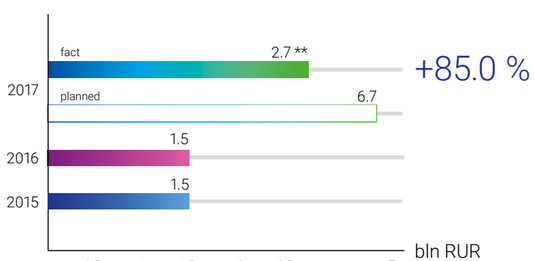


+1.2 %

* A new product (business) – this is a product out of the scope of the complex offer to supply a nuclear power plant and research reactors, as well as Defense Procurement implementation. In 2015–2016 new products revenue and portfolio value was calculated taking into account intracompany balance, since 2017 only the volumes out of the Rosatom State Corporation scope (external customers) are considered. Due to this, the data for 2015–2016 in this report is re-calculated and demonstrates the total volume of new products revenue and portfolio only beyond the scope of Rosatom State Corporation.

The dynamics of 2017 considering the contracts concluded by Nukem Technologies GmbH and works at radioactive waste management facilities at Kudankulam Power Units No. 5 and 6.

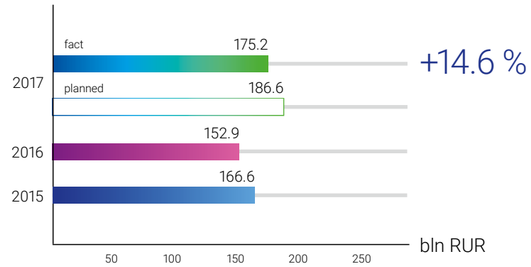
CAPEX



+85.0 %

** Financing of investment projects in 2017 was implemented at the expense of the consolidated investment resource of Rosatom State Corporation.

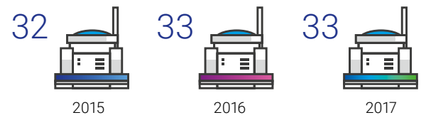
Revenue



+14.6 %

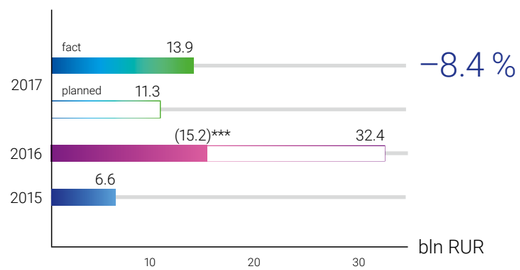
The revenue growth is related to work implementation under new projects in 2017 (e.g., El-Dabaa NPP, Paks II NPP, Bushehr-2 Power Units No. 2 and 3) and performance of a significant work scope at Belarus NPP which is currently in the active construction phase.

Number of Power Units in the Portfolio



The number of power units in the Company portfolio remained the same, however, at the beginning of 2017, Kudankulam NPP was put to commercial operation, and Power Unit No. 1 of Novovoronezh NPP-2 was commissioned. In July 2017, new contracts for works under the third stage of Kudankulam NPP were signed, the project of construction of Units No. 5 and 6 has entered the stage of actual implementation.

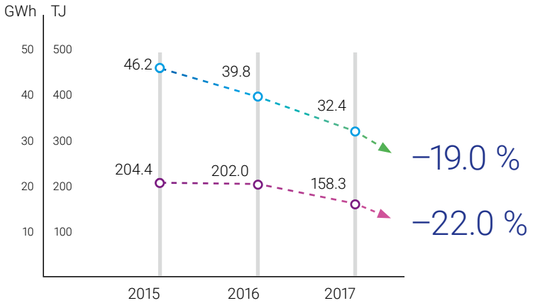
EBITDA



–8.4 %

*** Parameter of 2016 is indicated taking into account compensation for losses on Belene NPP (Bulgaria), in brackets, the parameter is specified without considering the compensation for losses on Belene NPP. Dynamics is shown to the parameter net of compensation.

Consumption of Power Resources. Electrical and Thermal Power

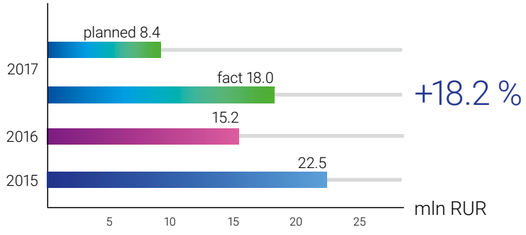


Reduced consumption of energy resources in 2017 was related to commissioning at the end of 2016 of energy conservation equipment and favorable weather conditions during the heating season.

Planning for 2018 in terms of environmental parameters is made separately by each area of performance.

Consolidated data of the Division on the planned environmental parameters for 2018 has not been generated.

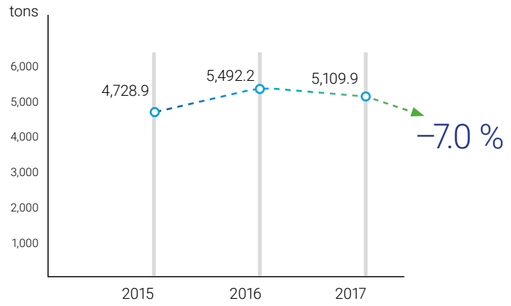
Expenditures for Environmental Protection Measures



In 2017, the growth of expenses was related mainly to increased costs of industrial environmental monitoring and the necessity to re-issue permitting documentation in the sphere of environmental protection.

Consolidated data on planned ecological indicators is not estimated.

Total volume of waste

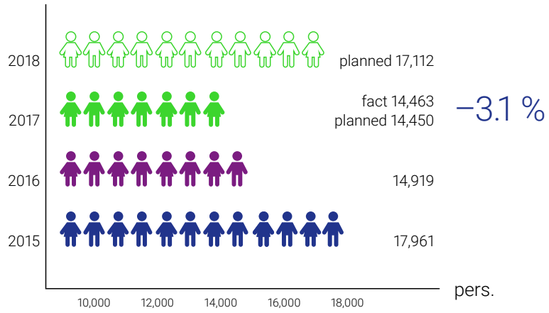


In 2017, the total volume of generated waste decreased, including waste of hazard classes IV and V that are removed to waste disposal area. Reduction of the generated waste volume is related to completion of works and commissioning of Rostov NPP Power Unit No. 4.

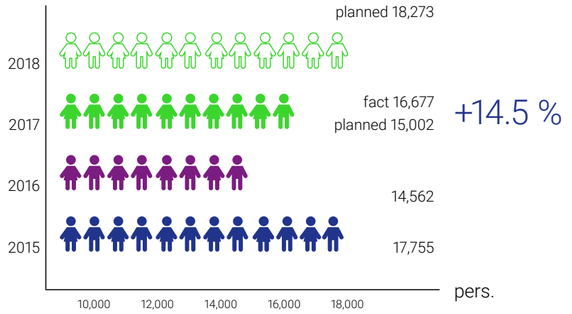
In 2017, there were no incidents of level 2 and higher, according to the INES scale.

Kudankulam NPP (India) Units No. 1 & 2

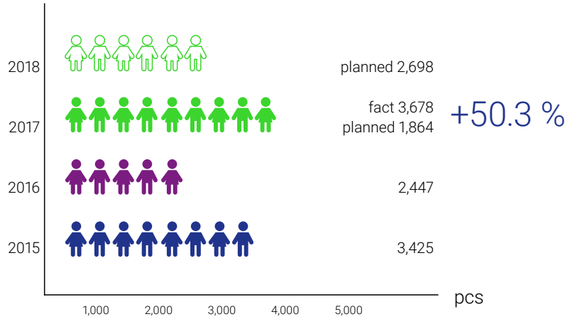
Average Staff



Total Number of Employees as of December 31 of Each Year (GRI 102-7)



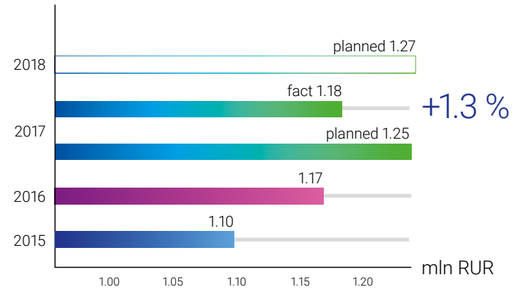
Number of New Jobs



The factors that influenced the increase of employees number in 2017:

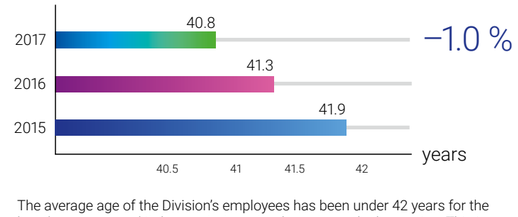
- transfer to active phase of construction of Rooppur NPP, Bushehr-2 NPP, Kursk NPP-2, increase of work scope at the NPPs that are already in the active phase of construction (e.g., Belarus NPP);
- enhancing the competence of employees of the foreign projects designing division;
- development of the Department of system engineering and IT within the digital transformation of the Engineering Division (3 per cent of the total increase in manpower).

Salary and Other Benefits per one Employee



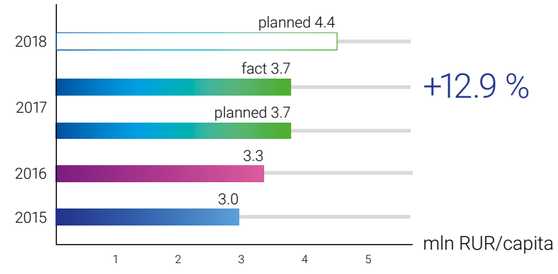
The calculation was made on the basis of average headcount of the employees. The growth is caused, among other things, by annual wages indexation due to increase of consumer prices for goods and services.

Average Age of Employees



The average age of the Division's employees has been under 42 years for the last three years, and it demonstrates a tendency towards decreasing. This is caused by consistent attraction of young specialists with competences in the field of digital technologies, knowledge of foreign languages who are ready to perceive the experience and learn to take decisions in a responsible manner.

Labour Productivity (in terms of proper revenue)



The growth of labour productivity was caused by implementation of RPS-projects and introduction of advance technologies of construction and project management as well as growth of the scope of works performed using own resources.

Milestones in 2017

January

A partnership agreement with Autodesk corporation in the field of application of information modeling (BIM), was signed.

Power Unit No. 2 of Kudankulam NPP (India) was brought to 100% power.

February

Power Unit No. 1 of Novovoronezh NPP-2 was put to commercial operation.

March

Power Unit No. 2 of Kudankulam NPP (India) was put to commercial mode, a one-year period of warranty operation started.

The stage of civil and erection works at Bushehr-2 NPP (Iran) started.

Additional agreement with FSUE Mining and Chemical Plant was signed for increasing the scope of works for introduction of the integrated schedule – a project management tool (for management of time frame and costs).

April

Reactor pressure vessel of Power Unit No. 1 of Belarus NPP was installed in the design position.

A Joint Statement between JSC Atomstroyexport and Nuclear Power Corporation of India representatives regarding the final acceptance of Kudankulam NPP Power Unit No. 1, was signed.

Under the Paks II NPP project (Hungary), the EPC Contract entered in full legal force including the financial obligations of the parties.

Legend

The current events of the Engineering Division

Events of the Engineering Division as part of the digital transformation

May

JSC ASE EC has successfully passed a nuclear qualification audit performed by the Owner of Paks-II NPP (Hungary) and obtained certificate NO. SNQ/007/2017.

Power supply for auxiliary loads of Unit No. 2 of Novovoronezh-2 NPP was performed.

Conference of Rosatom State Corporation on digital economy and transformation of the nuclear industry, was held, where representatives of JSC ASE EC demonstrated the company's developments in the field of digitalization – a digital technological platform of life cycle management of complex engineering facilities Multi-D that was the winner at the international competition of engineering and technological innovations CETI AWARD 2016.

Nukem Technologies GmbH and JSC NIKIMT-Atomstroy completed the active phase of construction the first stage facilities for decommissioning of Ignalina NPP (Lithuania). B1 Facility was put to commercial operation, cold tests were completed and hot tests started at Radioactive Waste Treatment and Storage Facility B 2, 3, 4.

June

General Framework Agreement for the construction of third stage of Kudankulam NPP (India) was signed. The agreement envisages the construction of Kudankulam NPP Power Units 5 and 6.

Agreement between the Government of the Russian Federation and the Government of the People's Republic of Bangladesh on cooperation in import to Russia of spent fuel from the Rooppur NPP, was signed.

Priority engineering survey including marine survey has been completed for the El-Dabaa NPP project (Egypt).

Rosatom State Corporation, represented by JSC ASE EC, became a member of center of competences for digital economy of the Government of RF.

JSC ASE EC became the representative of Building Smart alliance in Russia.

The main digital laboratory of JSC ASE EC was established.

Within the framework of XXI St.Petersburg international economic forum:

• agreement with IBM was signed on cooperation in the field of digital transformation for successful reforming of business and expansion of Multi-D technology within the framework of management of capital construction facilities life cycle;

• agreement on establishment of Digital Transformation Institute was signed whose tasks are implementation of joint research, consulting, educational and pilot innovation projects and programs in the key industries of economy, with the Moscow School of Management SKOLKOVO and Center for Strategic Research "North-West".

Within the framework of international forum "Atomexpo-2017":

• memorandum with SAP was signed on cooperation in the field of life cycle management of nuclear facilities;

• agreement on educational and scientific-research cooperation was signed with National Research Nuclear University MEPhI, in the frame of which Higher School of Engineering was established, an institution for training digital engineers and testing new solutions for digital business;

• memorandum on strategic cooperation with the Russian representative office Hilti was signed.

• memorandum on cooperation with Association on Development of Information Modeling Technologies in construction of buildings and public utilities (BIM-association), was signed;

• memorandum with French company AssystemSA was signed on cooperation in the field of promotion and practical introduction of solutions based on Milti-D technologies for NPP operators in Europe, Middle East and North Africa.

Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 3 of Kudankulam NPP (India) was held.

July

JSC Atomstroyexport and Nuclear Power Corporation of India (Ltd.) signed contracts for the first priority design works, elaboration of the working documentation and supply of main equipment for Units 5 and 6 of Kudankulam NPP. The project for construction of Kudankulam NPP Units 5 and 6 has entered implementation stage.

Akkuyu NPP project (Turkey) – "Report on Site Parameters" and design documentation was approved, development of the open pit has started.

Nukem Technologies and JSC NIKIMT-Atomstroy concluded contracts for steam generators dismantling for decommissioning of Biblis NPP (Germany).

August

The construction of national radioactive waste storage facility with a long period of decay started (NUKEM Technologies GmbH, as part of the Russian-Bulgarian consortium).

Agreement with JSC "Afrikantov OKBM" was signed that is aimed at introduction of an integrated schedule – a project management tool (in terms of time and cost).

September

JSC ASE EC and the Government of Nizhny Novgorod region signed an agreement on cooperation in the field of application of information technologies.

October

A ceremony of commencement of works in the open pit of the main buildings of Power Unit No. 2 of Bushehr-2 NPP (Iran) was held.

Under the Hanhikivi-1 project (Finland), process of optimization of design and layout solutions for the NPP was completed, a branch office was opened in Finland.

Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 4 of Kudankulam NPP (India) was held.

Physical start-up of Power Unit No. 3 of Tianwan NPP (China) was performed.

November

License for designing and construction of Rooppur NPP Power Unit No. 1 (Bangladesh) was obtained.

JSC ASE EC and the Industrial Development Fund of the Ministry of Industry and Trade of RF signed an agreement "On cooperation for the purpose of development of state industry information system".

Extra-industry PMC-service contract was signed with Electricite de France (EDF).

Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 1 of Rooppur NPP (Bangladesh) was held.

December

Certificates were signed on entering into legal force of commercial contracts for construction of El-Dabaa NPP (Egypt).

Under the Akkuyu NPP (Turkey) project, a ceremony of commencement of civil and erection works of preparatory period for non-nuclear part of the NPP was held in accordance with the limited permission for construction issued by TAEK.

Power start-up of Power Unit No. 3 of Tianwan NPP (China) was performed.

Reinforcement of foundation slab of reactor building of Unit No. 1 of Kursk NPP-2 started.

Achievement of the stage of systems flushing with the open reactor of Power Unit No. 2 of Novovoronezh NPP and Unit No. 1 Belarus NPP.

The reactor pressure vessel of Power Unit No. 2 of Belarus NPP was installed in the design position.

Physical start-up of Unit No. 1 of Leningrad NPP-2 was performed, the license for the power unit operation was received.

Physical start-up of Power Unit No. 4 of Rostov NPP was performed.

Rooppur NPP Bangladesh Ceremony of first concrete pouring

Events after the Reporting Date (January–May 2018)

February

Power start-up of power unit No. 4 of Rostov NPP was held.

An official handover ceremony of El-Dabaa NPP (Egypt) construction site.

Putting into warranty operation and provisional acceptance of power unit No.3 of Tianwan NPP (China).

March

Power start-up of power unit No. 1 of Leningrad NPP-2 was held.

Handover of Rostov NPP power unit No. 4 for trial commercial operation.

April

An official ceremony of first concrete pouring into the reactor building foundation of power unit No. 1 of Akkuyu NPP (Turkey) was held.

May

JSC ASE EC completed the voluntary international certification for projects, programs, portfolio management. Following its results the Company was awarded the International Project Management Association (IPMA) Certificate of 4th class of competence in the field of management of projects, programs, portfolio based on IPMA-DELTA.

CEO Statement (GRI 102-14)

Dear colleagues and partners, dear friends,

this year has been vitally important for us as the decennial anniversary of the Rosatom State Corporation. We are proud to have reached this milestone with excellent achievements.

The physical start-up of the Rostov NPP Unit 4 has completes the whole era of commercial B-320 reactor power units that have proven their safety and reliability both in Russia and abroad. This is an important stage in the history of nuclear power engineering started by the Soviet specialists and completed by our staff now.

It is symbolic that the physical start-up of the Leningrad NPP-2, a generation III+ unit, was held only several days after that memorable event. It is the second power unit of the new generation that we put into operation ahead of our competitors. At the same time, this symbolic event marks the completion of one series of reactors and the commencement of a new one.

In 2017, we implemented the successful start-up of the Tianwan NPP Unit 3 in China, too. The first two power units are considered to be the best among all NPPs in China. We are confident that the third power unit will be reliable and safe as well and will operate for the benefit of the Chinese people.

As for the projects launched, we should principally point out the commencement of construction marked by the first concreting at the Kudankulam NPP Units 3 and 4. The third important start is the first concreting at Rooppur NPP in the People's Republic of Bangladesh. Nowadays, maintaining the leadership depends largely on the company's integration into the emerging digital economy. Our Engineering Division is making good progress while keeping this track.

We have been long involved in digitalization, and the main tool in this area is the Multi-D system that we have developed. We are creating currently an industrial IT platform that can be used by any company, both in Russia and abroad. We believe that our task consists in the active interaction with state enterprises to facilitate the development of the economy of the regions where we operate.

For example, last year we concluded an agreement with the Government of the Nizhny Novgorod region on cooperation in the field of application of information technologies.

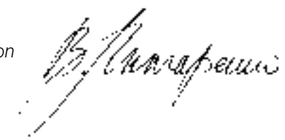
3 physical start-ups of Power Units and 3 first concretings are the achievements of year 2017. However, these figures reveal still more outstanding results.

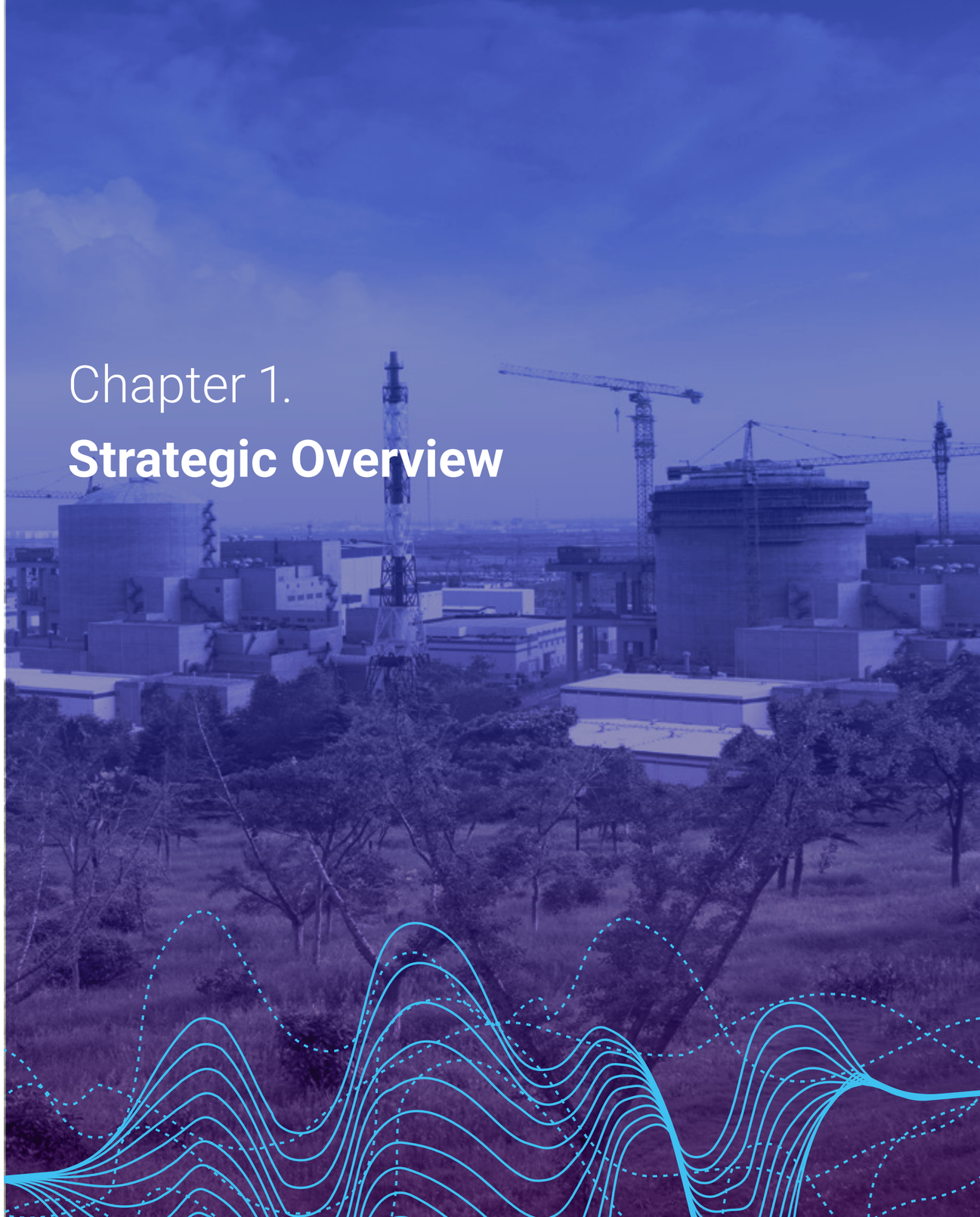
Within the framework of social responsibility, the Engineering Division of Rosatom State Corporation pursues a consistent policy of socially orientated business in the regions of operation, supporting social projects in the sphere of environmental protection, culture, sports, promotion of patriotism among the young generation.

Moreover, we should mention the priorities of our company, such as development of personnel social support programs, creating conditions for employees personal self-fulfillment, career advancement of young specialists, enhancing the prestige of making a career in the nuclear industry.

In order to ensure the stable economic status of the Engineering Division in severe competition, we should bring together our efforts and capabilities. In every day work, our team shows its ability to maintain the technical leadership on the global market.

Valery I. Limarenko,
CEO of Rosatom State Corporation
Engineering Division





Chapter 1.
Strategic Overview

Ivan Borisov,
Senior Vice-President
for Development

– For the Engineering Division 2017 was marked by physical start-up of three power units and three "first concretes" for new NPPs. Therefore, the Russian nuclear industry has turned out to be a step ahead of its competitors. Thanks to what did the Division manage to achieve such results?

– The corporate value "A step ahead" is not just the words for us but a real target. The world is rapidly changing, digitalization is well underway, that's why in order to successfully maintain leadership positions, it is necessary to regularly improve all production and management processes.

This is the reason why we set a course for standardization and typification of design solutions. It is important that our product – NPP project should be typified to a maximum extent but besides, be managed to meet all the requirements of the most sophisticated customer. In fact, it shall be a universal constructor – for each customer we'll be able to erect and install a set of elements required especially for him, and quickly adopt this project to a particular construction site in a particular country. Works on the typification of applied design solutions started in 2017 and will be completed until the end of this year.

Besides, in each project we improve the work with our suppliers and contractors – the size of Rosatom portfolio executed by the Engineering Division is growing from year to year and the number of partner countries is also increasing. Note that each region has its own market and business peculiarities to be considered. That's why we are scrupulous about contractors selection: we generate the pool of global engineering companies that are ready to cooperate with us, and of course, we always strongly interact with local suppliers and contractors – it is more profitable indeed to localize the implementation of the significant part of works. But there is a "cake" we are not ready to share with the partners – this is our anchor business, our key competence – construction of a "nuclear island".

To make a long story short, there are three factors that are important for success. The first one is our staff, a reliable team of professionals. The second – advanced project management technologies and application of digital tools. And finally, it is our experience of NPP construction in different countries: as for the NPP construction abroad – we are unrivalled leaders.

By the way, I would like to add that in 2018 we expect one more physical start-up and connection to the grid of power unit No.4 of Tianwan NPP in China and two more "first concrete" pouring – at the construction site of unit No.1 and No.2 of Kursk NPP-2.

– What are strategic growth priorities of the Division in the short and mid term? Which place will the digital transformation hold in the Company's strategy for the nearest years?

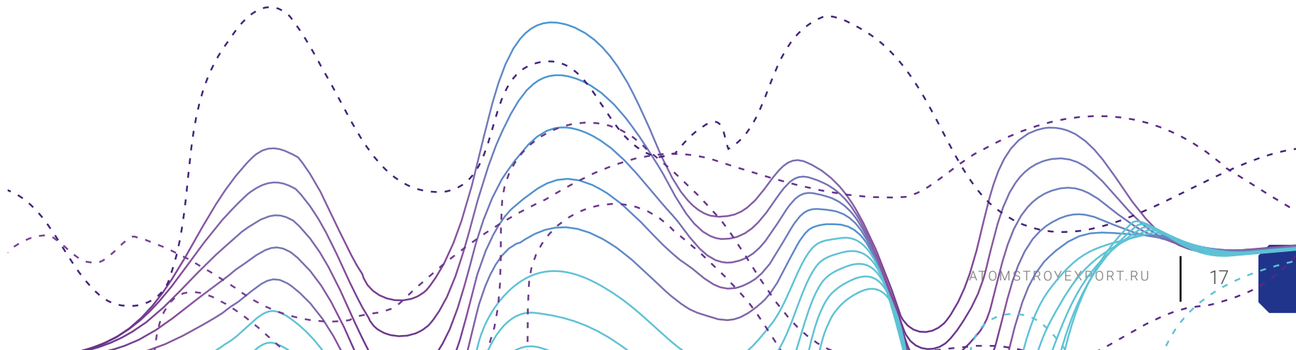
– ASE Group of Companies had got into gear in terms of the digital technologies long before the state drew attention to this problem. It can be said that the Engineering Division was at the source of the development of "Digital economy of the Russian Federation" government program, and in some areas was even the initiator of the promotion of new production technologies and process groundworks. After the digital economy program had been approved by the Government we together with other Rosatom enterprises were actively engaged to its implementation. For these purposes we had to form within JSC ASE EC the whole structural subdivisions responsible for digital transformation of our Company and implementation of digital development in other sectors of the economy. As for our digitalization partners, this list is broad: These are regional and federal executive authorities, business and business societies' representatives, educational institutions, international associations – as a whole – over hundred of key partners.

All together we are not only working upon the development of digital technologies in the Division but creating the institutional environment for functioning of the digital economy throughout the country.

Currently, a lot has been done in this direction. Based on our unique Multi-D technology a project management system verified with IPMA standards (International association of engineering companies) has been developed. In 2016 we were the first Russian company to be awarded the international 3rd -grade certificate in the area of project, programme and portfolio management based on IPMA Delta model. Nowadays, we are actively getting ready to achieve the highest – 4th grade. Besides, we already have an information model of the NPP power unit which turned out to be an independent and a very valuable digital asset. And now, the Division has transferred from facilities digitalization to building of a platform solution, i.e. to such an information model which will combine all process participants: the customer, designers, purchasers, suppliers of equipment, contractors and will give an opportunity to simultaneously manage the whole architecture of different processes interface. The next step in the process of the company digital transformation is the creation of the so called "a digital ecosystem", i.e. the build-up of the whole chain of different partnerships in various countries in order to meet all customers' requirements.

Also, I would like to mention that digitalization itself has become a foothold for the development of the partnership interaction pattern with the largest western players. In 2017 a number of significant cooperation agreements with IBM corporation, with leading global companies – Assystem SA, SAP СНГ, HILTI was signed.

Having gained sound experience in the field of digital transformation, we decided to share our knowledge in this area with those companies that are just entering this path. Last year, together with Center for Strategic Research "North-West" and the Moscow School of Management SKOLKOVO we proceeded to the establishment of the Digital Transformation Center. Programs of the Center (and it is already under operation) are intended to give answers to the questions regarding the way of the company's business-model transformation, the way of the organizational model and structure modification, as well as regarding the tools to reduce the time of new products development and their entering the market. On the Center basis, expert seminars regarding digital transformation practice are held – seminars on oil and gas, medical, pharmaceutical, mining industries, city development arrangement were held. The Center conducts active research and analytical work, educational projects concerning the preparation of digital transformation teams in key sectors of the economy are implemented.



1.1. Strategy of the Engineering Division and KPI of its Implementation

1.1.1. The Engineering Division Contribution to Rosatom State Corporation Strategy Implementation

ROSATOM Strategic Goals	Engineering Division Strategic Goals	2017 Key Performance Indicators	2018 Objectives	2030 Objectives
To increase the Corporation's share on international markets	Leadership in the core business area, i.e NPP construction	90,845* / 100,637 Portfolio of overseas orders for 10 years, for traditional business, mln dollars * The actual value is between the lower and the target level of KPI. 100 % / 104.5 % Concern Rosenergoatom investment program index (in the scope of responsibility), % 2,302* / 2,227 Foreign revenue from traditional products, mln dollars * 2192 mln dollars in accordance with the Russian system of accounting. The figure was adjusted according to the rules defining actual levels of the KPIs determination and in accordance with approved methodology. –11.2 / -11.2 Contribution to the consolidated Adjusted free cash flow of Rosatom State Corporation for the nuclear order, bln RUR	• Physical start-up and power start-up of Unit No. 4 of Tianwan NPP. • First concrete pouring at Unit No. 1 of Kursk NPP. • First concrete pouring at Unit No. 1 of Akkuyu NPP. 	> 1/3 share of the global NPP construction market.
To develop new products for the Russian and international markets	Assurance of operational sustainability (diversification)	100 % / 91.1 %* Integrated index for new products, % 3 / 4 Achievement of milestones for new businesses, number * The actual value is between the lower and the target level of KPI. Considering the adjustment of the target value of KPI "Orders portfolio for new projects (beyond the scope)" and KPI "Revenue for new products outside the scope" according to the resolution of Rosatom Director General A.E.Likhachev on exclusion of work scope for "Research Reactors" area.	1. Participation of Nukem Technologies Engineering Services GmbH and JSC NIKIMT-Atomstroy in tenders abroad: • decommissioning of Vattenfall NPP (Sweden); • processing and conditioning of contaminated soils during decommissioning of Kozloduy NPP (Bulgaria). 2. Conclusion of contracts by JSC NIKIMT-Atomstroy: • for work performance related to designing of decommissioning of Leningrad NPP; • for integrated designing, construction and supply of equipment for commissioning of radioactive waste treatment facilities at Bushehr-2 NPP . 3. Commencement of works by JSC NIKIMT-Atomstroy for construction of radioactive waste treatment facilities at Rooppur NPP, opening of branch office in Bangladesh. 4. Implementation of contract with Electricite de France (EDF). 5. Works performance in accordance with road map under the project "Smart City". 6. Development of package of digital technologies and strategy of their promotion on foreign markets.	30 % share of new businesses in the Division revenue.
To develop new products for the Russian and international markets	Financial stability	100 % / 100 % Compliance with the time frame and cost of NPP construction abroad, % 93,726 / 93,726 Specific forecasted cost of NPP construction, reduced taking into account the timing, RUR/KW 34 / 33 Inventory turnover, days 25.0 / 23.7 Adjusted free cash flow of Rosatom State Corporation (considering the performance of the Division AFCF), bln RUR 27.2 / 29.5 Relatively fixed costs, bln RUR *Fact* *Target value*	1. Execution of: • digital transformation of the Engineering Division; • project of the industry digital platform introduction; • creation of information control system for projects to ensure compliance with the requirements of foreign customers to IMS; • Rosatom Production System (RPS); • program of expansion of industry cost management system jointly with Concern Rosenergoatom. 2. Improvement of cost management methodology and expansion of functionality of resource management information system. 3. Improvement of the accuracy of planning at the stage of contract conclusion. 4. Development of the comprehensive cost and time management system for industry projects.	Sustainable achievement of the goals and further actions to upgrade leadership surpassing annual goal's indicators.

In the reporting period the Division was focused on the fulfillment of the core business obligations – nuclear power plants design and construction in Russia and abroad, as the majority of NPP construction projects entered the active construction phase. This is a challenge the Company has not faced before, due to this, the top priority of the year is unconditional fulfillment of obligations under the contracted projects, without which it is impossible to keep the top position in terms of the number of power units under construction.

Strategic goals of the Division in the reporting year were achieved by means of reducing the products prime cost and the time period of processes behavior.

In 2017 there was a decision made on hand over of “Research reactors” business area to another subdivision of Rosatom State Corporation.

Based on the analytical information about the trends on the priority markets, about the state of the macroeconomic environment, competitive analysis, new partner patterns, as well as taking into account the priorities of the Shareholder’s performance, mid- and long term plans of the Division as well as key performance indicators are being confirmed and updated on an annual basis. The relevant decisions are made also at the strategic sessions with the Shareholder’s participation, which are held at least twice a year. Sessions on KPI fulfillment are held every quarter – in order to control risks and set goals achievement.

Changes in the priorities are reflected in the Company’s business plan which is verified and, if needed, updated on an annual basis.

When generating mid- and long-term programs and development plans, the Company uses the market analytics that reflects main trends on major markets and in operation areas, as well as the competitive analysis and benchmarking of key players. Source of this information:

- daily mass media reviews, companies’ publications;
- periodic reviews of operation areas made by partner organizations;
- analytical reviews made by specialized organizations (World Energy Outlook, BP-Energy Outlook and etc.);
- competitors’ reviews upon request made by the largest consulting companies that allow making the comparative analysis and identify best practice;
- participation in large industry forums;
- industrial information system OAZIS systematizing data on key partners, customers etc.

The reactor pressure vessel of Power Unit No. 2 of Belarus NPP was installed

1.1.2. External Environment Strategic Analysis

PEST-analysis of the Environmen

Political factors

- Political pressure on the part of the USA and the EU remains in force, incl. the sanctions from the USA and the EU.
- Retaliatory sanctions from the Russia’s side.
- Development of digital economy in Russia.
- Development of the cooperation with SEA, primarily with China, as well as thaw in relations with Turkey and Egypt.
- Refusal by a number of European countries of the use of nuclear power.

Economic factors

- The remaining relatively low price level for hydrocarbons.
- Deficit budget of Russia.
- Bankruptcy of Westinghouse and consequently the growth of contractors’ economic sustainability requirements.
- Ruble rate volatility.
- Considerable decrease of the Central Bank interest rate.

Engineering Division

- A global leader in ASE engineering.
- Owns competences of the full range of works throughout the whole NPP lifecycle.
- Seeks for sustainable growth and development.
- Actively promotes diversification of its performance.

Social factors

- Growth of trust in nuclear power engineering both in Russia and many countries of the target market (Africa, Asia).
- Growth of the nuclear power engineering companies attractiveness as an employer.
- Shortage of workers and engineers in the RF.
- Shortage/absence of experts in the field of nuclear power engineering in the developing countries for NPP construction.

Technological factors

- Active efforts to promote Korean and Chinese technologies.
- Import phase-out/localization.
- Toughening of NPP construction time and cost requirements.
- Penetration of digital technologies into all processes of operational performance.
- Development of new technologies for conventional fuel extraction.
- Modernization and cost-cutting of renewable power sources technologies .
- Toughening of NPP safety requirements.

Factor dynamics:

- increase
- at the same level
- decrease

1.1.3. Sustainability Agenda

Taiwan NPP (China)

(GRI 102-20)

Due to a broad range of works made by the Division in different businesses, the sustainable development issues are regulated and governed separately by each area of activity: the social area is under the responsibility of the vice-president for personnel management and administrative work, economics and finance – under the responsibility of the senior vice-president for economics and finance, ecological area – under the responsibility of the director for quality management.

Sustainability Approach

The Engineering Division looks upon the sustainable development of the Company's business as a type of performance that satisfies both the criteria of economic and ecological expediency and social interests of the society and states. Based on its unique role of the designer and constructor of NPP power units – the Division shall ensure safety and reliability of nuclear facilities on the territories of all countries where it operates.

Sustainability Agenda of the Engineering Division

- We value safety and reliability of nuclear facilities as our primary concern and we are responsible for the results of our performance.
- We consider all environmental safety aspects to be extremely significant and are worked out on the NPP construction projects development and power units construction. Production environmental monitoring is regularly conducted at the construction facilities.
- We develop and implement innovative management technologies for design and complex engineering facilities construction.
- We are a responsible employer and make a significant contribution to the social and economic development of the regions where we operate.
- We are transparent and report to the shareholders, consumers, partners, suppliers, employees, population of the regions of operation and other parties concerned.
- We contribute to the establishment of a peaceful and open society for the benefit of sustainable development, seek to interaction in a constructive way with the parties concerned regarding all aspects of the performance and maintain the achievement of sustainable development goals in all regions of operation.
- The Division performance in the field of sustainable development enables to more accurately determine and adjust the strategy of the Company development and improve the efficiency of strategic goals achievement.

"Social responsibility" section is shown here (see. http://www.niaep.ru/social/), where the information on the performance in the field of the corporate social responsibility and sustainable development is provided.

Commitment to the UN Sustainable Development Goals

The Engineering division follows the objectives in the field of sustainable development declared by the UN for a period until 2030.

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Report of the UN Commission
on the environment and development
"Our common future", 1987

*Table 1.1. The Engineering division follows the objectives in the field of sustainable development declared by the UN** (GRI 102-15)

	THE UN SUSTAINABLE DEVELOPMENT GOALS	CONTRIBUTION OF THE DIVISION TO THE GOALS ACHIEVEMENT
7	Accessibility of cost-effective, reliable, sustainable and up-to-date power sources for everybody.	Contribution to energy security in 23 countries worldwide. Development of carbon-free power generation. Initiatives on power efficiency increase.
8	Promotion of stable, comprehensive and sustainable economic growth, employment and decent work for all.	Implementation of national investment projects in a number of countries worldwide. Positive economic and social impact on the regional, country and international scale (promotion of employment, support of small- and medium-size business entities etc.)
9	Establish a stable infrastructure, promote sustainable industrialization and foster innovation.	Contribution to a digital transformation of the Russian economy, including implementation of a complex project management system based on Multi-D technology. Transfer of "nuclear" developments to related sectors. Growth of innovation products volume. Contributions to R&D.
12	Ensure sustainable consumption and production patterns.	Implementation of Rosatom Production System at all facilities. Increase of operational and investment efficiency. Application of LEAN-technology, BIM-modeling, Agile-practice etc. Contributions to occupational health and safety and job security.
17	Revitalize the global partnership for sustainable development.	Partnership with Russian and international organizations. Performance of social obligations. Observance of national and international legal standards.

* The rest of the UN goals are not directly relevant to the Engineering Division performance. The Company shares such goals and pulls its fair weight to their achievement.

Information on the results of 2017 in the field of sustainable development is provided in Chapter 2 "Key performance results".

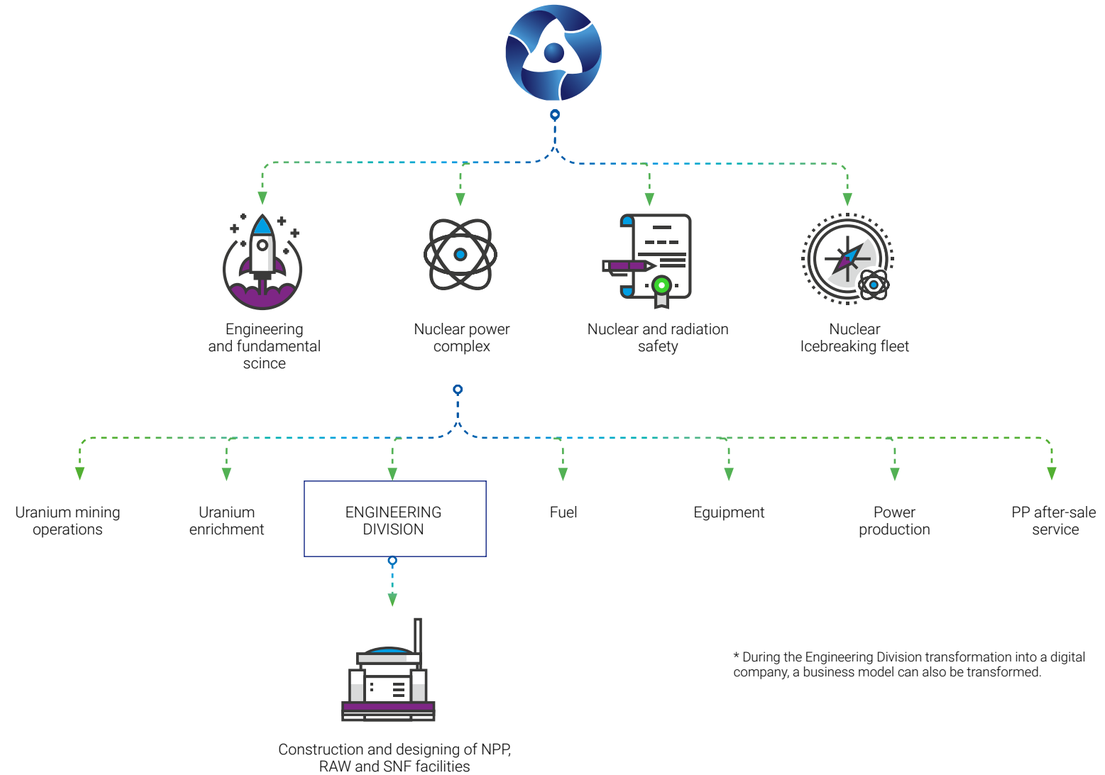
Busher NPP (Iran)

1.2. Business Model

(GRI 102–9) Having realized the significance of its performance for the economy and the society, the Engineering Division sets a goal of the business sustainable development, also by means of increasing of its aggregate cost/value for the Division, for a wide range of stakeholders and society on the whole. The term "cost/value" means not only products to be produced, services to be rendered and financial results but a combination of the Company's economic, social and ecological impact on the environment and the world around.

Engineering division's value chain (in the main business core) is a component part of the uniform value chain of the nuclear industry.

The Division defines its business model as a creating value system within the short-, mid- and long-term perspective and aiming to achieve strategic goals. The Company's business-model is based on its long-term strategy*.



* During the Engineering Division transformation into a digital company, a business model can also be transformed.

Capitals as on 01.01.2017

Financial

10-year Portfolio of Overseas Orders (traditional products and diversification) – 92.34 US bln dollars.

10-year Portfolio of New Products – 115.86 US bln dollars.

Revenue – 152.93 bln RUR.

CAPEX – 1,469.09 mln RUR.

Manufactured

Number of power units in the portfolio – 33.

2,287 competitive procurement procedures for amount over 141.897 bln RUR.

Labour Productivity (in terms of proper revenue) – 3.3 mln RUR/pers.

Human

Average Staff – 14,919 pers.

Share of employees under 35 y.o. – 40 %.

Salary and other benefits for employees – 17,448 mln RUR.

Intellectual

Number of inventions and utility models – 6.

Submitted national and regional applications for inventions – 20.

Share of investment products in the revenue – 7.71 %.

An advanced system of nuclear power plant lifecycle management based on Multi-D technology.

Natural

Expenses for environmental protection measures – 15.2 mln RUR.

Regulatory framework in the field of environmental management.

Social and Relationship

23 countries of the world where the company runs business.

Improvement of inclusivity and responsiveness principles in relationships with stakeholders.

Value chain

Service

Construction

Procurement and supply

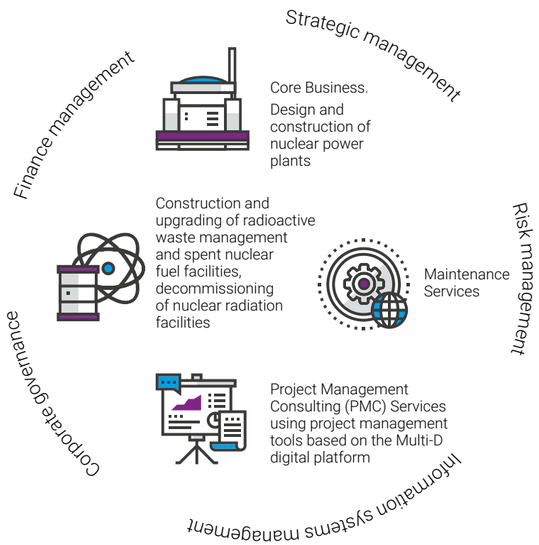
Design

Project management based on Multi-Dplatform digital tools

Mission

Our business involves the area of complex engineering construction project management based on the extensive record of nuclear project implementation.

We create a stakeholder value and ensures achievement of its objectives on the Russian and international markets.



Strategic goals

- Leadership in the core business – NPP construction.
- Assurance of operational sustainability (diversification).
- Financial stability.

Results of 2017

- Physical start-up of Power Unit No. 4 of Rostov NPP.
- Physical start-up of Power Unit No. 1 of Leningrad-2 NPP.
- Physical start-up of Power Unit No. 3 of Tianwan NPP (China).
- Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 3 of Kudankulam NPP (India).
- Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 4 of Kudankulam NPP (India).
- Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 1 of Rooppur NPP (Bangladesh).
- Commencement of the Digital Transformation of the Engineering Division.

Capitals as on 31.12.2017

(created value for the Company)

Financial

10-year Portfolio of Overseas Orders (traditional products and diversification) – 92.17 US bln dollars (-0.2 % to 2016).

10-year Portfolio of New Products – 115.89 US bln dollars (+0.03 % to 2016).

Revenue – 175,20 bln RUR (+14.6 % to 2016).

CAPEX – 2 712,70 mln RUR (+85 % to 2016).

Manufactured

Number of power units in the portfolio – 33.

Amount of concluded contractual obligations on procurement – 409.7 bln RUR incl. VAT.

Labour Productivity (in terms of proper revenue) – 3.73 mln RUR/pers. (+12.9 % to 2016).

Compliance with timing and cost of NPP construction abroad – 100%.

Human

Average Staff – 14 463 pers. (-3.14 % to 2016), among them a number of employees who upgraded qualification, – 9 665 pers.

Share of employees under 35 y.o. – 41 % (+2.5 % to 2016).

Salary and Other Benefits for employees – 17,116 mln RUR (-1.9 % to 2016).

Expenses for labor protection measures ~ 300 mln RUR.

Reducing the severity of injuries at construction sites, including the subcontractors, – by 15 %.

Intellectual

Number of inventions and utility models – 21 (increased by 3,5 times to 2016).

Submitted national and regional applications for inventions – 106 applications in 34 countries in the world (increased by 5 times to 2016).

Share of investment products in the revenue – 8.18 %.

An advanced system of nuclear power plant lifecycle management based on Multi-D technology.

Efficiency improvement by implementing RPS-projects.

Natural

Absence of violations of environmental requirements.

Expenses for environmental protection measures – 17.97 mln RUR (+18,2 % to 2016).

Emissions of pollutants – 76.73 tons (0 % to 2016).

Social and Relationship

23 countries of the world where the company runs business.

Taxes and fees paid in budgets of different levels – 6,263 mln RUR (+14.19 % to 2016).

Allocated for charity activities – 274.3 mln RUR (+40.4 % to 2016).

New partners: Assystem SA, Limited Liability Company SAP CIS, Hilti Distribution Ltd. etc.

Publications in Russian and foreign mass media per a year – 5,929.

Value created for stakeholders as on 31.12.2017

For shareholders

-11.2 bln RUR – Contribution to the consolidated free cash flow of Rosatom State Corporation for the nuclear order.

104.5 % – Concern Rosenergoatom investment program index (in the scope of responsibility).

92.17 US bln dollars – 10-year Portfolio of Overseas Orders (traditional products and diversification).

For the state

6.26 bln RUR of tax payments and 274.3 mln RUR – allocated for charity activities to the development of regions of operation.

For customers

Physical start-up of three power units.

For employees

16.7 thousand of work places.

1.185 mln RUR – Salary and Other Benefits per one Employee.

For partners (suppliers of equipment, contractors)

409.77 bln RUR incl. VAT – amount of concluded contractual obligations on procurement.

91.08 % – share of procurement at Russian suppliers.

For society

3,678 – number of New Jobs.

2.9 % – growth of the local employment share.

274.3 mln RUR – invested in regions development in the form of contributions.

7 % – the total volume of generated waste reduction.

Consumption of Power Resources decrease:

19 % – electrical power,

22 % – thermal power.

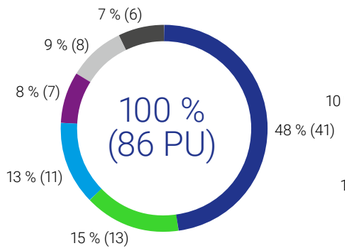
1.3. Target Markets

1.3.1. NPP Construction and Operation's Market

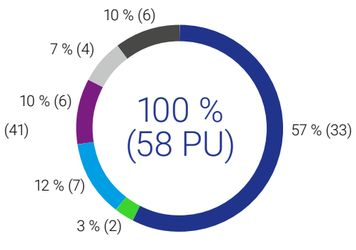
The Division is the EPC-contractor of the majority of NPP power units under construction and the leader on the Russian market. Following the results of 2017, the portfolio of orders in Russia comprises 8 power units at various stages of implementation. Foreign projects portfolio includes 25 power units in 10 countries worldwide.

Key Players on the NPP Construction Market

Total portfolio of orders for NPP construction, % (PU)



Portfolio of foreign orders for NPP construction, % (PU)



Data of ROSATOM and Engineering Division differ due to different methods of calculating the number of power units.

For more details see Annual report of ROSATOM: http://www.rosatom.ru/about/publichnaya-otchetnost/.

* Inclusion of power units in the 10-year portfolio of orders of the Engineering Division is based on the conclusion of contract , with the exception of units of the portfolio – putting Power Unit into commercial operation.

In 2017 the atomic power engineering share in the world energy consumption amounted to ~ 11 %. According to IAEA, 30 countries in the world generate atomic power, 13 of them depend on the electric energy generation by nuclear power plants by more than 1/4. Countries with the largest share of electric power generated by NPP are France (72.3 %), Slovakia (54.1 %), Ukraine (52.3 %), Belgium (51.7 %) and Hungary (51.3 %).

According to IAEA, as on 31.12.2007 there were 448 power reactors with a total capacity of 391.7 GW in operation (including temporarily shut down Japanese reactors). Another 59 reactors were under construction.

Currently, Asian countries are dominant in the demand for NPP construction which is related to a rapid growth of demand for electric energy in this region.

The leading global analytic agencies predict a considerable growth of the installed capacity in the nuclear power engineering. By 2030 the International power agency, UxC Consulting company and the Global nuclear association expect the capacity growth, under a basic scenario, at existing NPPs from 445 to 468 GW. IAEA in its forecasts, within the similar horizon period, specifies the bottom and the top limit of the world's NPP capacity to be from 345 to 554 GW.

1.3.2. Diversification Markets

Priority directions of diversification are:

- market of decommissioning of nuclear and radiation hazardous facilities (DC NRHF), construction and modernization of RAW and SNF management facilities;
- service market in terms of life extension;
- market of project management consulting services (PMC-services).

Table 1.2. Category of consumers, which the Division's performance beyond the core business

Business area	Products/services	Country	Consumers
Construction of RAW and SNF management facilities, DC NRHF	Engineering and process works	Austria	Research and development institutes
		Armenia	National regulators
		Belgium	Fuel companies
		Great Britain	National nuclear organizations
		Germany	National industrial companies
			Power generating companies
			National industrial companies
			Research and development institutes
			RW and SNF management companies
		Netherlands	National industrial companies
		UAE	National industrial companies
		Bulgaria	National nuclear organizations
		Iraq	National regulators
		Russia	Power generating companies
			Research and development institutes
		USA	National industrial companies
		Ukraine	Design consulting companies
			National regulators
		France	International consortiums
			International industrial companies
		Switzerland	Power generating companies
			RW and SNF management companies
		Japan	International industrial companies
	General contract on the facility	Bangladesh	National nuclear organizations
		Hungary	Power generating companies
		Lithuania	Power generating companies
		Egypt	National nuclear organizations
		China	Power generating companies
		Belarus	Federal State Enterprises
		India	Federal State Enterprises
		Iran	Federal State Enterprises
		Russia	Power generating companies
			Federal State Enterprises
Service	Maintenance and Repair	Iran	National nuclear organizations
		Russia	Power generating companies
PMC	Project Management	Turkey	Power generating companies
		China	National nuclear organizations
		India	National nuclear organizations
		Jordan	National nuclear organizations
		Finland	Construction companies
		Czech Republic	Power generating companies
		Russia	Federal State Enterprises
			Power generating companies
			Fuel companies

Systematically, all own developments including those in the field of information technologies and projects management are patented. Number of partnerships with key players on the Russian and foreign markets are developing day by day.

The Company regularly participates in open competitions and tenders and carries out direct sales to the largest Russian and foreign companies.

1.4. Digital Transformation of the Engineering Division

1.4.1. Digital Transformation Program

Partners of JSC ASE EC in digitalization:

- RFNC-VNIIEF;
- Moscow School of Management SKOLKOVO;
- Center for Strategic Research “North-West”;
- NRNU MEPhI (Higher School of Engineering);
- Dassault Systems;
- Autodesk;
- IBM;
- SAP;
- Hilti Russia;
- BIM-association;
- AssystemSA and other.

Digital platform of complex capital facilities life cycle management, means:

- reducing the cost and time period of construction of complex engineering facilities;
- optimization of civil and erection works, detailed planning of the sequence of working operations;
- saving up to 10% of the project budget;
- unified web-orientated space for management of capital construction facilities;
- compliance with the best trends in the field of digital assets and project management;
- compliance with BIM 4.0 approaches;
- partnership with the leading Russian engineering company.

In April 2017, resolution of President of RF approved the composition of the working group of the Economic Council of President of RF for “Digital Economy” area.

In July 2017, the Government of the RF approved federal program “Digital Economy of the Russian Federation” that is aimed, among other things, at digital transformation of the real sector of economy – Industry 4.0. In fact, such goal is already being implemented by the Engineering Division of Rosatom State Corporation, and the virtual prototypes of industrial and infrastructural facilities are an efficient tool for reaching the set goals.

In December 2017, the Government of RF approved road maps for the four main directions of program “Digital Economy of RF” including the Plan of measures for “Development of research competences and engineering capacities”.

In June 2017, Rosatom State Corporation, represented by JSC ASE EC, became a member of center of competences for digital economy of the Government of the RF. JSC ASE EC also became the representative of Building Smart alliance in Russia. A digital laboratory was formed in the Company.

In June 2017, agreements were signed that will facilitate the development of the Company’s competences in the field of digital transformation.

1

Agreement on establishment of Digital Transformation Center on the basis of Moscow School of Management SKOLKOVO, jointly with Center for Strategic Research “North-West”, in which JSC ASE EC performs the role of the engineering partner and provides its digital transition expertise to large and medium-size industrial companies.

The programs of the Center contribute to transformation of businesses due to introduction of state-of-the-art engineering technologies under the condition of new industrial revolution, and are aimed at entry on new high profit markets. The tasks resolved within the framework of the programs of the Center: Transformation of business-model of companies, transformation of organizational model and structure, reducing the time of development of new products and their placement on the market.

2

Agreement on establishment of Higher School of Engineering (HSE) of National Research Nuclear University (NRNU) MEPhI for training engineers for the digital future, creation of testing areas for new solutions for digital business. HSE Partners – IBM, Mail.RU, Dassault Systèmes, Autodesk, Siemens, etc.

In September 2017, the project of pilot master course “Engineers of the Digital Future” was launched, with 5 teams of 4 students each, who are trained various professions (designers, physicists-calculators, system engineers) and resolve the practical tasks of the Company jointly with employees of JSC ASE EC. Training fields: System engineering, Digital platforms, Data Science, Machine learning, BIM, etc.

The Engineering Division proceeded to implementation of a comprehensive technological transformation program aimed at sustainable development in terms of engineering digital technologies and increase of interaction efficiency on NPP construction in different countries.

The most important aspect of this transformation is creation of Rosatom State Corporation standards in terms of generation of information models and Building Information Modeling (BIM) processes. A team for BIM practical implementation for El-Dabaa NPP construction project has been established.

In 2017 preparatory works and test studies using advanced information tools have been done – Comprehensive information models for Hanhikivi-1 NPP projects and conceptual models of the operation stage on the example of Leningrad NPP-2 safety building have been made.

A complex of engineering works on the optimization of design solutions aimed at reduction of the NPP owning cost for Hanhikivi-1 NPP and Paks II NPP projects is performed.

The Events plan of the Engineering Division ensures the Division readiness to fulfill in full scope within the limited period the portfolio of orders meeting the internal and external challenges (Transformation program).

The works on information (digital) NPP models and BIM have been launched, including design solutions, resource plans, economic project parameters, technical solutions, configuration, change and requirements management tools.

Objectives of the Digital Transformation Program:

- to launch digital transformation projects;
- to establish a team of digital transformation leaders (implementation time period is 2018–2020).

Projects within the Program:

- pilot project on creation of an industrial and technological digital platform for digital twins storage;
- pilot project on creation of an industrial and technological digital platform for NPP lifecycle management;
- pilot project on creation of an industrial and technological digital platform for capital facilities lifecycle management.

Expectations:

- construction technologies are integrated into a unified module platform;
- the technology of capital facilities digital twins generation is worked out.

Table 1.3. Priority directions of digital transformation

Cost management engineering	Purchases and supply	Design	Data management
1. Implementation of the automated cost management system at all sites that operate using the input method.	1. Implementation of Milestone IPMS (SAP) in terms of digital procurements, supplies and quality. 2. Development of electronic catalog up to Multi-D Market. 3. Real-time connected suppliers (update of suppliers portal). 4. Digital acceptance of equipment.	1. Digital modeling: information models of projects, process setting. 2. Typification through functional groups. 3. Generation of a digital as-build model. 4. Launch at all projects of digital requirements and configuration management processes.	1. Data architecture in the Company. 2. Digital project management. 3. Implementation of information management system (IMS) at all projects. 4. Implementation of digital analytics module for project managers. 5. Data oriented comprehensive digital data management system.
Field engineering	**Operation**	**Services**	**Organizational infrastructure**
1. Organization of a digital infrastructure of construction management (bar-coding, incoming inspection of equipment etc.) 2. Digital headquarters. 3. Digital weekly-daily tasks. 4. Digital management of labor resources and mechanisms. 5. Monitoring of the construction status using VR/AR technologies.	1. Industrial implementation of the owing cost management module (OCMM). 2. Log in EDF with ABB-Multi-D operations. 3. Digital twins of equipment. Access to a "smart plant".	1. Implementation of Milestone IPMS (SAP) in terms of corporate systems. 2. Process digitalization and robotization (chatbots, ELMA). 3. Improvement of quality and process progress.	1. Generation of educational and development eco-system. 2. Infrastructure renewal to support digital transformation of the Division (data lakes, devices update, increase of speed and improvement of user-friendliness). 3. Creation of the Company management new modules. Build-up of partnerships. Organization of ASE DIGITAL.

Industrial and Technological Digital Platform – is the tool of production and management of complex engineering facilities digital information models at all lifecycle stages.

The objective of the Platform is the growth of the added value (for goods and services) within the framework of the digital economy and cost reduction by means of modeling and optimization of design, construction and managerial solutions; use of reference standard solutions; transfer of routine works to smart computer programs; reduction of production operations time period and minimization of mistakes/ errors and reworks.

The platform consists of:

- IT platform,
- software based on IT-platforms,
- tools created based on the software and technological interface management processes,
- structured and update data base.

1.4.2. Training and Professional Development of the Personnel under the Conditions of Digital Transition Demand

300

employees of the Engineering Division per year will be trained in 2018–2019

In 2017, with the participation of the Engineering Division, projects were launched in Russia for development of professional standards of system engineer and BIM-designer. The training of a new-breed of skilled personnel is performed via project "Higher School of Engineering of National Research Nuclear University MEPHI–ASE".

Due to modern development of digital technologies, digital skills and knowledge in the Engineering Division, there is now a need in new professions that did not exist before:

- **system engineers,**
- **requirements engineers,**
- **configuration managers.**

Besides the training of students under the master's course "Engineers for digital future", in 2018–2019 it is planned to re-train the employees of the Engineering Division.

Requirements to skills and knowledge in the field of digital model will be developed and established in 2018 for all the positions of the Engineering Division design unit.

New Forms of Training

- Network university – enlistment of courses of the best.
- Departments from different universities,
- Modular type of training.
- Courses based in a virtual platform, VR laboratory.
- Project based training in multi-professional groups.
- Testing ground for technologies testing.

Key Requirements to a System Engineer:

- ability to design;
- knowledge in the field of nuclear physics and technology;
- understanding the supply chain in the nuclear industry;
- knowledge of the main suppliers of equipment;
- ability to develop detail design documentation and provide both remote design supervision and supervision at the construction site;
- having at least the intermediate level of English knowledge.

1.5. Risks and Opportunities

1.5.1. Risk Management

In the Division the Automated risk management system is used, the main functions of which are the following:

- automated risk identification;
- generation of the data base of NPP construction projects key risks;
- projects risk map maintenance;
- tracking the compensating measures performance schedule.

Within the framework of improvement of risk management and internal control system in 2017 the following works were performed:

- weekly meetings in OBEYA format involving key managers of NPP construction projects and the Company management. Reviewing the most important and critical risks and taking decisions aimed at risks reduction/exclusion;
- implementation of Rosatom State Corporation project "Harmonization of the risk management system in compliance with the best international practice", with KPMG international consulting company as a consultant. Kursk NPP-2 and Bushehr NPP-2 are chosen to be pilot projects. Testing of the project risk management system was made, risk-sessions involving key staff of design offices were held, risk management tools were offered, including the tools for quantitative assessment of schedule risks and project cost;
- update of risk management standard for complex engineering construction projects of JSC ASE EC taking into account best international practice;
- training ~ 430 people;
- the Company entry into ECRI international association (Engineering & Construction Risk Institute) (GRI 102-13).

Risk Insurance

The purpose of risk insurance is to ensure coverage of the Company's property interests when carrying out of its production and economic activities, as well as when fulfilling the obligations under the existing contracts.

Peculiarities of the insurance coverage in the Division are stipulated by the character of the performance to be carried out, projects geography, legislative aspects of countries-customers, customers' requirements, contractual obligations.

Due to this, each particular project has its own unique insurance, the parameters of which depend on the terms of the contracts and agreements to be concluded, specifics of the region, as well as on the national legislation of the country where the project is implemented.

Insurance is made in Russian and foreign insurance companies. Selection of insurers depends on legislative regulations of the customer's country and the customer's requirements. Where applicable, risks are allocated in Russian insurance companies that get pre-approval of Rosatom State Corporation.

Insurance package of CEW is made with mandatory involvement of reinsurance companies both international and Russian. If needed, specialized insurance brokers, for example, such as Nuclear insurance broker, AON, JLT, Marsh, Willis, UIB, Renomia are engaged for insurance.

Table 1.4. Types of insurance mostly used in projects implementation

Insurance package of construction and erection works (applicable for Bushehr-2 NPP, Belarus NPP; planned to be applied for Rooppur NPP projects).	It ensures "all risks" coverage, i.e. it recovers damages caused to insured objects as a result of sudden and unexpected events not included in the exclusionary list in the insurance contract. In practice it means that almost any sudden and unexpected loss or damage occurred during the insurance period in relation to insured property located on the construction site will be compensated.
Insurance of equipment and documentation for a period of transportation (applicable to Bushehr-2 NPP, Tianwan NPP, Belarus NPP, Rooppur NPP, Kudankulam NPP; planned to be applied to Paks II NPP).	Provides the insurance coverage of equipment, materials and documentation during transportation.
Professional liability insurance (planned to be applied to El-Dabaa NPP and Paks II NPP).	Provides for protection of material interests of the contractor related to the necessity to compensate for damage to third parties in connection with carrying out by him of his professional performance. Mostly used in relation to designers, builders and surveyors.
Staff insurance.	Medical insurance of the personnel traveling outside the permanent place of residence within the official business trips. Medical insurance of the personnel on sites, in representative offices and branches. Personnel insurance against accidents and sicknesses.

Subcontractors' works and personnel engaged in the Project shall be also insured. Subcontractors are responsible for insurance of their own construction machinery and personnel.

Risk Management Objectives for 2018 and in the Mid-term:

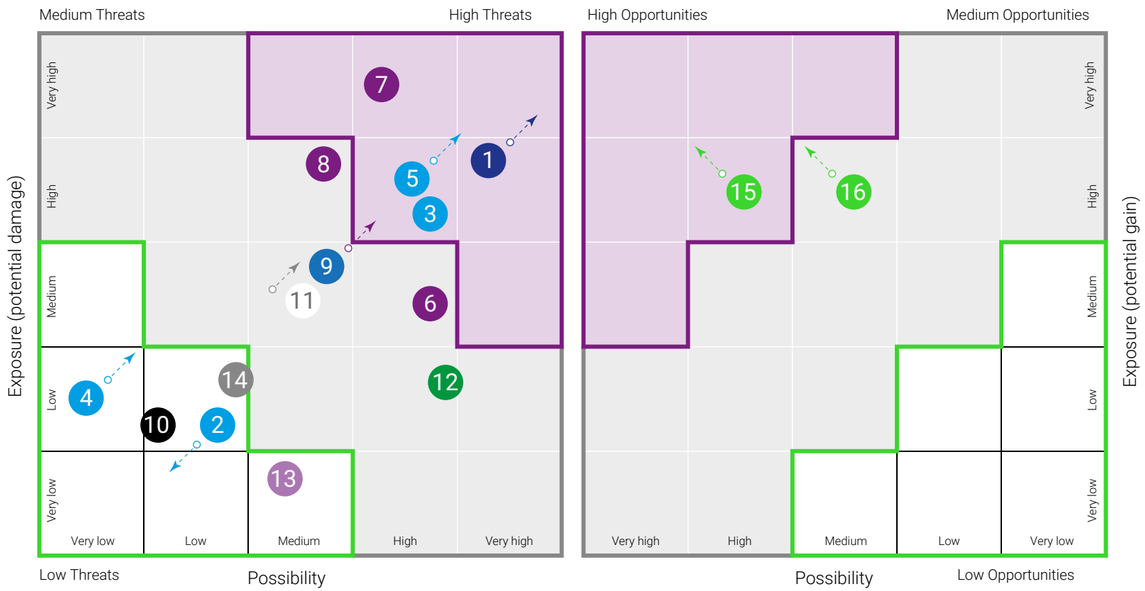
- Further development of the risk management process in compliance with the best international practice.
- Improvement of the risk-management culture proceeds via establishment of the risk owners' responsibility (establishment of KPI and OPI), improvement of risk analysis quality in the course of planning and making decisions.
- Education of employees engaged in risk management processes, in ECRI (Engineering & Construction Risk Institute).
- Adaptation of the Automated risk management system to existing risk management practices at all NPP construction projects.
- Integration of the risk management process into "Project risk management" unit of the Total Cost Management Nuclear Construction (TCM NC) system implementation program*.

Belarus NPP construction, May, 2017

* Total Cost Management Nuclear Construction (TCM NC) – a new integrated cost and time management system for nuclear facilities construction, that ensures full coverage of all management processes with the focus on the cost management.

1.5.2. Basic Risks and Opportunities

Following the results of 2017, the Engineering Division's key risks have been updated.



	Category	No.	Risk
Risks – threats	Political and country-based risks	1	Political risk
	Commercial and financial risks	2	Interest Rate Risk
		3	Risk of state funding size decrease
		4	Exposure to the credit risk of suppliers and customers
		5	Exchange rate risk
	Project risks	6	Risks of default under EPC-contracts on NPP construction abroad, and of default under NPP construction contracts in the RF.
		7	Loss of contract, postponement of EPC-contracts related to overseas NPP construction projects
		8	Cutting of foreign customer budgets
	Reputation risks	9	Reputation Risk
	Technological risks	10	Risk of developed technologies non-competitiveness
	Human resources	11	Qualified personnel shortage risk
	DC NRHF, construction and modernization of RW and SNF management facilities	12	Loss of contract, postponement of contracts implementation in a RAW and SNF segment.
	NPP service and modernization	13	Loss of contract, postponement of contracts implementation in the segment of "NPP service and modernization"
	Project Management Consulting services (PMC-services)	14	Loss of contract, postponement of contracts in the segment of project management consulting (PMC Services)
Risks – possibilities	IT Risks	15	Transformation into a digital company
		16	Increase of the personnel efficiency under conditions of transition to a digital company

1.5.3. Risk Management in 2017

Table 1.5. Risks and key performance on risk-management (GRI 102-15)

No. on the map	Risk (factor) a pointer indicates a trend	Trend discription	Key performance on risk management and response to risks emerged in 2017. Risk management results in 2017.
POLITICAL AND COUNTRY-BASED RISKS			
1	Political risk. (Political and economic instability of target markets).	**Risk impact growth factors:** Continued existence of sanctions on the part of the USA and the EU and retaliatory sanctions on the part of Russia. The occurrence of the probability of imposing sanctions on individuals and legal entities in the field of nuclear technologies and as a result – the possible restriction of transactions with foreign companies for the supply of equipment for NPPs, etc. **Risk mitigants:** Development of cooperation with Southeast Asian nations. Improvement of relations with Turkey and Egypt.	• Participation in international forums. • Intensity of negotiation efforts, including arrangement of visits of partner countries. • Arrangement of foreign customers' representatives' visits. • Looking for new markets. • Import substitution of technologies and equipment program implementation.
COMMERCIAL AND FINANCIAL RISKS			
2	Interest Rate Risk. (unavailability of global financial resources).	Considerable reduction of the Central Bank interest rate.	The risk did not affect the Company in the reporting year.
3	Risk of state funding availability decrease. (change of the Russian macroeconomic indicators).	Remaining relatively low price level for hydrocarbons. Deficit budget of Russia.	Results: No significant losses related to reduction of available state funding.
4	Exposure to the credit risk of suppliers and customers.	Bankruptcy of Westinghouse and, as a consequence, – growth of requirements to economic security of the general contractor and subcontractors.	Within the framework of competitive procedures, the counterparties' financial resources are assessed. The Company uses guarantees provided by the partner banks of Rosatom State Corporation.
5	Currency risk.	The incomplience between real exchange rates during the year 2017, and the rates in planning budgeting indicators in 2017.	Control of net foreign exchange position. Individual approach to subcontractors, including calculating for the share of the currency component in the cost value.
PROJECT RELATED RISKS. SEGMENT: HIGH POWER NPP			
6	Risks of default under EPC-contracts on NPP construction abroad, and of default under NPP construction contracts in the RF. (at the level of 2016).	Due to the increase in the number of projects, there is a risk of insufficient resources to fulfill contracts, in particular labor resources, see risk 11.	Unconditional execution of contracts conditions.
7	Loss of contract, postponement of EPC-contract related to NPP construction project. (at the level of 2016).	High dependence of the general contractor selection on political impact of competing countries.	Intensification of the work with customers. Holding negotiations between the management of Rosatom State Corporation and the government of a foreign customer. Development of action plans on cooperation with a foreign customer. Implementation of the time and cost reduction program in NPP construction. Proactive position of the Company in work with the existing foreign customers in relation to prospective projects.

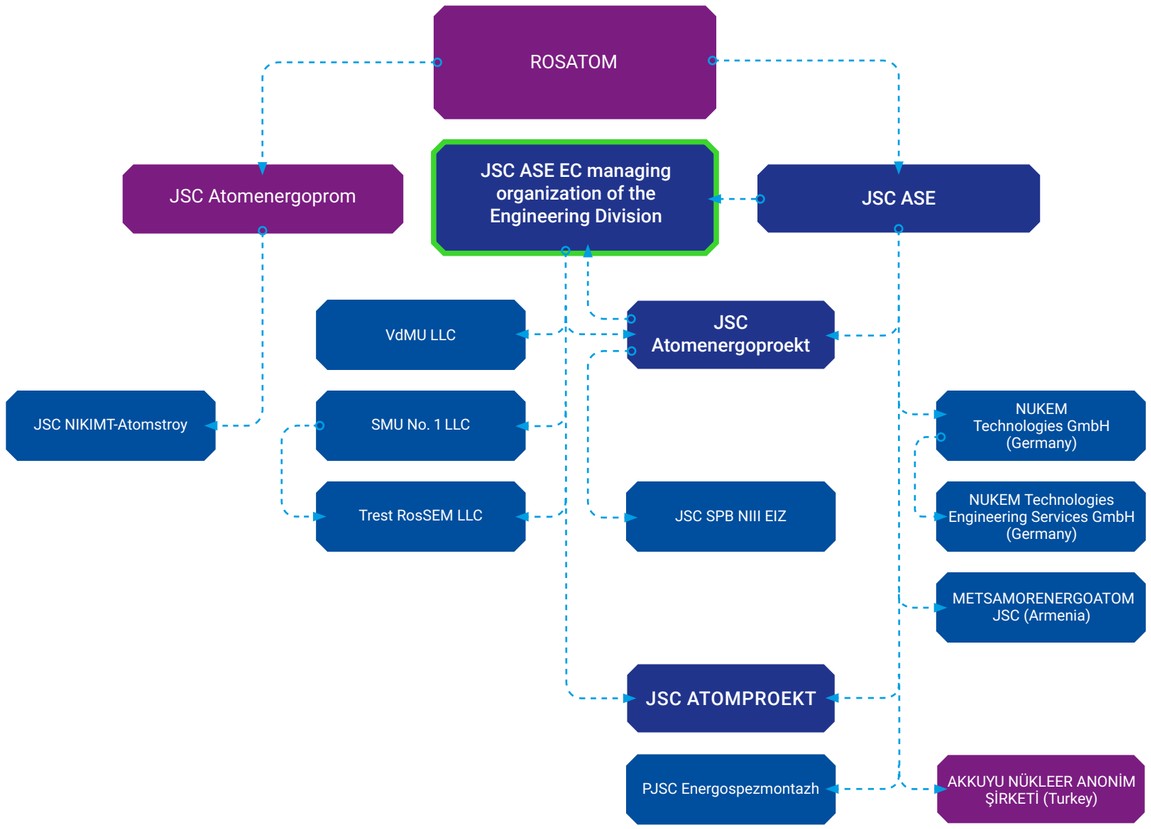
No. on the map	Risk (factor) a pointer indicates a trend	Trend discription	Key performance on risk management and response to risks emerged in 2017. Risk management results in 2017.
8	Cutting of foreign customer budgets. (1. Lack of funding in a number of countries where the Company has promising NPP construction projects. 2. Limited project investment resources in the RF). (at the level of 2016).	Changes in the macroeconomic performance of countries participating in projects.	Operating performance using alternative financing sources, including commercial loans, hiring of partners and investors on alternative markets, including through involvement of Private Institution Rusatom International Network to implementation of measures in relation to alternative financing sources. Use of opportunities for redistribution of free credit resources between projects. Results: alternative proposals for financing promising projects were presented to foreign customers.
REPUTATION RISKS			
9	Reputation Risk. 1. Major incidents in the global nuclear industry; 2. Mass Media publications (in the RF and abroad) of articles discrediting Russian nuclear technologies on traditional and prospective markets).	Possible expansion of sanctions of Western countries on cooperation in the field of nuclear technologies may adversely affect the reputation of the Division. In some cases, the Company's overseas projects development are faced with opposition from local public organizations and political structures. In general, this counterforceis relatively low, however, such events are periodically covered by the media.	Measures aimed at strengthening the positive public attitude towards development of the nuclear energy industry by improvement of information transparency and open communication with all stakeholders. Regular interaction with the public and the mass media in the regions of construction projects. Informing the public on all important events related to JSC ASE EC core business. Publication of the Company's Reports including the Integrated Annual Report. Analysis of stakeholders' structure, identification of their expectations, expansion of stakeholder groups, attraction of foreign stakeholders. Participation in Russian industrial events and international exhibitions and conferences. Strengthening the brand presence on foreign markets through marketing promotion of the brand.
TECHNOLOGICAL RISKS			
10	The risk of non-competitiveness of the technologies being developed (NPP of the Russian design).	**Risk impact growth factors:** Active promotion of technologies from Korea and China. Enhancement of NPP safety requirements. Development of new technologies of conventional fuels production. Improvement and cost-cutting of renewable technologies. **Risk mitigants:** Development of its own production base, cooperation, innovation, ensuring the growth of indicators for import substitution. Reducing transaction costs, improving the quality of project performance and construction work using digital transformation models.	Evaluation of projects and technological developments according to the criteria of novelty, cost and quality in the pre-investment phase. Use of project management technologies and flexible Agile methodologies aimed at evaluation of the design and technology. Application of benchmarking and Lean management technologies (in the RPS rules) for the growth of the qualification level, quality, enhancement of the organizational culture and the development of market competences. Application of methods and models of public-private partnership (BOO, etc.) Assisting the customer-countries in developing their own nuclear infrastructure. Improvement of design quality, cost reduction at the next stages of NPP life cycle, provided by the use of BIM models and Multi-D technologies. Diversification of activities, product "lines" and services – taking into account the diversity of customer requirements. Mastering of new market sectors. Complex offers to consumers of products and services.
HUMAN RESOURCES RISKS			
11	Qualified personnel shortage risk.	**Risk impact growth factors:** The lack / absence of specialists in the field of nuclear energy in the target countries for NPP construction. Lack of workers and engineers in the RF. **Risk mitigants:** Growth of attractiveness of nuclear energy enterprises as an employer.	Cooperation with universities, support and development of student construction teams.

No. on the map	Risk (factor) a pointer indicates a trend	Trend discription	Key performance on risk management and response to risks emerged in 2017. Risk management results in 2017.
ADDITIONAL MARKET SEGMENTS			
DC NRHF, CONSTRUCTION AND MODERNIZATION OF RW AND SNF MANAGEMENT FACILITIES			
12	Non-conclusion of new foreign contracts for RAW management and NPP decommissioning services. On the foreign market –subsidiaries: NUKEM Technologies GmbH, NUKEM Technologies Engineering Services GmbH. (1. Competition growth on market. 2. Transfer of a number of key tenders at the customers' initiative).	The risk remained at the level of 2016. Refusal of some European countries to use nuclear power opens for the Company the opportunity (with consideration for European asset – Nukem) to strengthen its presence on the market of RW, SNF management facilities construction and DC NRHF.	Negotiations with customers and potential partners on the market. Cooperation with market integrators – Rosatom SC – JSC Techsnabexport, JSC Rusatom Service, Nukem Technologies Sales International GmbH. **Results:** Participation in a major tender for rendering services in the field of radioactive waste management during decommissioning of Kozloduy NPP. The tender results will be announced in 2018. Overfulfillment of the plan for concluding new contracts on the market of Western Europe (Germany, France, Great Britain).
	Failure to meet deadlines for the implementation of concluded contracts at Ignalina NPP.	The risk remained at the level of 2016.	Strengthening the project team. Optimization of interaction with the Customer and the European Bank for Reconstruction and Development. Development of a project-oriented approach in the implementation of works at Ignalina NPP. **Results:** All key events of 2017 regarding the commissioning of the SRW storage and processing facility were completed on time. The "cold" tests of the solid RAW storage and processing facility were completed.
	Non-conclusion of new contracts as a result of increased competition on the Russian market for decommissioning and RAW management.	The risk increased in comparison with 2016.	Applications were submitted for the implementation of 6 R&D projects in the field of development of new decommissioning and RAW management technologies. **Results:** Applications review and making decisions on projects financing is planned for 2018.
NPP SERVICE AND MODERNIZATION			
13	Loss of contract, postponement of contracts implementation in the segment of NPP service and modernization. (tough competition on the part of local contractors).	The company, with its unique Multi-D project management technology, has the potential to provide the market with consulting services for the construction management of complex engineering facilities. Company's reputation and expertise allow retaining its market position.	**The application of best practices in the construction of nuclear power plants, obtained by the Company in the main segment (high-capacity nuclear power plants), allows to increase the competence in the provision of PMC services.** The risk did not affect the Company in the reporting year.
PROJECT MANAGEMENT CONSULTING SERVICES (PMC-SERVICES)			
14	Loss of contract, postponement of contracts in the segment of project management consulting (PMC Services). (tight competition on the part of the existing players).	The unique project management technology Multi-D makes it possible for the Company to provide the market with consulting services on management of complex engineering facilities.	Application of best practices obtained by the Company in the core business of NPP construction makes it possible for us to build-up the competences in the PMC-services segment.
RISKS-POSSIBILITIES			
IT			
15	Transformation into a digital company.	Development of the digital economy in Russia, penetration of digital technology into all processes of operating activities.	Implementation of Data-oriented comprehensive digital management system. Digitalization and robotization of processes to improve the quality and speed of flow. Updating the infrastructure to support digital transformation.
HUMAN RESOURCES			
16	Increase of the personnel efficiency under conditions of transition to a digital company.	Reducing transaction/time costs for processing information and for decisions' making. Increase of the personnel effectiveness through the use of information technologies.	Personal transformation of the staff, formation of the digital transformation leaders in JSC ASE EC and supporting leaders outside the company. Formation of basic knowledge and skills that contribute to the development and implementation of projects within the framework of transition to a digital company.

1.6. Corporate Governance

1.6.1. Corporate Governance System of the Engineering Division

Engineering Division Corporate Management Scope (as of 31.12.2017)*



Legend:

- *Key ompanies within the scope of management*
- *Companies within the scope of management*
- *Companies outside the scope of management*
- *Share/stockholding*

* On 17.04.2018 JSC ASE transferred the shares of CJSC METSAMORENERGOATOM to the joint-stock company Rusatom Energo International (JSC REIN) on the basis of securities sale and purchase agreement dated April 13, 2018 No. 7756/172016.

Table 1.6. Key principles of the corporate governance of the Division joint stock companies

The principle of protecting the rights and interests of shareholders	Corporate governance in companies is based on the principle of protecting and respecting the rights and legitimate interests of shareholders and contributes to the companies effective operation, including the growth of assets and the maintenance of financial stability and profitability. Shareholders have the rights provided by the Federal Law "On Joint-Stock Companies" and the Articles of Association. Corporate governance provides shareholders with a real opportunity to exercise their rights related to participation in the management of companies. The procedure of information exchange between companies and shareholders is regulated by the current legislation of the Russian Federation, the Articles of Association, industry and internal documents of the companies.
The principle of effective management by the Board of Directors	The performance of the Board of Directors (BoD) follows the principle of maximum compliance with and implementation of the shareholders' interests and responsibility for the companies performance. BoD acts in good faith in the interests of shareholders and companies. The Board of Directors ensures full transparency of its performance to shareholders.
The principle of transparency and objectivity of disclosure of information on the companies' performance	In order to ensure that the shareholders can take reasonable decisions, as well as communicate information on the companies performance to the stakeholders, the companies provide timely disclosure to shareholders and interested parties of reliable information, including the financial status, economic indicators, performance results, ownership and management structure. The disclosure and/or publication of any information takes into account the legislation provisions on state and commercial secret.
The principle of legality and ethics	The companies act in strict compliance with the legislation, generally accepted principles of business ethics, the Articles of Association of the companies and contractual obligations. Relations between shareholders and members of the Board of Directors are built on mutual trust, respect, accountability and control.

Key Results of 2017 in the Field of the Corporate Governance:

- new revisions of the Articles of Association of key organizations of the Engineering Division were approved, in which the competence of the management bodies was partially redistributed in accordance with the amendments to the Federal Law "On Joint Stock Companies" effective from 01.01.2017;
- in connection with the expiration on 31.03.2017 of the term of office of JSC ASE managing organization – JSC ASE EC (agreement on delegation of authority of sole executive body of JSC ASE dd. 27.03.2014), an agreement was concluded on delegation of authority of sole executive body of JSC ASE between JSC ASE and JSC ASE EC from 31.03.2017 for a period of 5 years from 01.04.2017;
- (GRI 102–10)) from 29.12. 2017, the shareholder's structure in JSC ASE EC, JSC ATOMPROEKT and PJSC Energospezmontazh has been changed:

Shareholder's structure	as of 01.01.17	as of 29.12.17
JSC ASE EC:		
JSC Atomenergoprom	27.2 %	-
JSC ASE	72.8 %	100 % minus 1 share
JSC Atomenergoproekt	-	1 share
JSC ATOMPROEKT:		
JSC Atomenergoprom	100 %	-
JSC ASE	-	100 % minus 1 share
JSC ASE EC	-	1 share
PJSC Energospezmontazh:		
JSC Atomenergoprom	99.9565 %	-
JSC ASE	-	99.9565 %

- on 28.12.2017 LLC ASE-Engineering was liquidated. The decision for voluntary liquidation was made by the sole member – LLC ASE-Engineering on 03.05.2017;
- on 25.12.2017 JSC Kazakh-Russian company "Nuclear power plants" (JSC KRNPP) in the Republic of Kazakhstan, was liquidated. The decision for voluntary liquidation of JSC KRNPP was made by the annual general meeting of shareholders of JSC KRNPP on 10.05.2017;
- on 03.07.2017 the decision of the sole shareholder of JSC Siberian Design and Research Institute "Orgstroyproekt" (JSC Atomenergoproekt) was made on the voluntary liquidation of the company (the company was liquidated on 01.03.2018);
- on 10.10.2017 Volgograd Design Branch of JSC Atomenergoproekt was liquidated.

Plans to improve the system of corporate governance in 2018 and in the mid-term:

switching on the electronic voting system at general meetings of shareholders of JSC ASE EC.

Particular standards of the Corporate Governance Code recommended by the Bank of Russia Letter No.06-52/2463 dd.10.04.2014 are reflected in a number of local regulations of the Division and are applied in practice, taking into account the provision that most organizations in the management scope are non-public joint-stock companies, and taking into account the specifics of the State Corporation Rosatom legal status, envisaged by the regulatory legal acts of the Russian Federation, ensuring the unity of management of nuclear industry organizations.

1.6.2. JSC ASE EC Corporate Governance System

(GRI 102-18, 102-19, 102-22, 102-23)

In 2017, the general meeting of shareholders of JSC ASE EC took various decisions, including the ones on the following issues:

- on approval of JSC ASE EC Articles of Association in new revision No. 4;
- on early termination of powers of JSC ASE EC BoD members;
- on election of the Board of Directors of JSC ASE EC;
- on the distribution of profits (including payment (declaration) of dividends) and losses of JSC ASE EC according to the results of the reporting year of 2016;
- on consent to a major transaction.

KPI has not been identificated. No committees under the BoD have been established.

The meetings are held mainly by absentee voting.

The members of the BoD do not have shares in the authorized capital of JSC ASE EC or hold shares of JSC ASE EC.

During the reporting year, no transactions on JSC ASE EC shares acquisition or takeover have been committed by the BoD members.

No renumeration was charged or paid to BoD members within the reporting period.

7 meetings

SHAREHOLDERS' GENERAL MEETING
(supreme corporate body of the joint stock company)

Resolutions including those in the area of economy, environmental protection, social benefits are binding for the Company's President.
(GRI 102-18)

34 meetings
60 settled issues

BOARD OF DIRECTORS*
(general management)

Report of JSC ASE EC BoD about the performance results see in Appendix 10 of the Book of Appendices.

The information about major transactions and transactions with interest can be found in Appendix 11 of the Book of Appendices.

** Biography of BoD members is given in Appendix 9.*

BARABANOV
Oleg Stanislavovich
First General Director Deputy of Joint Stock Company Atomredmetzoloto, Chairman of the Board of Directors of JSC ASE EC

VLASOV
Alexander Vyacheslavovich
Deputy Director of International Business Department – head of global development and strategic partnerships of Rosatom State Corporation

ARSEEV
Boris Nikolayevich
Deputy Director of the Development and International Business Unit – Head of International Business Department of Rosatom State Corporation

LIMARENKO Valery Igorevich
President of JSC ASE EC

BORISOV
Ivan Alekseevich
Senior Vice-President for Development of JSC ASE EC

(GRI 102-5) The organizational and legal form of JSC ASE EC is the property of state corporations, a non-public joint-stock company.

Paid-out dividends, mln RUR.

Company	2015	2016	2017	
			planned	fact
JSC ASE EC	1,451.12	-	-	-

PRESIDENT OF JSC ASE EC,
Managing company of JSC ASE, JSC Atomenergoproekt, JSC ATOMPROEKT

Organizes execution of the management bodies' resolutions by issuing task orders, administrative and executive orders, by delegating powers through the institute of authorities.

Top rank managers and other employees

For monthly assessment of top managers' effectiveness, the assessment system of operative performance indicators is applied.

The KPI system is applied as an annual effectiveness assessment (the KPI system is specified in detail in section "Human capital").

For assessment the effectiveness over a year period, the design and strategic bonus award with the relevant indicators is applied.

Information about JSC ASE EC registrar

- Joint Stock Company "Registrar R.O.S.T." that keeps the register of JSC ASE EC registered security holders.
- The address of the registrar: Russian Federation, 107996 Moscow, Stromynka Str., 18, bld. 13.
- (GRI 102-7) Registered ordinary shares with the nominal cost of 1 (one) RUR each in the number of 500 001 877 (five hundred million one thousand eight hundred and seventy seven) pieces for a total amount of 500 001 877 (five hundred million one thousand eight hundred and seventy seven) RUR are placed by JSC ASE EC. All shares of the Company are issued non-certificated, placed by means of closed subscription.
- According to the independent appraiser's report the market value of one registered ordinary share amounted to 14 RUR 35 kopecks.
- As of 31.12.2017, the authorized capital of the Company amounted to 500,001.877 RUR.

Table 1.7.

Committees under the President of JSC ASE EC (GRI 102-22)

Committee	The Chairman	Key issues reviewed in 2017
Committee on Restructuring of non-core assets (asset complexes, property and stock capital)	Senior Vice-President for Economy and Finance N. Podorov	**12 meetings.** Main issues: • on the recognition of the non-core asset of the recreation center "Lesnoy Uyut"; • approval of the cut-off price and the way of restructuring of the non-core assets located in the Leningrad and Kaliningrad regions; • on the way of restructuring of property complexes located in the Rostov, Tomsk and Tver regions; • on the recognition of the non-core assets and the way of restructuring of premises located in the Kaluga region; • on the way of restructuring of the non-core assets located in the Udmurt Republic, as well as in the Tver and Rostov regions.
The Investment Committee		**19 absentee meeting.** Main issues: • approval of projected funding limits for 2018; • reallocation of limits between projects/transfer to subsequent periods in case of production needs; • initiating of new investment projects with further issue raising to Rosatom State Corporation Investment Committee in order to get approval of additional scope of funding; • closing of the implemented investment projects.
Budget committee within the management scope of JSC ASE EC		**29 meetings, including 14 absentee meetings.** Main issues: • work results of key companies within the scope of management JSC ASE EC for 2016; • budgets of key companies within the scope of management JSC ASE EC for 2017; • quarterly results of key companies within the scope of management JSC ASE EC for the year 2017; • increase in the limits of financing of the competitive procedure of JSC SSMU Lenatomenergostroy; • conclusion of agreements on assignment of claims (cession) to JSC Siberian "Orgstroyproekt"; • the targeted use of funds from the receipt of unremunerated contribution to the property of LLC Trest RosSEM and LLC SMU No. 1; • the first reading of key companies within the scope of management JSC ASE EC budgets for 2018.

Table 1.8.

Boards under the President of JSC ASE EC (GRI 102-22)

Board	Director	Key issues reviewed in 2017
Joint Board	Senior Vice-President for Economy and Finance N.Podorov	**28 meetings.** Main issues: • commencement and maintenance of claims and lawsuits in the process of execution of contracts for supply of equipment and performance of construction and erection works; • provision of bank guarantees and security payments under supply contracts and CEW; • determination of financing sources; • coordination of the currency of subcontracts for DSW and equipment supply; • pre-payment when concluding subcontracts for CEW; • settlement of pricing issues and payment procedure when performing CEW on construction sites; • settlement of issues when conducting tender procedures; • settlement of issues related to changes in staffing and organizational structure in the central office and branches.
Project management Board	Senior Vice-President for Russian Projects Management S.Olontsev	Main issues: • confirmation of the conformity of JSC ASE EC project management system to the requirements of the International Association for Project Management IPMA.
ASE Group of companies development Board	Senior Vice-President for Development I.Borisov	**28 meetings.** Main issues: • the need for specialists with foreign experience and knowledge of the English language, the definition of required knowledge, skills and abilities in the specializations of designers; • preparation of the forecast of the total number of personnel responsible for the performance of CEW based on the developed target business model of the Division; • development of the schedule for the creation of information models and the information model standard; • identification of projects analogues for each project in the Division's portfolio; • development of basic NPP configuration management methods; • development of quality management methodology using quality gates; • development of conceptual architecture of the digital industry platform for lifecycle management of capital facilities.

1.6.3. Corporate Governance System of JSC ASE

(GRI 102-18, 102-19, 102-22, 102-23)

In 2017 JSC ASE as the sole executive body took decisions on the following issues:

- approval of JSC ASE Articles of Association in new revision No.10;
- election of the Board of Directors of JSC ASE;
- transfer of powers of the sole executive body of JSC ASE to the managing company;
- approval of JSC ASE Articles of Association in new revision No.11;
- the distribution of JSC ASE profit (including payment of dividends) following the results of 2016 financial year;
- approval of JSC ASE Articles of Association in new revision No.12;
- approval of the concluded major transaction;
- consent to a major transaction.

8 decisions of the sole shareholder (10 issues)

SHAREHOLDERS' GENERAL MEETING
(Supreme corporate body)

Resolutions including those in the area of economy, environmental protection, social benefits are binding for President of the Company.

34 meetings
72 settled issues

BOARD OF DIRECTORS*
(General management)

KPI has not been specified No committees or commissions have been established.

The meetings are held mainly in by absentee voting.

The members of the BoD neither have shares in the charter capital nor hold shares.

During the reporting year, no transactions on shares acquisition or carve-out have been committed by the BoD members.

No remuneration was charged or paid to BoD members within the reporting period.

Report of JSC ASE Board of Directors about the performance results see in Appendix 10 of the Book of Appendices.

The information about major transactions and transactions with interest can be found in Appendix 11 of the Book of Appendices.

** Biography of BoD members is given in Appendix 9.*

BARABANOV
Oleg Stanislavovich
First General Director Deputy of Joint Stock Company Atomredmetzoloto, The Chairman of the Board of Directors of JSC ASE

VLASOV
Alexander Vyacheslavovich
Deputy Director of International Business Department – Head of Global Development and Strategic Partnerships of Rosatom State Corporation

ARSEEV
Boris Nikolayevich
Deputy Director of the Development and International Business Unit – Head of International Business Department of Rosatom State Corporation

PODOROV
Nikolay Grigorievich
Senior Vice President for Economy and Finance of JSC ASE EC

SAVUSHKIN
Vladimir Nikolaevich
Senior Vice-President – Director of JSC ASE EC Moscow Branch

JSC ASE placed registered ordinary shares with the nominal cost of 10 90/91 RUR each in the amount of 31,854,080 pieces for a total amount at a nominal value of 350,044,835 15/91 RUR. Privileged shares have not been placed. The shares are out of public trading, their current market value has not been defined.

In 2017 JSC ASE Board of Directors held 34 meetings where the decisions on the following issues were taken:

- approval of JSC ASE budget for 2017;
- the offer to the sole shareholder of JSC ASE to take a decision on transfer of powers of the sole executive body of JSC ASE to the Managing company – JSC ASE EC, on approval of the terms of the agreement on delegation of authority of sole executive body of JSC ASE No. 7763/171268 between JSC ASE EC and JSC ASE;
- approval of JSC ASE annual report for 2016 and JSC ASE annual accounting (financial) reporting for the results of 2016;
- recommendations on profit distribution, including according to the amount of dividend on JSC ASE shares, and its payment procedure (following the results of the financial year of 2016);
- approval of JSC ASE auditor for 2017 and determination of his services remuneration;
- termination of JSC ASE participation in the Self-regulating organization of Association "Association of organizations conducting construction, modernization, overhaul of nuclear facilities "SOYUZATOMSTROY";
- participation of JSC ASE in Association "Self-regulating regional industrial association of employers "Association of Nizhny Novgorod builders";
- termination of JSC ASE participation in CJSC METSAMORENERGOATOM;
- approval of the List of charity initiatives of JSC ASE for 2017;
- the change in the share of JSC ASE participation in the charter capital of JSC ASE EC by purchasing from the Joint-Stock Company "Nuclear power generation complex" ordinary registered uncertificated shares of JSC ASE;
- participation of JSC ASE in the charter capital of Joint Stock Company "Power Technologies Research and Development Design Institute ATOMPROEKT" by purchasing from Joint Stock Company "Nuclear power generation complex" ordinary registered uncertificated shares of Joint Stock Company "Power Technologies Research and Development Design Institute ATOMPROEKT";
- participation of JSC ASE in the charter capital of Public Joint Stock Company "Energospezmontazh" by purchasing from Joint Stock Company "Nuclear power generation complex" ordinary registered uncertificated shares of PJSC "Energospezmontazh";
- determination of the price of major transactions, on approval of conclusions on major transactions, on the offer to the sole shareholder to approve a major transaction concluded / take a decision on the consent to a major transaction;
- consent to make transactions by the Company in cases stipulated by the Company's Articles of Association.

JSC ASE EC MANAGING COMPANY
(carries out the powers of the sole executive body – President)

Top rank managers and other employees

Organizes execution of the management bodies' resolutions by issuing task orders, administrative and executive orders, by delegating powers through the institute of authorities.

Paid-out dividends, mln RUR

Company	2015	2016	2017	
			planned	fact
JSC ASE	-	-	4,000	4,000

Information about JSC ASE registrar

- Joint Stock Company "Registrar company "STATUS".
- 109544, Moscow, Novorogozhskaya str. 32, bldg.1 .
- TIN 7707179242, PSRN 1027700003924.
- Phone number: + 7 (495) 974-83-50. Fax: + 7(495) 678-71-10.
- License №10-000-1-00304 dd. 12.03.2004 for acting as registrar.
- The legal form is a non-public stock Company.

For monthly assessment of top managers' effectiveness, the assessment system of operative performance indicators is applied. The KPI system is applied as an annual effectiveness assessment (the KPI system is specified in detail in section "Human capital") For assessment the effectiveness over a year period, the design and strategic bonus award with the relevant indicators is applied.

1.6.4. JSC Atomenergoproekt Corporate Governance System

(GRI 102-18, 102-19, 102-22, 102-23)

Important resolutions of the general meeting of shareholders:

- Approval of JSC Atomenergoproekt Articles of Association in new revision;
- Early termination of rights/election of JSC Atomenergoproekt BoD members.

6 meetings

SHAREHOLDERS' GENERAL MEETING
(Supreme corporate body)

Resolutions including those in the area of economy, environmental protection, social benefits are binding for the Company's President.

23 meetings

BOARD OF DIRECTORS*
(General management)

KPI has not been specified No committees under the BoD have been established.

The meetings are held in absentee form.

The members of the BoD do not have shares in the authorized capital of JSC Atomenergoproekt or hold shares of JSC Atomenergoproekt.

During the reporting year, no transactions on JSC ASE EC, JSC Atomenergoproekt shares acquisition or takeover have been committed by the BoD members.

No remuneration was charged or paid to BoD members within the reporting period.

JSC Atomenergoproekt BoD Report about the results of performance is provided in Appendix 10 of the Book of Appendices.

Information about major transactions and transactions with interest can be found in Appendix 11 of the Book of Appendices.

** Biography of BoD members is given in Appendix 9.*

EGOROV
Leonid Valentinovich
First Deputy General Director JSC Atomenergoproekt, Chairman of Board of Directors

SINITSIN
Vladimir Victorovich
Deputy Director General for Economy and Finance, JSC Atomenergoproekt

DMUKHA
Olga Evgenyevna
Administrative Director, JSC Atomenergoproekt

AKSENIN
Eduard Alexandrovich
Deputy Director for Foreign Projects Cost Management, JSC ASE EC

POLYAK
Igor Efimovich
Deputy Head of Capital Construction Management Division, JSC ASE EC

JSC Atomenergoproekt legal form of corporation is a is a non-public Joint Stock Company.

Information about JSC Atomenergoproekt registrar

- The register of JSC Atomenergoproekt registered stock owners is kept by JSC R.O.S.T. Registrar.
- Location: 107996, Moscow, Stromynka Str., 18, bld. 13.
- Mailing address: 107996, Moscow, Stromynka Str., 18, mail box 9.
- TIN 7726030449, PSRN 1027739216757.
- Tel./fax: (495) 771-73-36.
- The license for register keeping performance No. 045-13976-000001 dd. 03.12.2002 is issued by the Federal Stock Market Committee.
- JSC Atomenergoproekt has floated the common registered uncertified shares of 1 (one) RUR each at par in the amount of 1,547,504,159 shares for the total value of 1,547,504,159 RUR at par. Privileged shares have not been floated. The shares are out of public trading, their current market value has not been specified.

Important resolutions of the Board of Directors:

- Liquidation of the Volgograd Design Branch of JSC Atomenergoproekt;
- JSC Atomenergoproekt participation in the JSC ASE EC charter capital by purchasing a common registered uncertified share from JSC Atomenergoprom;
- Approval of the JSC Atomenergoproekt – JSC ASE agreement on paying of an unremunerated contribution to the joint-stock company property and agreement on commitment of this major transaction.

Paid-out dividends, mln RUR

Company	2015	2016	2017	
			planned	actual
JSC Atomenergoproekt	-	6.61	-	-

MANAGING COMPANY – JSC ASE EC
(Exercises the power sand authority of a sole executive body – Director General)

Organizes execution of the management bodies' resolutions by issuing task orders, administrative and executive orders, by delegating powers through the institute of authorities.

Top rank managers and other employees

For monthly assessment of top managers' effectiveness, the assessment system of operative performance indicators is applied. The KPI system is applied as an annual effectiveness assessment (the KPI system is specified in detail in section "Human capital"). For assessment of the effectiveness of period over one year, the project and strategic bonus award with the relevant indicators is applied.

1.6.5. JSC ATOMPROEKT Corporate Governance System

(GRI 102-18, 102-19, 102-22, 102-23)

* Before 27.12.2017, the supreme corporate body of JSC ATOMPROEKT was the shareholders' general meeting acting through the sole shareholder – JSC Atomenergoprom, that owned 100% of JSC ATOMPROEKT shares.

On 27.12.2017, 100% of JSC ATOMPROEKT shares were transferred by the latter on the basis of the Sale agreement dd. 27.12.2017 in favour of JSC ASE and JSC ASE EC.

Proceeding from the above-said, resolutions of JSC ATOMPROEKT supreme corporate body were taken in 2017 by the JSC ATOMPROEKT sole shareholder – JSC ATOMENERGOPROM and issued as sole shareholder's resolutions.

No general shareholders' meetings of JSC ATOMPROEKT were held after 27.12.2017.

Established on 27.12.2017*

SHAREHOLDERS' GENERAL MEETING
(Supreme corporate body)

Resolutions including those in the area of economy, environmental protection, social benefits are binding for the Company's President.

Established on 22.11.2017
1 absentee meeting
3 settled issues

BOARD OF DIRECTORS**
(In charge of general management)

KPI has not been specified No committees under the BoD have been established.

• The meetings are held via teleconferencing.

The members of the BoD do not have shares in the authorized capital of JSC ASE EC or hold shares of JSC ASE EC.

During the reporting year, no transactions on JSC ASE EC shares acquisition or carve-out have been committed by the BoD members.

No remuneration was charged or paid to BoD members within the reporting period.

JSC Atomproekt BoD Report about the results of performance is provided in Appendix 10 of the Book of Appendices.

Information about major transactions and transactions with interest is given in Appendix 11 of the Book of Appendices.

*** Biography of BoD members is given in Appendix 9.*

BUZHAROV
Nikolay Alexandrovich
Deputy Director for Economics, JSC ASE EC – Chairman of BoD

KAZARIN
Alexander Mikhailovich
Deputy Director for Design, JSC ASE EC

NOVIKOVA
Olga Konstantinovna
HR Director, JSC ATOMENERGOPROEKT

ILYINSKY
Konstantin Mikhailovich
Director of JSC ATOMPROEKT Saint-Petersburg Design Institute

SHAFALOVICH
Natalya Borisovna
HR and Organization Development Director, JSC ASE EC

JSC ATOMPROEKT 22 sole shareholder's meetings were held within 2017, that took decisions in the following areas:

- JSC ATOMPROEKT Articles of Association were approved in the new revision (sole shareholder's decision No. 237 dd. 22.11.2017);
- JSC ATOMPROEKT Board of Directors was established and its members were elected (sole shareholder's decision No. 237 dd. 22.11.2017);
- Early resignation/ election of JSC ATOMPROEKT Board of Director's members (sole shareholder's decision No. 238 dd. 26.12.2017) (Borisov I.A., Senior Vice-President for development of JSC ASE EC resigned from, and Shafalovich N.B, Director for JSC ASE EC HR and organization development was admitted to the BoD);
- Distribution of profits, payout of dividends (announcement) by the results of 2016 Following the results of JSC ATOMPROEKT financial and economic performance over 2016, it was decided to pass and omit the JSC ATOMPROEKT share dividends in 2016.

JSC ASE EC MANAGING COMPANY
(Exercises the powers and authority of a sole executive body – General Director)

Organizes execution of the management bodies' resolutions by issuing task orders, administrative and executive orders, by delegating rights through power of attorney.

Top rank managers and other employees

For monthly assessment of top managers' effectiveness, the assessment system of operative performance indicators is applied. The KPI system is applied as an annual effectiveness assessment (the KPI system is specified in detail in section "Human capital") For assessment the effectiveness over a year period, the design and strategic bonus award with the relevant indicators is applied.

Corporate Governance information in JSC NIKIMT-Atomstroy, Trest RosSEM Ltd, JSC Energospezmontazh are cited in Appendix 9 of the Book of Appendices.

Information about JSC ATOMPROEKT registrar

- The register of JSC ATOMPROEKT registered stock owners is kept by JSC R.O.S.T. Registrar. Title: Joint Stock Company R.O.S.T. Registrar.
- Legal address: Moscow, Stromynka Str., 18, bld. 13. Mailing address: 107996, Moscow, Stromynka Str., 18, mail box 9.
- TIN 7726030449, PSRN 1027739216757.
- Tel./fax: (495) 771-73-36.
- The license for register keeping performance No. 10-000-1-00264 dd. 03.12.2002 is issued by the Federal Stock Market Committee.
- JSC ATOMPROEKT form of ownership is private property.
- The legal form is a closely-held stock Company.
- The general amount of shares is 1,233,576,578 items, the amount and nominal cost of common shares is 1,233,576,578 shares at the cost of 1,233,576,578 RUR. It has no privileged actions. There are no restrictions as to the sale of shares, shares are not circulated at on-exchange trading.

Paid-out dividends, mln RUR

Company	2015	2016	2017	
			planned	fact
JSC ATOMPROEKT	2,067.35	-	-	-

1.6.6. Control of Financial and Economic Performance and Anti-corruption Policy

JSC ASE EC accounting department and Internal Control and Audit Service operate in the system of financial and economic activities of the Engineering division as inspecting agencies.

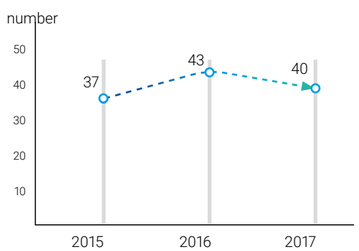
There are no revision committees in JSC ASE EC, JSC ASE, Atomenergoproekt JSC, ATOMPROEKT JSC.

Internal Control and Auditing System

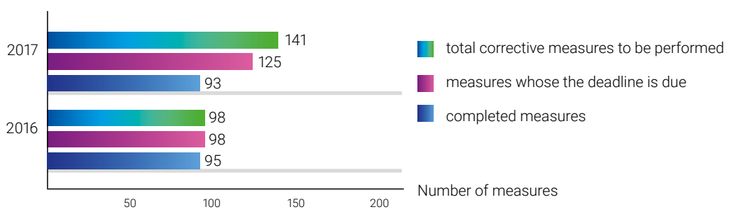
2017 key results:

- The process of separation of internal control, internal audit and functions in the area of competitive policy control has been completed. The Division's Arbitration Committee has been established. Departments' employees have been trained.
- New practices of the internal audit of the NPP construction project management system are implemented that allow reducing the time of audits and simultaneously enhancing their efficiency, relevance and frequency with significant increase of the number of projects implemented in the Division.
- The amount of expert analytical measures have increased by 22% (due to the Division Management's growing need in internal consulting including independent and objective opinions regarding separate economic aspects, making independent opinions about how to improve the performance).
- Audits of business process "Record of transactions related to acquisition and rendering of works and services", "Making changes in the design estimates and detailed design documentation" as part of Belarus and Rostov NPP construction projects, Procedures for non-conformance control during the main performance, TOP-100 KPI and the process of development of the public annual report.
- The time of checking of procurement procedures publication (RPS-project "Checking of procurement procedures publication at UIS for placing orders and procurement of goods, works and services for Rosatom State Corporation needs" is implemented) reduced sixfold.

Yury Degtyarev, employee of the Internal Control and Audit Service has won the "Person of the year" competition organized by Rosatom State Corporation, in the "Internal control and audit" nomination.



Amount of inspecting measures



Follow-up of corrective measures

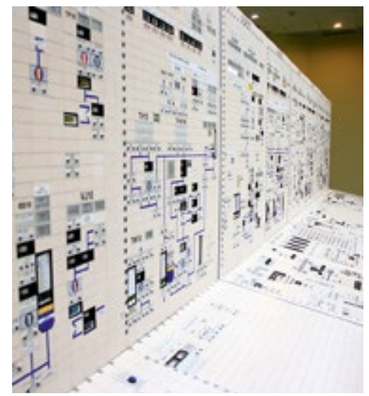
Table 1.7. Amount of officials subject to disciplinary measure

Company	2015	2016	2017	Δ 2017/2016 %
JSC ASE	7	11	0	-100
JSC ASE EC	37	56	7	-88
JSC Atomenergoproekt	0	3	2	-33
JSC ATOMPROEKT	0	0	0	0
LLC Trest RosSEM	0	13	4	-69
LLC SMU-1	2	0	0	-
JSC NIKIMT-Atomstroy	0	6	2	-67
PJSC Energospezmontazh	0	0	2	100
Total in the Engineering division	**46**	**89**	**17**	**-81**

In other companies within the scope of management of the Division, officials were not brought to disciplinary responsibility.

Table 1.8. Number of inspections of procurement measures

Company	2015	2016	2017 planned	2017 fact	Δ 2017/2016 %
JSC ASE	1	1	1	4	300
JSC ASE EC	6	2	4	8	300
JSC Atomenergoproekt	0	3	2	4	33
JSC ATOMPROEKT	0	3	2	1	-66
LLC SMU-1	1	1	1	2	100
LLC VDMU	1	1	1	1	0
LLC Trest RosSEM	1	1	1	2	100
JSC NIKIMT-Atomstroy	0	0	0	1	-
PJSC Energospezmontazh	0	0	0	2	-
Total in the Engineering division	**11**	**12**	**13**	**25**	**92**



Anti-corruption

(GRI 102–17) The Division employs the "Unified Industrial procedure of checking notifications about corruption and other legal offences arriving at the hotline and through other channels of Rosatom State Corporation". Notifications about the quality of products supplied to nuclear facilities (works and services) are received and checked accordingly.

In 2017, no corruption cases were revealed in the Engineering Division.

The employees are aware of the possibility to inform publicly or anonymously of the facts of corruption via "Hot Line" channels of specialized communication or through electronic mail to the address of JSC ASE EC asset security subdivision, as well as in writing through the "Confidence Boxes" located in central offices, branch offices and representative offices of organizations. Any employee as well as representative of another organization has the possibility to provide any information about corruption, namely:

- cases of employees being tempted to commit corruption legal offences;
- cases of corruption legal offences committed by other employees, agents of the organizations or other persons;
- the employee's conflict of interests that has arisen or is likely to arise.

Methods of risk assessment related to corruption include definition of specific business-processes and business operations in the the Company's structural units where the probability that the employees may commit corruption legal offences both for the personal or organization's interest, is the highest.

Corruption risks are assessed as follows:

- Business processes specifying critical business process check points performed by structural divisions and/or organization are determined (identified, specified and regulated);
- For each critical point, a description of possible corruption legal offences is made that includes:

  - characteristics of profits or benefits that may be obtained by an organization or its individual employees owing to the committed corruption offence,

  - key positions,

  - possible forms of corruption payments and (or) other benefits and advantages that may stir or satisfy any lucrative or other interest of business process participants.

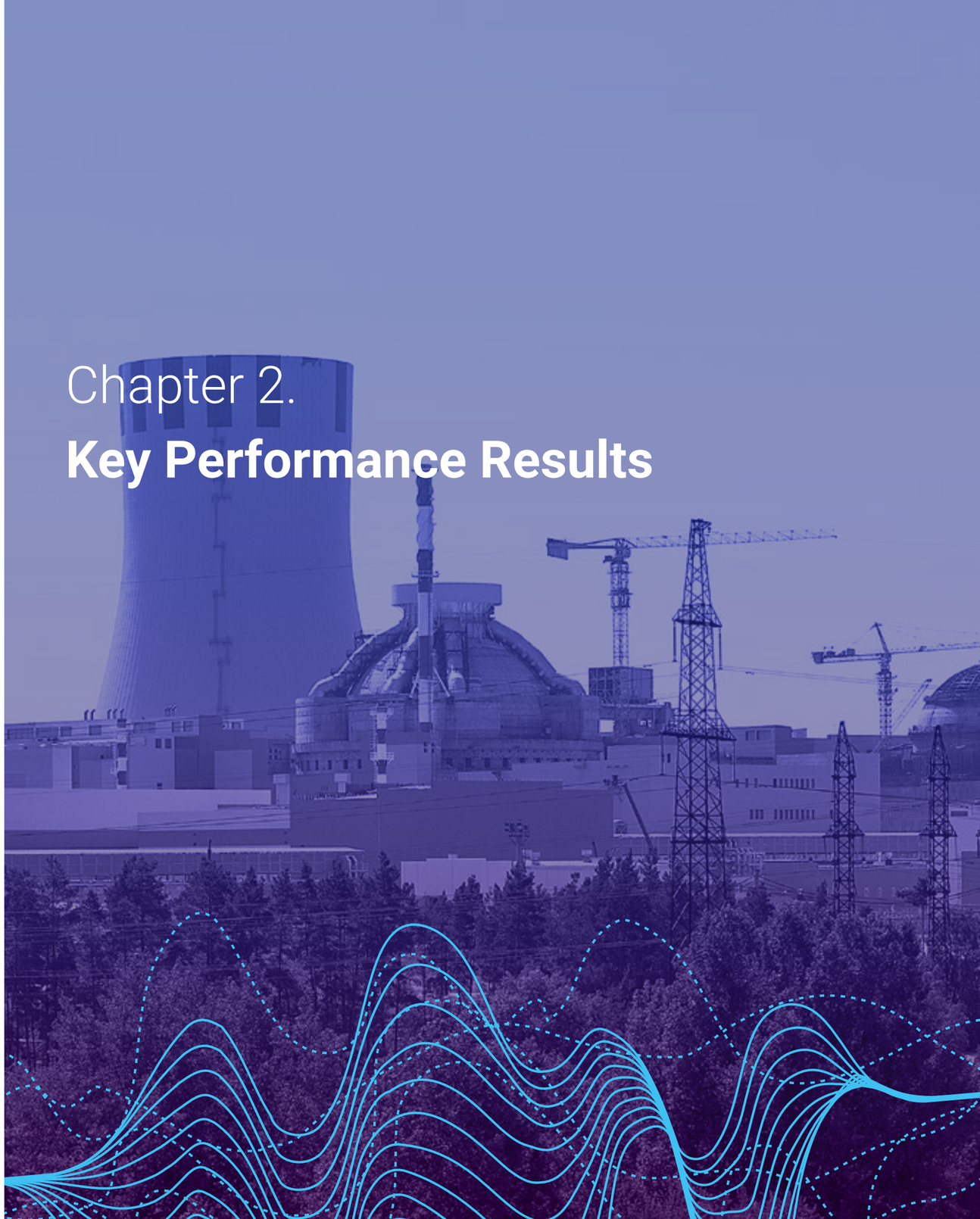
Based on the performed analysis:

- A map of corruption risks of organization is compiled that becomes an integral attachment to regulating and methodical documents or respective business-processes;
- The map specifies key positions, special anti-corruption procedures and requirements are established in respect of the employees taking these positions (for example, regular submission of the income declaration).

Following the results of the works, a complex of measures to eliminate or minimize corruption risks is developed.

According to the analisys we reveal conflicts in due time during operational performance of the company.

Chapter 2.
Key Performance Results



2.1. Financial Capital

Financial capital is financial resource that is employed by the Company during production of goods (rendering of services) that are manufactured in the result of commercial and investment operation and those that are received through financing (debt or equity). Financial capital management is an efficient employment of all financial tools for achieving Division's strategic goals.

Nikolay Podorov, Senior Vice-President for Economy and Finance

– In your opinion, what has influenced positive financial results of the Division in 2017?

– The results of the reporting year have been influenced by the growing efficiency and quality of the Company management, the demand for engineering services rendered by the Division on the Russian and international markets and active development of the Russian nuclear industry as a whole.

The growth of revenues in 2017 as compared to those in 2016 amounts to 14.6%. The main contribution into this growth was made by foreign NPP construction projects.

The positive level of EBITDA indicator is maintained due to the efficient cost management process that is ensured by the control of production costs and restraining of management costs..

The major part of investments in 2017 was allocated for equipping of construction sites. The mechanization costs of Russian and CIS construction sites (Kursk NPP, Belarus NPP) accounted to 808.8 mln RUR. As to foreign sites (Rooppur NPP in Bangladesh, Bushehr NPP in Iran, Akkuyu NPP in Turkey), their cost reached 353.2 mln RUR. The IT-infrastructure costs amounted to 1,230.2 mln RUR. The cost of development of infrastructure (head and branch offices) equalled to 320.6 mln RUR.

– What are the plans for 2018 and mid-term prospects?

– The Division's strategy is aimed at the Company's steady development. It is focused on improvement of the management system as a main tool to ensure the steady growth of financial and economic indicators.

The Division's portfolio makes 92 bln USD. The foreign revenue makes approximately 87% of the total revenue and it is expected to expand beyond the 90% limit in the next 2 years. As a matter of fact, we are growing into a fully export-oriented company since the Kursk-2 NPP is the only home project remaining in the nearest time.

By 2020, we plan to ensure the growth of revenue by 2.8 times (as compared to 2017). This is a challenge that can be met only by proper organization of the Company divisions' work.

In 2018, the Division's CAPEX is expected to increase severalfold and make 20 bln RUR. It is important to note that in order to retain the consolidated investment resource, the 2018 investments are to be financed by debt instruments other than JSC Atomenergoprom; i.e.we are speaking about commercial banks' credits. Main use of proceeds for 2018 are: mechanization of Russian and CIS construction sites (Kursk NPP, Belarus NPP etc.) – 4,134.9 mln RUR; mechanization of foreign sites (Rooppur NPP, Bushehr-2 NPP, Akkuyu NPP) – 8,563 mln RUR. The remaining part of investments will be channeled to develop the IT-tooling – in the amount of 2,452.9 mln RUR, to develop the infrastructure of the head and branch offices – in the amount of 887 mln RUR. The remaining investments will reach 4,699 mln RUR.

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2.1.1. Financial Results

*Table 2.1. Financial results of Engineering Division**

Engineering Division's revenue, the structure of revenue as per areas of business, bln RUR. (GRI 102-7)		2015	2016	2017 planned	2017 fact	Δ2017–2016/ 2016,%	2018 planned
Tota		**166.6**	**152.9**	**186.5**	**175.2**	**14.6 %**	**235. 7**
Breakdown by business	Construction management	52. 9	48.3	64.9	41.9	-13.2 %	95.8
	Equipment	69.8	64.8	70.3	85.1	31.4 %	89.6
	Design and survey works	28.8	30.0	38.7	33.9	12.8 %	30.0
	Other businesses	15.1	9.8	12.6	14.3	44.9 %	20.3

The revenue growth is related to work implementation under new projects in 2017 (e.g., El-Dabaa NPP, Paks II NPP, Bushehr-2 Power Units No. 2 and 3) and performance of a significant work scope at Belarus NPP which is currently in the active construction phase.

2015	2016	2017 planned	2017 fact	Δ2017–2016/2016,%	2018 planned
Manufacturing expenses, bln RUR					
22.6	23.6	29.6	27.4	16.6[1]	28.4

[1] Due to the active phase of construction or the stage of works deployment at the sites of Belarus NPP, Kudankulam NPP Units 3, 4 (India), El-Dabaa NPP (Egypt), Rooppur NPP (Bangladesh).

Management expenses, bln RUR					
7.4	8.1	9.3	8.6[2]	5.4[3]	9.3[4]

[2] Reduction of current expenses (business trips, consultations, advertising and marketing, personnel, taxation costs etc.

[3] The increase of manpower is caused by the recent trends of performance (such as digital economy and others).

[4] Owing to changes and decomposition of strategic objectives, the subject of control of administrative costs has been changed. The administrative expenses include expenses of all organizations in the management framework.

Commercial expenses, bln RUR					
2.8	3.0	4.0	4.0	30.0[5]	6.9

[5] The growth of volumes in 2017 is caused by the growing sales of equipment.

Gross profit, bln RUR*					
21.1	20.0	19.4	21.6	7.5[6]	27.2

[6] Self-cost economy means reduction of expenses borne by subcontracted organizations.

Net profit, mln RUR					
-23.2	4,892.2	3,081.7	5,586.9	14.2	3,449[7]

[7] The Income of 2018 is showed without JSC NIKIMTAtomstroy shares devaluation (the devaluation of financial investments is caused by handover of JSC "Severskie teploseti".

Labour productivity (in terms of proper revenue), mln RUR per capita					
3.05	3.30	3.70	3.73	12.9[8]	4.35

[8] The growth of labour productivity is caused by implementation of RPS-projects and introduction of advance technologies of construction and project management as well as by growth of the scope of works performed using own resources.

*The figures indicated in tables may differ from same ones calculated in this report due to rounding of figures.

2.1.2. Financial Capital Management

Table 2.2. Cost management

	Russian projects Automated cost management system	Foreign Projects The software complex of information resource management system (IRMS)
Functional possibilities	• estimate the forecasted construction cost throughout the years of construction, • generate the threshold cost to the level of IWL/FSE, • generate the initial (maximum) prices taking into account price caps, • accumulate actual project costs as per the cost structure, • follow-up of price caps in the course of construction, • forecast the construction cost under various scenarios of macroeconomic indices, • develop administrative report forms.	• keep records of the full cost of construction, taking into account specific features of foreign contracts, • provide cost accounting in several currencies (multi-currency support), • introduce cost threshold for cost items in the required detail, • keep the database of concluded subcontracts in the required detail to implement the management accounting and connection with the contract items, • accumulate actual project costs as per the structure of FE costs, • follow-up and review of execution of the limits on the actual construction, • develop administrative report forms, • differentiate allocation of access to the data based on the role matrix.
On-line accessibility	For the Investor, Customer and the EPC-Contractor.	
Is implemented in	Rostov, Kursk, Belarus NPPs (in the limited amount), Novovoronezh NPP-2.	Has passed the stage of trial commercial operation, been put into commercial operation.
Results of application in 2017	1. At the Novovoronezh NPP-2 power unit No. 2: • has been implemented in the applicable 1C platform architecture, put into the trial commercial operation, • the forecasted cost is calculated up to the end of construction. 2. Additional addenda to General Contract agreements have been concluded for the Kursk NPP-2, Novovoronezh NPP-2 construction projects about joint use of ACMS as an additional tool for the NPP construction forecasted cost. 3. Information is prepared about the forecasted construction cost of Kursk NPP-2 units 1&2, Novovoronezh NPP-2 unit 2.	The main functional requirements are developed for automation of methods to manage the cost of facilities constructed in Russia and abroad.
Plans for 2018	Putting into commercial operation according to the module of issue planning and generation of reports as per KS-2 format.	Preparation of detailed technical and methodical requirements for further implementation of functionality in SAP S/4 HANA.

TCM NC Programme

In 2017, Rosatom State Corporation launched a programme to generate and implement the integrated cost and time management system for nuclear facilities construction (Total Cost Management Nuclear Construction, TCM NC). Main objective of the Program is to reduce the time and cost of NPP construction in order to keep the leadership of Rosatom State Corporation in the global nuclear industry.

The Program implementation will allow:

- reducing the time period for design and budget documentation development by 20%;
- reducing risks of making changes in the project by 50%;
- reducing the time period for planning of construction works by 20%;
- reducing the cost of construction preparation and maintenance by 20%.

Key participants of TCM NC Program – Industry Capital Construction Center, Design office “NPP product”, Engineering Division, JSC Rusatom Overseas, JSC Greenatom.

Investment Performance

The Division’s investment portfolio includes the projects aiming at maintaining the Division’s main business in the field of design and construction programmes implementation as part of participation in Rosatom State Corporation’s investment and construction projects.

Investment management system and making investment decisions

The main parameters of the Engineering Division’s investment program are determined by the decisions of the Rosatom State Corporation Investment Committee. The Investment Committee is a collegial body that implements the principles of the unified industry investment policy of Rosatom State Corporation and its organizations within the frame of the authorities delegated by a higher organization.

Main results of investment performance improvement In 2017:

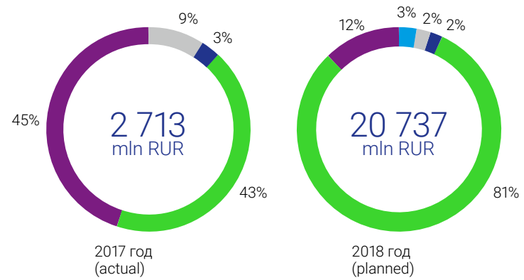
- the unified industry project management system was implemented that improved the investment business-process efficiency;
- as part of the investment planning for 2018, a technical and economic study of the Division’s investment requests was carried out to be followed by the investment programme optimization by 759 mln RUR without changing of the project deadlines and targets;
- within the framework of current performance, taking into account the technical and economic study of projects investment budget adjustments, the amount of expenses has been optimized and reduced by 204 mln RUR;
- the required key indicators of the portfolio were met;
- individual indicators were included in the KPI maps of investment project managers;
- on the basis of industry standards, the methodology for conducting technical and economic analysis was adapted to further optimize investment costs;
- automation of the investment decision-making process when correcting the investment budgets of the Division’s organizations through the use of a specialized internal business-process information management system;
- the work on additional capitalization of the Division’s subsidiaries and organizations in accordance with the forecasts of their financial results.

Outside the Russian Federation JSC ASE EC implements investment projects, within the framework of which it is expected to supply equipment to the construction site, to create and develop the infrastructure of representative offices, branches and residential settlements for the construction of Akkuyu NPP (Turkey), Bushehr NPP (Iran), Rooppur NPP (Bangladesh), Belarus NPP.

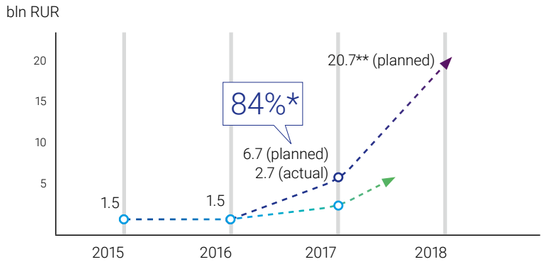
KPI of the Division’s investment performance for 2017 amounts to 98.9%

Investment management plans for 2018 and the mid-term:

- development of motivation principles for JSC ASE EC organizations in order to identify and implement investment projects for new business lines of the Engineering Division;
- development of the internal standard for JSC ASE EC investment projects risk management;
- establishment of a collegial body to implement the expert function when making the technical and economic analysis of investment expenses;
- development of the institute of technical and economic analysis, including the establishment of the industry experts team, the arrangement of the KPI system, regular training for investments initiators;
- development of competences for structuring M&A transactions (mergers/acquisitions), including the issue of the Regulation/ Operation Procedure of the Division regarding these transactions;
- development of a methodology for working with investments, taking into account their funding from external sources.



CAPEX breakdown



* At the expense of the consolidated investment resource of Rosatom State Corporation.

** Taking into account transitory investments from 2017 in the amount of 9,974 mln RUR External funds raising.

The figures indicated in tables may differ from same ones calculated in this report due to rounding of figures.

Total CAPEX of the Engineering Division

Table 2.3. CAPEX breakdown by organizations, mln RUR

Company	2015	2016	2017		Δ2017–2016/ 2016,%	2018 planned
			planned	fact		
JSC ASE	118.15	118.78	6,028.36	580.23	389	16,198.61
JSC ASE EC	887.91	701.14	2,529.05	1,654.05	136	3,137.08
JSC Atomenergoproekt	151.34	302.76	347.29	277.5	82	423.37
JSC ATOMPROEKT	231.48	269.88	169.51	83.01	21	419.94
NUKEM (including: Nukem)	5.17	7.63	17.59	1.70	12	28.01
JSC NIKIMT-Atomstroy	133.05	59.82	114.72	92.68	55	514.69
LLC Trest RosSEM	13.49	5.37	14.78	13.70	155	6.07
PJSC Energospezmontazh	4.07	3.70	9.95	9.83	166	9.44
United Company	**1,313.18**	**1,469.09**	**6,702.20**	**2,712.70**	**85**	**20,737.20**
Total amount of investments	**1,544.65**	**1,469.09**	**6,702.20**	**2,712.70**	**85**	**20,737.20**

Kursk NPP-2 construction

Table 2.4. Investment projects

Groups of projects	Performancein 2017	
Mechanization of construction sites for performance of CEW	The major portion of investments is spent on the equipment of construction sites for Belarus NPP (purchasing construction machinery and fixtures for the main construction stage) and Kursk NPP-2 (purchasing machinery and mechanisms for preliminary stage of NPP construction) and Rooppur NPP (Bangladesh). The delivery of key equipment for the construction of these facilities was financed in the amount of 1,162 mln RUR including:	
		1) Kursk NPP – contracts for supply of five tower cranes were signed, delivery started, including a Set of process equipment of the automated cement warehouse, a Modular semitrailer Goldhofer THP/SL (6+6) with the haul truck MAN, Set of equipment to ensure on the manufacture of the units metal structures;
		2) Rooppur NPP – within the framework of project "Mechanization of the construction site in Bangladesh (for the performance of CEW of the main construction period), preparation of procurement documentation for tenders to supply the equipment required for the NPP construction was carried out. Also, a supply contract for a crawler crane was concluded and advance payment of 30% of the contract price (279 mln RUR) was paid.
IT-projects	The work on the IT infrastructure (including telecommunications) modernization is underway, the need for which is dictated by a growing number of construction projects, most of which are foreign. New projects information systems at the NPP construction sites keep on replicating (within the framework of the Standard Unified Information Space). **The work on the creation of the national Multi-D platform started:** • implementation of control system for NPP operation processes (the Multi-D Operation subsystem), • implementation of project information control system to ensure compliance with the foreign customers' IMS requirements.	
	The information system "Electronic Obeya" was developed on the basis of the ENOVIA software, which is a part of 3DEXPERIENCE platform, whose functionality improves the collection, preparation and management of status reports, reporting materials, and corporate reporting processes. This decision is aimed at supporting the decision-making for top management.	The investment project "Replication of corporate ERP systems in the division "Engineering and Construction" is being implemented, the purpose of which is to create a single reliable corporate information source of the Division and construction for the control panel of the General Director of Rosatom State Corporation. In 2017, a prototype of the capital construction management system (Milestone IPMS) was put into commercial operation based on SAP S/4HANA platform.
R&D	Preparation for certification in Rostekhnadzor of TDMCC and KORTES software tools, required for safety calculation of the NPP under construction.	Patenting/registration of intellectual deliverables (inventions) is carried out in the Russian Federation and abroad. In total, it is planned to implement patent protection in 34 countries.

2.2. Manufactured Capital

The Manufactured capital is a value reserve that the Company has for using during production of goods/services, the main components of which are buildings, equipment, infrastructure, etc. Manufactured capital management is an efficient use of all productive assets to implement the Division's strategic goals.

2.2.1. Nuclear Power Plant Design and Construction is the Engineering Division's Core Business

Senior Vice-President for Russian Projects Management

Sergey OLONTSEV

- Belarus NPP
- Rostov NPP
- Kursk NPP-2
- Novovoronezh NPP-2
- Leningrad NPP-2

Senior Vice-President for Foreign Projects Management

Alexander KHAZIN

- Bushehr-2 NPP
- Rooppur NPP
- Paks II NPP
- Akkuyu NPP

Vice-President for Projects in South Asia

Andrey LEBEDEV

- Kudankulam NPP
- Tianwan NPP

Senior Vice-President for Development

Ivan BORISOV

- Hanhikivi -1 NPP

Vice President

Grigoriy SOSNIN

- El-Dabaa NPP

NPPs Abroad

Alexander Khazin,
Senior Vice-President
for Foreign Projects

– What are the main problems that the company faces when operating on the foreign markets? What are the ways to resolve them?

– Let me start with the fact that there are general problems related to the NPP design and construction; first of all, there is a shortage of professional and qualified specialists, caused by the increase of the customer's requirements under the conditions of digitalization and comprehensive regulation of the industry. Also, there are specifics regarding the NPP construction region: we have to consider the design requirements of the national regulatory documentation, the European Union, IAEA and other international organizations, seismic and hydrological parameters of each site, business-practice specifics in some countries, etc.

What is helping us in solving these problems? First of all, Multi-D digital technologies allows us to make a digital duplicate of the plant, as well as the "integrated design and construction schedule", that enables us to optimize the time and costs for NPP construction. Secondly, we involve local experts who know the regulatory requirements; the Russian specialists are well-educated in the field of nuclear physics, design and digital technologies added by high professional level of English language knowledge. By means of joint operation, the number of problems is minimized.

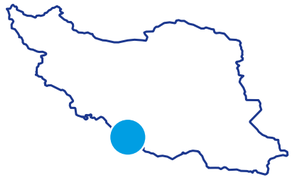
– Due to the fact that the Engineering Division has actually become a company oriented to foreign cooperation, are there any changes in operation processes? Which of the foreign customers are more demanding? Where is operation more demanding: on the western or eastern markets

– Certainly, due to the division orientation to the global market, there are some changes in the operation processes: NPP construction process modeling systems and online optimization using 3D–6D information model linked to particular sites are applied. Also, we use a concept of the unified information space and management.

It is next to impossible to identify more or less demanding customers. Customers, regardless of the NPP power units construction and operation experience, both in the western and in the eastern markets, have very high requirements for the design and construction of NPP power units, both in terms of time, cost, and the plant safety. Like us, they carry out constant monitoring with the involvement of international specialized organizations. Another thing is that there are specific features of doing business in the West and in the East. But our vast experience in power plant construction in different countries allows us successfully taking into account this specifics with the benefit for all the interested parties.

Bushehr-2 NPP (Iran)

Principal – Nuclear Power Production & Development Co. of Iran (NPPD)



The NPP site is located in the province of Bushehr, the town of Bushehr.

Type of reactor – VVER-1000.
The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

From the beginning of operation and until December 2017, the total output of electricity amounted to over

27 mln MWe/h

Under construction

1,000 MWe

Unit 1

1,057 MWe

Unit 2

1,057 MWe

Unit 3

Since the date of commissioning, the Power Unit No. 1 has served for the period of 3 fuel cycles

Key Milestones in 2017

March. Commencement of works for preparation of the construction site.

May. Completion of development and handover to the Principal of working documentation for the main buildings pit.

June. Completion of development and handover to the Principal of the Basic Design for soil stabilization for the main buildings.

July. Completion of development and handover to the Principal of the Working project for soil stabilization for the main buildings.

August. The Principal handed-over the site to the contractor.

October. Beginning of the works for digging the foundation pit under Power Unit No. 2 main buildings of Unit No. 2.

December. Main scope of the Basic Design for Bushehr-2 NPP Unit No. 2 has been developed and handed over to the Principal.

The Works for vertical leveling of the site, dismantling of the existing buildings and removal of technogenic soil have been completed.

Plans for 2018

Engineering and geological survey of the offshore area where water intake facilities are to be installed.

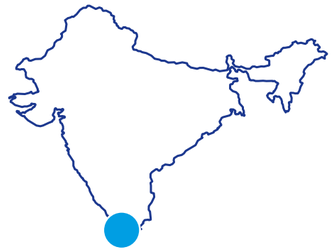
Approval of the Basic Design of Bushehr-2 NPP by the Principal.

Commencement of licensing procedures.

Completion of pit excavation and soil stabilization under the main buildings of Unit No. 2.

Kudankulam NPP (India)

Customer is the Nuclear Power Corporation of India Ltd. (NPCIL)



The construction site is located in the Southern India in the state of Tamil Nadu.

Type of reactor – VVER-1000.
The power units are constructed under the terms and conditions of the EP Contract.

- The Multi-D Platform is used.

Handed over to the Customer

Put into the guarantee-period operation

Under construction

2 x 1,000 MWe

Unit 1

Unit 2

4 x 1,000 MWe

Unit 3

Unit 4

Unit 5

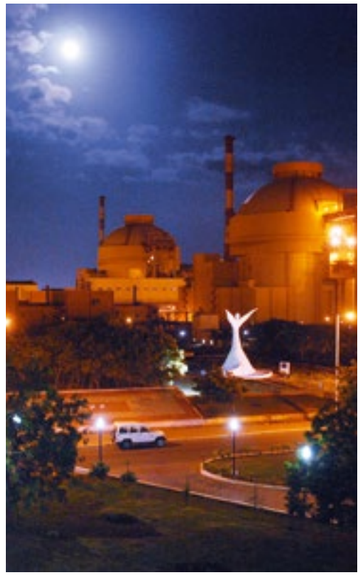
Unit 6

I stage

Connected to the grid

II stage

III stage



Key Milestones in 2017

January. Unit No. 2 was brought to 100% of capacity.

March. Unit No. 2 was handed over for warranty operation.

April. The Final Acceptance Certificate was signed for Unit No. 1, Provisional Acceptance Certificate was signed for Unit No. 2.

June. General Framework Agreement for the construction of stage three of Kudankulam NPP (Units No. 5 and 6), and Intergovernmental Credit Protocol required for the project implementation, were signed.

Ceremony of first concrete pouring into the foundation slab of reactor building was held which marked the commencement of construction works at site of Power Unit No. 3.

Ground works are under way, base for implementation of the main CEW is being developed.

July. JSC Atomstroyexport and Nuclear Power Corporation of India (Ltd.) signed contracts for first priority design works, elaboration of the working documentation and supply of main equipment for Units No. 5 and 6 Kudankulam NPP.

August. Contract for technical support in construction of Units 3 and 4 was signed.

October. Ceremony of first concrete pouring into the foundation slab of reactor building was held which marked the commencement of construction works at site of Power Unit No. 4.

Plans for 2018

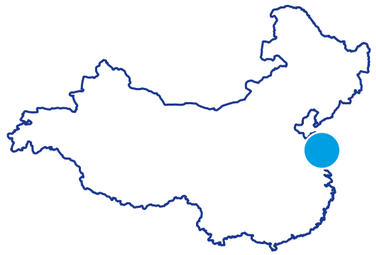
Final handover of Power Unit No. 2 to the Customer.

Shipment to the Customer of reactor vessel and turbine generator of Unit No. 3.

Commencement of works for contract execution for supply of equipment for Units No. 5 and 6.

Tianwan NPP (China)

Customer – Jiangsu Nuclear Power Corporation (JNPC)



The construction site is located in the province of Jiangsu, the city of Lianyungang .

Type of reactor – VVER-1000.

- The Multi-D Platform is used.

Were put into commercial operation in 2007	Under construction
2x1,000 MWe	**2x1,000 MWe**
Unit 1	**Unit 2**
Unit 3	**Unit 4**
I stage	II stage

The Engineering division is commissioned to design and procure nuclear island documentation and equipment and provide associated services (such as designer supervision, designer follow-up installation, designer adjustment supervision) to the Customer.

The responsibility for civil and erection, pre-commissioning works is born by the Customer.

Key Milestones in 2017

August. Receipt of license for fuel loading, first fuel loading (11 days ahead of schedule).

Physical start-up of the reactor of Power Unit No. 3.

September. Achievement of minimum controllable level of the reactor of Power Unit No. 3.

November. Commencement of cold tests of Power Unit No. 4.

December. First connection to the grid of Power Unit No. 3.

Plans for 2018

Signing of provisional acceptance certificate, commencement of the warranty period, putting Power Unit No. 3 into commercial operation.

Physical and power start of the reactor of Power Unit No. 4, achievement of minimum controllable level of the reactor of Power Unit No. 4.

Akkuyu NPP (Turkey)

Customer – AKKUYU NÜKLEER ANONİM ŞİRKETİ

The NPP site is located near Mersin city.

Type of reactor – VVER-1200.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

4 x 1,150 MWe

The Engineering Division is commissioned to develop design documentation for the Akkuyu NPP project and working documentation for the Nuclear island facilities as part of the Akkuyu NPP, to perform civil erection works as part of construction of the nuclear island facilities.

Key Milestones in 2017

July. The Customer approved design documentation for Akkuyu NPP.

August. Pit for the foundation slab of reactor building of Unit No. 1 was excavated.

October. Project company Akkuyu Nuclear received from TAEK a limited permit for construction of the NPP.
A limited construction permit allows to start construction and installation works at all facilities of the Nuclear Power Plant, except for the Nuclear Island safety-related buildings and structures.

Engineering survey of the detail design documentation stage were performed for the nuclear island facilities.

November. Concrete raft for the foundation slab of reactor building was completed, detail design documentation was elaborated and handed over the Customer to ensure the performance of civil and erection works in 2018.

December. A package of documentation was submitted to Rosatom for performance of a departmental review and assessment of design documentation of Akkuyu NPP.

Plans for 2018

Completion of approval of documents by TAEK for the construction license of Unit No. 1.

Signature of intergovernmental agreement for spent nuclear fuel .

Completion of works for reinforcement of the foundation slab.

Obtaining of the Construction license for Power Unit No. 1.

Conclusion of legally bounding documents with the investors – signature of the shareholders agreement.

Signature package of documents of contracts and agreements required for the implementation of the project.

Rooppur NPP (Bangladesh)

Customer – the Bangladesh Atomic Energy Commission (BAEC)

The construction site is located 160 km to the north-west from the city of Dhaka.

Type of reactor – VVER-1200.

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

2 x 1,150 MWe

Key Milestones in 2017

November. The Bangladesh Atomic Energy Regulating Authority (BAERA) granted Rooppur NPP design and construction license to the Bangladesh Atomic Energy Commission (BAEC). This document confirmed the safety of the project chosen by the Bangladesh Party and made it possible to commence Rooppur NPP construction.

Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 1 of Rooppur NPP (Bangladesh) was held.

December. Rooppur NPP public counseling office was opened in Bangladesh.

Plans for 2018

Concreting works with the purpose of ensuring the installation of core catcher and building A of Power Unit No. 1.

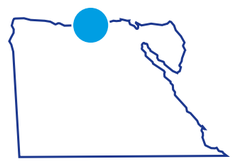
Obtaining the Construction license for Power Unit No. 2.

Ceremony of first concrete pouring into the reactor building foundation of Power Unit No. 2.

Works for concreting of the foundation slab of the reactor building, foundation slab of the turbine building, annular floor of Power Unit No. 2.

El-Dabaa NPP (Egypt)

Owner – Nuclear Power Plant Authorities of the Arab Republic of Egypt



The construction site in located in the town of El-Dabaa, 130 km north-west from Cairo.

Type of reactor – VVER-1200

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

4 x 1,194 MWe

Key Milestones in 2017

December. Entering into force of the EPC-contract, commencement of the works for site acceptance by the Customer.

Plans for 2018

Conclusion of the contract for supply of nuclear steam generating plant.

Completion of the fourth stage of engineering surveys, acceptance of the reports by the Customer.

Completion by the Customer of first priority detail design documentation for CEW of preparatory period.

Submission of documents for obtaining of the Construction license for Power Unit No. 1, 2.

Paks II NPP (Hungary)

Owner – MVM Paks II (since 06.11.2017, known as Paks II Nuclear Power Plant Private Company Limited by Shares)

The construction site is located in the proximity of the town of Paks.

Type of reactor – VVER-1200.

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

2 x 1,198 MWe

Unit 1 Unit 2

Key Milestones in 2017

April. The EPC Contract entered in full legal force including the financial obligations of the parties.

The Hungarian Atomic Energy Authority (HAEA) approved the application for granting the license for the construction site of new power units at Paks-II NPP.

November. Initialing of Supplementary agreement No. 1 to the EPC Contract. for the erection of the construction and installation base.

December. Signing of an agreement with General Electric (GE) for the supply of turbine island equipment.

Plans for 2018

Development of design documentation of the Basic Design and Preliminary Safety Analysis Report, submission of documents for obtaining the license.

Commencement of the civil and erection works.

Organization of tender procedures, signing contracts for equipment and materials (long-lead equipment, turbine island, core catcher).

Continuation of the engineering surveys.

Nuclear qualification of the supplier of the reactor plant, nuclear assessment of the supplier of the turbine islandl equipment.

Hanhikivi-1 NPP (Finland)

Owner – Fennovoima Oy • EPC-Contractor is RAOS Project Oy • EPC – Designer is JSC ATOMPROEKT

The site is located in the region of North Österbotten (north-western Finland), near the town of Oulu.

Type of reactor – VVER-1200.

- The Multi-D Platform is used.

1,265 MWe

Unit 1

The Engineering division is commissioned to develop the design documentation and working documentation of nuclear island buildings and structures.

Key Milestones in 2017

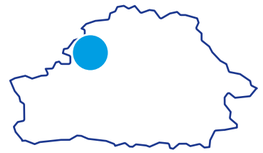
Under the Hanhikivi-1 NPP project JSC ATOMPROEKT (General Designer), within the framework of the contract with RAOS Project Oy (General Contractor), was in the process of developing the project and the licensing documentation so that Fennovoima Oy (the Owner) could receive the license for Hanhikivi-1 NPP construction in accordance with the legislation of Finland.

Plans for 2018

Completion of development of the Basic Design documentation, 3D-model of the NPP in the scope of the Basic Design and licensing documentation with the purpose of submitting it to STUK.

Belarus NPP

Customer – RUE "Belarus Nuclear Power Plant"



The site is located in the region of Grodno, the area of Ostrovets.

Type of reactor – VVER-1200.

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

The possible boosting up to 1,200 MWe

1,150 MWe 1,150 MWe

Unit 1 Unit 2

Key Milestones in 2017

April. Reactor pressure vessel of Power Unit No. 1 was installed in the design position.

August. One of the main stages of construction – welding of the main coolant pipeline – was completed in the reactor compartment of Power Unit No. 1.

December. Commencement of installation of reactor pressure vessel of Power Unit No. 2.

Plans for 2018

Commencement of stage Revision at Power Unit No. 1.

Installation of steam generators, turbine in the turbine island and the main process equipment for preparation to flushing of the systems with the open reactor of Power Unit No. 2.

Beginning of welding of main coolant pipeline of Power Unit No. 2.

Russian NPPs

Sergey Olontsev,
Senior Vice-President
for Russian Projects

– What would you call the most important production achievement of ASE in 2017 at construction sites in Russia?

– The reporting year witnessed plenty of achievements. December 2017 was marked by the physical start-up of Unit 4 of Rostov NPP.

We managed to shorten sub-stage A-3 "Cold and hot run of the reactor plant –34 days instead of the planned 86 days. We managed to do the same for sub-stage A-4 "Inspection of the reactor plant" and completed it in 41 days instead of the planned 53 days.

December was full of events. The reactor vessel of power Unit No. 2 of Belarus NPP was installed at the beginning of December. It took 142 days to complete all the process operations and the works from the beginning of the reactor vessel installation to the welding of the main coolant pipeline (compared to 214 days that were envisaged by the schedule). The commissioning works at the polar crane equipment at the second power unit of the NPP lasted for 26 days compared to the planned 58 days.

In December, the flushing of systems with the open reactor at Novovoronezh-2 NPP (post-installation cleaning of the process systems) was completed 5 days ahead of schedule.

At Kursk NPP, an artificial foundation for the reactor building was arranged in spite of the emerged risks and difficulties with the subcontractor. In December, the reinforcement of the foundation plate of the reactor building started 15 days ahead of schedule.

– What are the main goals for 2018 and the mid-term perspectives for the Russian projects?

– We are building the first reference unit "VVER-TOI" at Kurk NPP-2. The commissioning is scheduled for 2023.

Kursk NPP-2 (Russia)

Customer – JSC Concern Rosenergoatom

2 x 1,255 MWe

Unit 1

Unit 2

Location: Makarovka site, Kurchatov district, Kursk region.

Type of reactor – VVER-TOI.

The power units are constructed under the terms and conditions of the General Contractor.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

Kursk NPP-2 is being constructed in order to replace the decommissioned Power Units of the operating Kursk NPP. Commissioning of the first two Power Units of Kursk NPP-2 is planned to be synchronized with the decommissioning of Unit 1 & 2 of the operating NPP.

Key Milestones in 2017

Preparatory works of the construction base have been performed such as excavation of soil and construction of the foundations for the buildings and structures.

December. Beginning of concreting of the foundation slab of the reactor compartment of Power Unit No. 1 over the current year.

Plans for 2018

Beginning of civil and erection works:

- construction of artificial foundations under the main buildings and structures reinforcement;
- start of concreting of the foundation slab (first concrete) of Power Unit No. 1;
- beginning of concreting of the foundation slab in the auxiliary reactor building and unit pump station of Power Unit No. 1.
- beginning of reinforcement g of the foundation slab of reactor building of Power Unit No. 2.

Leningrad NPP-2 (Russia)

Customer is JSC Concern Rosenergoatom

2 x 1,198.8 MWe

Unit 1

Unit 2

Location: Near the town of Sosnovy Bor, the Leningrad region.

Type of reactor – VVER-1200.

The NPP is constructed under the terms and conditions of contracts for engineering survey, development of basic and detailed design documentation and designer supervision.

- The Multi-D Platform is used.
- The Rosatom Production System and project management are implemented in the project.

LNPP-2 design meets the up-to-date international safety requirements. It applies 4 active (redundant) channels of safety systems including the core localization device (core catcher), passive heat removal system (PHRS) removing heat from beneath the reactor containment and passive heat removal system removing heat from steam generators.

Key Milestones in 2017

December. Physical start-up of Power Unit No. 1 of Leningrad NPP.

Obtaining the power unit operation license.

Plans for 2018

Power start-up of Power Unit No. 1.

Putting Power Unit No. 1 into commercial operation.

Rostov NPP (Russia)

Customer – JSC Concern Rosenergoatom

The site is located in the Rostov Region, on the bank of the Tsimlyansk reservoir.

3 x 1,000 MWe

Unit 1

Unit 2

Unit 3

1,000 MWe

Unit 4

Type of reactor – VVER-1000.

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

Key Milestones in 2017

March. Beginning of flushing of the systems with the open reactor, testing of equipment.

May. Placement of the Turbine on the turning gear.

July. Hydraulic testing of primary and secondary circuits.

August. The containment testing.

September. Circulation flushing, hot run of the reactor plant.

October. Inspection of the reactor plant.

December. First criticality of Power Unit No. 4, bringing of the reactor plant to minimum controllable Level.

Plans for 2018

Power start-up of Power Unit No. 4, commencement of trial operation, comprehensive testing of the power unit at nominal power.

Comissioning of the Rostov NPP Power Unit No. 4.

Novovoronezh NPP-2 (Russia)

Customer – JSC Concern Rosenergoatom

Location: Novovoronezh, Voronezh region.

Novovoronezh NPP-2 is the first Gen III+ NPP in Russia and in the world

1,200 MWe

Unit 1

1,200 MWe

Unit 2

Type of reactor – VVER-1200.

The power units are constructed under the terms and conditions of the EPC Contract.

- The Multi-D Platform is used.
- The Rosatom Production System (RPS) is implemented in the project.

Key Milestones in 2017

February. Unit No. 1 was put to commercial operation.

May. Power supply for auxiliary loads under the design diagram for Power Unit No. 2.

December. Commencement of flushing of the systems with the open reactor of Power Unit No. 2.

Plans for 2018

Completion of the reactor plant hot run-in.

Completion of the testing of containment enclosure of Unit No. 2.

Novovoronezh NPP-2 is the first Gen III+ NPP in Russia. The construction is carried out according to the design of the NPP with the VVER-1200 reactor developed by JSC "Atomenergoproekt". This Project is based on the technical solutions of the NPP-92 design, which was certified in April 2007 in line with all EUR technical requirements for NPPs equipped with the latest light-water reactors.

All safety functions in the VVER-1200 NPPs are implemented by separate active and passive safety systems, which guarantee a reliable operation of the Nuclear Power Plant and its resistance to external and internal impacts.

Unit No. 1 based on the Gen III+ VVER-1200 reactor was put into commercial operation on February 27, 2017. Civil and erection works are in progress at Unit 2 now.

2.2.2. Manufactured Capital Management

“Lean Engineering” – the project aimed at reducing the time period and costs of NPP designing

Main purpose of the Division is to increase projects competitiveness by means of including the motivation tools to reduce the cost and time in the Design business-process.

The Division implements the system of investment and construction projects motivation, the purpose of which is creation of conditions that contribute to reducing the cost and time of the facilities construction.

The motivation system is aimed at forming the conditions for material and non-material motivation of the designer to reduce the time period of design, the duration and cost of construction while ensuring high technical and economic indicators of the designed facility, reducing the operating costs.

The system has an individual focus, it provides the formation of incentives for the adoption of design solutions for each designer, regardless of the position held. At the same time, the designer develops an awareness of the importance of taking effective design decisions.

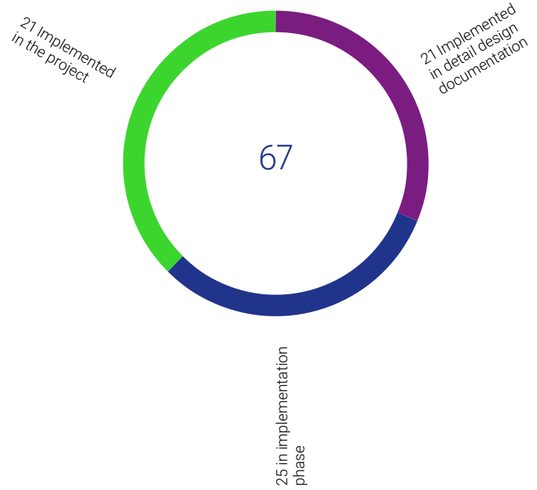
The participants of the motivation system are:

- Expert Council of Rosatom State Corporation;
- industry organizations included in the motivation system as per the conclusion of the Expert Council of Rosatom State Corporation;
- out-of-the industry organizations included in the system of motivation at the discretion of the industry organizations.

The Division’s tasks in terms of “Design” business process for 2017:

- reducing the cost and time of the facilities design and construction;
- promotion of the motivation system and involvement of as many designers as possible;
- creation of the unified database of proposals to reduce the cost of the Division;
- maintaining the panel of the integrated indicator of the motivation system in the context of updating the portal sections of participating organizations.

Number of optimization proposals approved by the Expert Council of the Division, of which:



Optimization proposal for Bushehr-2 NPP

The proposal allows to exclude from the design:

- pipeline sections – 439.1 kg,
- reinforcement – 2 pcs.,
- cable and switch box – 306 pcs.

Total savings – 2.385 mln RUR

The decision was made that this proposal would be applied in the detail design documentation.

Valery I. Limarenko, CEO of Rosatom State Corporation Engineering Division. Kursk NPP-2 (Russia)

Results of 2017:

- the construction cost was reduced by 4,144 bln RUR;
- a Regulation on the remuneration of experts participating in the review of cost reduction proposals (CRP);
- motivation mechanisms to submit proposals on savings at the operation stage based on LCOE;
- the unified CRP industry base in the Division is created;
- contests were held within the framework of “Recognition” program;
- quarterly information is updated on the panel of the integrated indicator of the motivation system;
- an extended session was held on the program for improving efficiency of the industry design system (Nizhny Novgorod region, 20–21.07.2017).

Accepted optimization proposals are embodied in the developed designs. All optimization proposals of designers are checked for compliance with the requirements of the regulatory documents and valid technical regulations in the field of the atomic energy use.

Optimization proposals do not reduce the safety level of NPP Power Units.

Plans for 2018:

- to increase the weight of the indicators aimed at achieving the goals in terms of time and cost when forming KPI maps of the responsible managers for 2018;
- to review (optimize), within the Division, the cost reduction proposals submission and evaluation process;
- to conduct a training course “Design Economics” for the Division employees involved in the CRP submission process;
- to conduct additional training on the use of agile-methods in project management, to expand the application of agile practices in the work of the design unit employees.

2.2.3. The Rosatom Production System in the Engineering Division

The RPS program implementation is linked to the NPP construction schedules and covers Novovoronezh NPP-2, Belarus NPP, Rostov NPP, Kursk NPP-2, Hanhikivi-1 NPP, Rooppur NPP, Akkuyu NPP, El-Dabaa NPP, Bushehr-2 NPP and Paks II NPP.

The RPS program includes five main stages – training, analysis, implementation, audit and involvement, and covers all stages of NPP construction from signing a contract for NPP construction to putting the NPP into commercial operation.

In 2017, the Division employees submitted more than 2000 proposals for improvement (PFI).

Table 2.5. Stages and levels of RPS implementation

Stages of works	Level of RPS implementation
Survey work related to obtaining the construction license, design works and detail design documentation.	Implementation of RPS tools and methods in designing.
Preparatory works, construction and erection works of the main period and commissioning works.	Implementation of RPS tools and methods in construction.
At all stages of NPP construction from signing the contract to putting the NPP into commercial operation.	Implementation of the RPS-standards in project management based on optimization of tools for performance indicators monitoring process.

*Table 2.6. Impact of RPS projects on achievement of **"Time reduction"** task (examples), days*

Site	Project	Results of 2017 (time reduction)
Bushehr-2 NPP	Optimization of the preparatory period work schedule	By 120 days
	Optimization of the foundation pit development period	By 39 days
Akkuyu NPP	Process optimization in order to achieve "First concrete" milestone	By 246 days
Rooppur NPP	Optimization of "Power supply provision" process	By 68 days
Belarus NPP	Optimization of MCP 1 welding process	By 22 days
	Optimization of installation process of pipeline and equipment engaged in flushing	By 8 days
Novovoronezh NPP-2	Optimization of the tensioning process of the containment pre-tensioning system pre-stressing strands	By 73 days
	Optimization of the process of electric work for "Auxiliary voltage supply" milestone according to the design scheme (from RAT) at NVNPP-2	By 30 days
	Reduction of the installation time of rubber-metal supports of the long-span crane girders of the bridge crane of the transport portal of the reactor building 20UJA of NVNPP-2	By 5 days
Kursk NPP-2	Reduction of the artificial foundation construction under the reactor building of Power Unit No. 2	By 22 days
	Optimization of the concrete bedding (primer) arrangement process under the foundation slab of Power Unit No. 1	By 7 days

*Table 2.7. Impact of RPS projects on achievement of **"Cost reduction"** task (examples), mln RUR*

Design Institute	Site	CRP	Economic impact of 2017
JSC ASE EC	Kursk NPP	Optimization of the method of substitution of the foundation soil under the hydraulic structures of the construction site	275.08
JSC ATOMPROEKT	Hanhikivi -1 NPP	Reduction of the size of auxiliary building UKA	295.20
		Proposal to cut the project cost in terms of reducing the size of the underground part of the Nuclear service building with domestic premises of controlled access area 10UKC	150.00
JSC Atomenergoproekt	Bushehr-2 NPP	Reduction of seismic impacts on the UKC building by taking into account the soil stabilization area during seismic response calculations in order to reduce the cost of equipment	218.24

Due to the implementation of measures to increase efficiency (including the use of RPS tools and digital technologies) following the results of 2017:

- time and cost indicators of NPP construction abroad were fully met;
- semi-fixed costs of the Division were reduced to 26.7 bln RUR (13.5% below the planned value);
- inventory turnover was reduced to 34 days (10.5% below the target).

Information on the RPS implementation results (reduction of construction time, costs, etc.) can be found in Appendix No. 13 of the Book of Appendices.

RPS Training

In 2017, 2,657 people were taught RPS, including 1,630 in the Engineering Division, 808 in contract organizations, and 237 in organizations of the industry.

During the reporting year, 14 RPS training programs were implemented: three detailed programs of supplementary vocational education "Rosatom Production System", nine training courses and two "process factories" for construction.

Plans for 2018:

- expansion of the share of training at foreign sites – employees of JSC ASE EC branches in Bangladesh, Turkey and Iran;
- launch of a new process factory "Last Planner", developed by JSC NIKIMT-Atomstroy;
- launch of a new pilot program of additional training for the management of contracting organizations in the practical application of the RPS tools to solve the problems identified at workplaces of the construction site ("site training");
- development of new training programs with the focus on practical testing of the acquired knowledge.

2.2.4. Procurement

The Engineering Division is a large-scale and reliable customer, complying with the requirements of the legislation in the field of procurement and competition.

These circumstances allow expanding opportunities for legal entities and individuals participation in the procurement of products for the needs of the Engineering Division, the development of fair competition, reliable operation of suppliers and contractors.

The Division does not give any preferences to suppliers depending on the supplier's location in respect of the region of operations. The suppliers are chosen only on the basis of their compliance with the requirements and criteria stipulated in the procurement documentation.

At the same time, organizations of the Engineering Division, which in their procurement activities are guided by Federal Law No. 223-FZ of 18.07.2011 "On Procurement of Goods, Works, Services by Individual Types of Legal Entities" (hereinafter referred to as Law 223-FZ), use the RF Government Resolution from 16.09.2016 No. 925 "On the priority of goods of Russian origin, works and services performed by Russian persons in relation to goods originating from a foreign country, work, services performed by foreign persons".

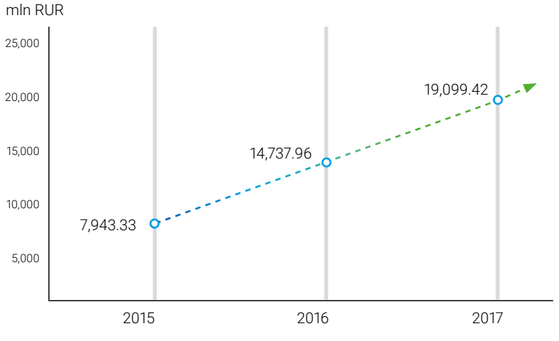
The share of purchases of goods from domestic producers in 2017 is 91%, from foreign ones – 9%.

In accordance with the Decree of the Government of the Russian Federation No. 1352 of 11.12.2014 "On the Specifics of the Participation of Small and Medium-Sized Enterprises in the Procurement of Goods, Works, Services by Individual Types of Legal Entities" (as amended on 15.11.2017), the organizations of the Engineering Division that fall under Act No. 223-FZ, make certain purchases only from small and medium-size enterprises (SMEs).

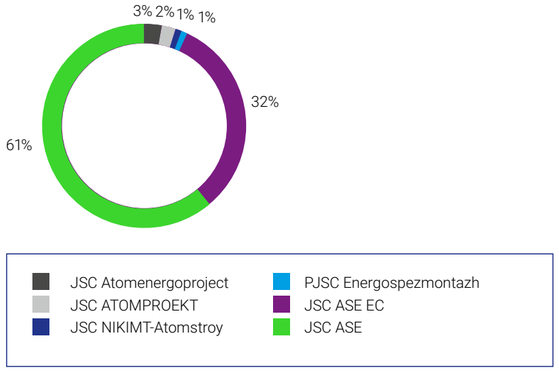
Rosatom State Corporation developed a list of products that the nuclear industry organizations should purchase only from SMEs. In the current version, the list includes more than 600 items. The specified list is placed in the open access on the official state procurement web-site and on the nuclear industry procurement web-site.

In 2017, as a result of competitive procurement procedures conducted using open electronic trading platforms, within the framework of the methodology of the unified industry procurement system, 19.1 bln RUR were saved. Savings are calculated on the basis of the difference between the original IMP (initial material price) and the proposals of the participants, and also as a result of re-biddings.

Total amount of the concluded contracts amounted to 409.8 bln RUR, incl. VAT, 93 % of contracts thereof were concluded with JSC ASE and JSC ASE EC.



Volume of savings as a result of open competitive procurement procedures



Obligations under concluded contracts in 2017

2.3. Intellectual Capital

The intellectual capital of the Division includes intangible assets, such as knowledge, technology and intellectual property. Intellectual capital is of fundamental importance for innovation and achievement of the strategic goals of the Division. Intellectual capital management includes contributions to the development of new and improvement of the existing technologies, preservation and enhancement of accumulated professional knowledge, innovative developments, R&D and patenting of developments.

Vyacheslav Alenkov,
Director of System Engineering and IT

– What are the quantitative parameters and the efficiency of application of Multi-D technology in 2017?

– The Engineering Division is using 40 modules of the unified information space integrated into the Multi-D technology, including the technology of comprehensive informational modeling taking into account the requirements of configuration and variation management. This technology has been implemented and is being actively used at nine NPP construction sites in Russia and abroad allowing us to comply with the customer's requirements under the EPC contracts in terms of development and submittal of the information model, reducing the time of approval of documentation by the customer.

Some digital products, like Multi-D IMS or Multi-D Integrated Schedule are supplied on the out-of-the-industry markets. E.g., a contract has been concluded for supply of Multi-D IMS to France, and a contract for introduction of Multi-D Integrated Schedule for the construction of a high-speed railway Moscow – Kazan, has been implemented.

– What are the advantages of Multi-D technology as a flagship project of the nuclear industry in the field of digitalization?

We believe the main advantage of Multi-D technology is a comprehensive approach to the management of complex engineering facilities. Our experience in the introduction of new technologies of informational modeling and information management has shown us that it is not sufficient just to introduce the new software. The introduction of up-to-date technologies entails changes of business-processes of the company, it requires significant enhancement of the personnel competence in terms of their work in digital environment. Multi-D is not just an IT tool offered by a vendor. This is primarily a project management methodology established on the basis of the vast experience of ASE Group of Companies in management of complex capital construction facilities, applied within an integrated IT-approach. Rendering services for the introduction of Multi-D, we offer an integrated approach: the analysis of the current project management system of the customer, recommendations for process optimization, services for configuration of the tools in accordance with the customer's specific requirements, a package of training and consulting materials, etc. In brief, we offer to our customers a conceptually new standard of project management on the basis of Multi-D technology which makes it possible to implement complex capital construction projects within the established deadlines and budget, with proper quality.

– What are the possibilities of Multi-D technology in other industries?

– We believe that Multi-D technology is sufficiently universal and can be used outside the nuclear industry. As I mentioned earlier, this is an aggregate of methodology of business-processes, models, data bases, software solutions that makes it possible to manage the complete cycle of a capital construction facility and create a unified information space for a formalized and legitimate interaction of specialists involved in designing, construction and operation of the facility.

The next logical step of development of Multi-D technology is the development on its basis of an industrial and IT platform of capital construction facility management. It will be an absolutely universal solution without any link to the industry, which we will implement within the framework of the program "Digital Economy of the Russian Federation".

2.3.1. Patenting of Intellectual Deliverables

Within the frames of the international patenting of NPP technologies with VVER reactor plant, 106 national and regional applications for inventions abroad were submitted. Three investment projects related to the legal protection assurance of the Engineering Division organizations technologies abroad for the period up to 2022 were developed and approved.

The purpose of patenting is to provide legal protection for intellectual deliverables (ID) within the NPP technology with VVER RP in the countries of NPP construction. When submitting documentation to a foreign customer, Rosatom ensures patenting of protectable solutions, which are disclosed in the documentation.

Table 2.8. Patenting in the Russian Federation

Applications	2015	2016	2017
Submitted applications for receipt of patents for inventions, utility models, industrial samples	3	46	21
Submitted applications for state registration of computer software and data bases	10		12
Received protection documents			
Inventions, utility models, industrial design	2	47	5
Computer programs and databases	22		26
Number of inventions and utility models	2	6	21
Know-how			
Production secrets (know-how) have been registered	-	7	3

Table 2.9. Patenting abroad

Applications	2015	2016	2017
Submitted national and regional applications (34 countries of the world)	-	20	106
Submitted international applications in accordance with PCT procedure	4	3	10

2.3.2. Innovation Projects Launched in 2017

Conceptual Design of NPP Information Model at the Operation Stage

In order to develop a conceptual design for the NPP information model (IM), the project of Leningrad NPP-2 was chosen as the subject area at the stage of operation, and the platform based on the Autodesk product line was used as the basic software solution for the project implementation.

In 2017:

- concepts of new optional-package solutions for the needs of operating organizations were developed;
- analysis of feedback, assessments, requirements and proposals of operating organizations in terms of the information platforms being implemented was carried out;
- new automatic design systems requiring fewer resources for the development of the NPP 3D model for the operational stage, were tested;
- options of the required specification of models were worked out;
- a methodological basis for the implementation of the action plan to develop a full-fledged IM of the entire power unit was developed;
- a number of practical recommendations aimed at improving the IM quality and increasing the effectiveness of information interaction of various participants in the IM generation at all stages of the NPP life cycle;
- the possible ways of application of the augmented reality in the industry were considered.

Pilot Project on BIM-design Approaches Implementation at El-Dabaa NPP (Egypt)

In 2017, the process of reengineering and design reorganization was carried out to reduce the time and cost of NPP construction in the following areas:

- development of approaches and requirements for the development of an integrated 3D-model using the BIM modeling methodology;
- analysis of potential problems in the implementation of BIM-design and development of compensatory measures;
- selection and introduction in the design process of a set of software tools aimed at improving the quality and speed of designing;
- development of organizational and functional schemes and models for constructing an integrated design process;
- increase the degree of interaction between the project participants.

Works on Arrangement of the Process of Typification and Cataloging of Design Solutions and Equipment of VVER NPPs:

- analysis of equipment parameters for the purpose of its typification for further use in all VVER NPPs projects;
- analysis of design, diagram and layout solutions for the possibility of their use at all plants in the unchanged form (a standard solution);
- analysis of the reasons causing changes in the reference plant, development of proposals for minimizing the number of options for such solutions;
- obtaining necessary approvals to make successful decisions as standard ones in all enterprises of Rosatom State Corporation;
- development of proposals for optimizing the functionality and finalizing the EONCOM catalog.

An example of the implemented innovation is the use of Semantic Web technology to manage NPP technical requirements.

Reducing Capital and Operating Costs for El-Dabaa NPP (Egypt) and Paks II NPP (Hungary) by Introducing New Design Solutions and Optimizing the Existing Ones

Working groups are established to carry out an engineering analysis of design requirements and solutions in order to identify and hedge risks that may lead to an increase in the NPP construction time and cost, as well as to search for and implement new optimization solutions that increase the technical and economic performance of the projects under design.

Working groups carry out:

- analysis and identification of the EPC-Contract requirements, leading to the NPP cost increase;
- analysis of the site causes and conditions, leading to the NPP cost increase;
- development of proposals for the application of alternative approaches and design methods, alternative technical solutions leading to reduction of the NPP owning cost.

Also, the works on application of mathematical tools and system analysis method for the resolution of industrial and optimization issues are conducted.

2.3.3. Project for Implementation of Information Technologies

- Electronic technical document management (Electronic technical document management system was deployed in 2017 as part of IMS for Rooppur NPP, Paks II NPP, Bushehr-2 NPP and Hahnikhivi-1 NPP projects. Within the latter project, the Customer accepts documentation for review only when it is downloaded in the system. According to Rooppur NPP, Paks II NPP, Bushehr-2 NPP, the Customer has been trained, additional functionality is being adjusted);
- putting into commercial operation of the technical electronic document management system for Hanhikivi-1 NPP project;
- putting into commercial operation of the technical electronic document management system for Rooppur NPP, Paks II NPP projects;
- industry nomenclature catalog of equipment and materials for NPP.
- the structure of the classifier of the industry nomenclature catalog of equipment and materials for NPP (EONCOM) is brought into compliance with the structure of the MTR guide of the unified industry system for regulatory reference information management (UIS RRI);
- integration mechanism for MTR data transfer from UIS RRI to EONCOM was implemented;
- restructuring of MTR class templates has been carried out, allowing to store and transfer relevant information to external information systems;
- work has been done to test the MTR data transfer technology from EONKOM to the SPF automated design system. Within the framework of this task, the technical specifications transfer were adjusted and verified for 1,474 classes of equipment;
- the functionality for automatic generation of production screens for Russian construction projects was put into commercial operation;
- a number of reports have been updated to automate and expand the analytical information in the module;
- integration with the IS “Electronic Obeya” is configured. Reports and visualizations from the Analytics module are placed in the IS “Electronic Obeya” including the grouping by projects, functional areas, areas of responsibility.

2.3.4. Multi-D Technology

The Engineering Division possesses a high-level expertise in the area of complex capital construction project management. A key to the Company's success in projects management is availability of Multi-D Technologies – an advanced system of nuclear power plant lifecycle management.

Multi-D technology is aimed at optimization of construction and erection works and is based on detailed planning of the working operations sequence. The main purpose of the technology is reduction of NPP power units construction time period.

This technology can be used not only for nuclear industry tasks – it can be adopted as a standard for the capital facilities management in other sectors of economy.

An integrated project management system, with Multi-D technology as one of the key tools, enabled the Company to be the first company in Russia which got accreditation for the 4-rd competence level of IPMA Delta in 2018.

For information on Multi-D technology, see public annual report of the Engineering division for the year 2016.

Plans for 2018 and the mid-term:

- implementation of innovative/new design solutions, design approaches, techniques and materials to be applied in NPP projects;
- creation of the NPP Digital twin concept;
- implementation of the BIM-modeling approaches in the daily activities of the Division;
- participation, jointly with JSC Concern Rosenergoatom, in the program of creation of low-power nuclear power plants on the basis of RITM-200 reactors;
- implementation of approaches for unification of design solutions and equipment in the process of the Division's performance;
- creation of the R&D program aimed at reducing the NPP construction and owning cost.

2.4. Human Capital. Personnel Training under Digital Transition Conditions

Human capital means the Company's employees competences, their abilities and experience. Human (HR) capital management includes: contributions to the refresher training of employees, work with the staff pool and labor market, as well as the programs of personnel motivation and support. HR management system of the Engineering Division is based on the Company's strategic goals and business priorities.

Vice-President for Personnel Management and Administrative Work

– *Are there changes in the HR policy of the Division due to a digital transition? What is the key achievement of the year in this area?*

– It goes without saying, digitalization of all business areas leads to changes in the personnel management approaches. In the horizon of 2017–2018 the Engineering division already plans the demand for specialists in view of new competences required for digital transition. A list of educational institutions – main suppliers of the Company's staff has been reviewed. The work on adaptation of training programs of educational institutions – partners to the requirements of the Company, the market and the competitive environment is in progress.

A striking project in this area has become the opening of the Higher Engineering School – NRNU MEPhI in partnership with JSC ASE EC in order to train personnel for the project work within the complex technical facilities lifecycle. In 2019 the first 19 students will graduate. In 2018 already 40 people will be enrolled, and then we are getting ready for a three-fold increase in the program participants. Active work is carried out in terms of deepening professional expertise in system engineering and developing short-term training programs in programming skills and requirements management for designers.

– *Does the digital transformation affect the priorities in personnel management in the med-term?*

– For successful adaptation and effectiveness in the era of digital transformation, the employee must be ready to exit from the comfort zone: work with new digital tools on new digital products; change the business model of the company; the need, within quite a short time, to acquire knowledge and skills, without which the implementation of the operation tasks becomes impossible; working in a flexible format with a focus on continuous feedback from the business customer to improve the product.

In order to implement the digital transformation strategy of the Engineering Division and to increase the level of digital maturity and competitiveness in the engineering services market, the structure of the project teams and the list of design works for participation in the digital transformation program of the division have been approved. The purpose of this program is launching of the digital transformation projects of the division, the establishment and training of "leaders of digital transformation" team. The program includes design and educational modules both on the site of JSC ASE EC, and on external sites, international training, accelerating program for projects under development and their implementation. The Program will be implementedby February 2019.

2.4.1. HR Policy

Table 2.10. HR policy strategic tasks

HR policy strategic tasks in 2017–2018	Performance in 2017
Building up a competitive team of designers, performance leaders and international globalizer leaders.	• Implementation of industry and company programs aimed at identification, development and support of employees – leaders in strategic protects implementation. • Enhancing the efficiency of participants of international projects by developing the language proficiency competence. • Retention and handing over of key knowledge and skills with the help of couching system, relocation of the key specialists from completed facilities to new facilities under construction. • Development of competences for reduction of time period and cost of designing and construction and enhancement of their quality.
Developing a result-oriented corporate culture.	• Development and implementation of involvement management programs. • Maintaining uniform principles and approaches to human resources management in all the regions of operation considering the local specific features, in strict compliance with the applied legislation. • Improvement of the value management system. • Implementation of projects aimed at internal competition and timely acknowledgment of employee's achievements.
Enhancement of HR management processes efficiency.	• Transforming the human resources management functions into a full-scale business-partner. • Efficient organization of human resources management system, improvement of interaction with employees via RPS projects implementation.

2.4.2. Personnel Characteristics

Average staffing number in 2017 amounted to 14,463 persons. Salaries and other allowances for the employees per one person amounted to 1.18 mln RUR which is 1.3% higher than in 2016.

Total number of the Engineering division employees as on 31.12.2017 amounted to 16,667 persons.

*Table 2.11. Trend of the total manpower, pers.** (GRI 102-8)

Company	2015	2016	2017 planned	2017** fact	Δ (2017-2016)/ 2016, %	2018 planned
JSC ASE	749	504	784	637	26	968
JSC ASE EC	4,057	4,349	4,591	4,635	7	5,068
JSC Atomenergoproekt	2,806	2,409	2,303	2,497	4	2,522
JSC ATOMPROEKT	3,150	2,086	1,966	2,292	10	2,333
JSC NIKIMT-Atomstroy	2,058	1,708	1,723	2,163	27	2,053
PJSC Energospezmontazh	2,726	1,964	2,168	2,412	23	2,076
LLC Trest RosSEM	2,209	1,542	1,467	2,031	32	3,253
Total manpower of the Engineering Division	**17,755**	**14,562**	**15,002**	**16,667****	**14**	**18,273**

* Total manpower means the aggregate value of the payroll staff, external part-timers and employees on civil law contract as of the end of the year.

** The factors that influenced the increase of employees number in 2017:

• transfer to active phase of construction of Rooppur NPP, Bushehr-2 NPP, Kursk-2 NPP, as well as increase of the work scope at the NPPs that are already in the active construction phase (e.g., Belarus NPP);

• enhancing the competence of employees of the foreign projects design unit;

• development of the system engineering and information technologies unit within the frames of the Company digital transformation (3% of the employees number total growth).

Table 2.12. Total manpower in the breakdown by gender, age and employees categories, pers. (GRI 102-8)

		2017		Share of employees under 35, %	Under 35 y.o.			36-50 y.o.			Over 50 y.o.		
		planned	fact		m	f	total	m	f	total	m	f	total
Total in the Engineering division	Heads	1,986	2,005	21.1 %	340	84	424	572	279	851	526	204	730
	Specialists	8,320	8,914	47.5 %	2,088	2,144	4,232	1,163	1,590	2,753	801	1,128	1,929
	Other office staff	104	99	29.3 %	2	27	29	1	33	34	3	33	36
	Workers	4,550	5,612	38.2 %	1,999	143	2,142	1,924	158	2,082	1,213	175	1,388
	Other	42	37	35.1 %	10	3	13	9	1	10	8	6	14
	Total	**15,002**	**16,667**	**41.0 %**	**4,439**	**2,401**	**6,840**	**3,669**	**2,061**	**5,730**	**2,551**	**1,546**	**4,097**

Table 2.13. Dynamic pattern of contractors' and subcontractors' companies (CSC) personnel engaged in the construction, pers. (GRI 102-8)

Name of the construction site	2015		2016		2017		Δ changes in the manpower in the reporting year in relation to to the previous year	Dynamic pattern of the share of local population employment (%)
	Total manpower of CSC	Share of local residents from the total number (%)	Total manpower of CSC	Share of local residents from the total number (%)	Total manpower of CSC	Share of local residents from the total number (%)		
JSC ASE								
Bushehr NPP	372	28.0	128	62.0	260	86.0	103.1	24.0
Akkuyu NPP	121	95.0	91	93.0	270	97.0	196.7	4.0
Rooppur NPP	335	90.0	595	87.0	1,672	86.3	181.0	-0.7
JSC ASE EC								
Rostov NPP	6,362	79.0	4,891	90.0	3,920	90.0	-19.9	–
Kursk NPP	847	68.0	810	81.0	788	76.0	-2.7	-5.0
Belarus NPP	7,266	79.0	8,695	72.0	7,819	73.3	-10.1	1.0
JSC Atomenergoproekt								
Novovoronezh NPP-2	7,961	59.0	5,803	61.0	3,542	55.0	-39.0	-6.0
Total number of contractor's and subcontractor's personnel engaged in the construction	**23,264**	**71.1**	**21,013**	**78.0**	**18,271**	**80.5**	**-13.0**	**2.9**

In 2017 the total number of contractor's and subcontractor's personnel of the NPP construction sites reduced by 13%. The decrease in the number of personnel is connected with the final construction cycle and a reduction in the scope of work at the sites of Novovoronezh NPP-2 and Rostov NPP. At the same time, the number of contractors and subcontractors involved in projects in the active phase of construction, including foreign sites, increased. For example, at Rooppur NPP in 2017, in relation to 2016, the number of personnel increased by 181%, at Bushehr-2 NPP – by 103.1%, and at Akkuyu NPP – by 196.7%.

In 2017, the share of employment of the local population increased by 2.9% in relation to the previous year. The growth of this indicator is caused generally by reduction of the contractors' seconded personnel share at the projects under completion (Novovoronezh-2 NPP, Rostov NPP). During a planned reduction of the manpower at the site, the contracting organizations primarily minimize the number of workers from other regions involved on a rotational basis (to minimize travel expenses, housing rent expenditures for seconders, compensation of transportation to the place of work and back).

For additional information see Appendix 12 of the Book of Appendices.

Students' Teams

Since 2015, in connection with the extension of the international presence in the Division, students' teams have been arranged on the NPP construction sites abroad. The peculiarity of international Students' teams is that students work on the sites within their future specialty, that is, they actually undertake a traineeship as an engineer of a foreign branch in the structure of the general contractor. The traineeship enables future graduates to adapt to the production process as much as possible and to deepen their knowledge in the specifics of the chosen profession.

In 2017, a student construction brigade "Lotos" was organized at Rooppur NPP (Bangladesh). Students took part in the full cycle of equipment acceptance on the site, from inspections and photofixation, to inventory and compilation of working certificates of incoming inspection and related documentation. Together with the branch office employees, students participated in inspections of the construction site to monitor the performance indicators of general construction works.

In 2018, Students' team members will undergo training at the construction sites of Kudankulam NPP in India, Rooppur NPP in Bangladesh and Akkuyu NPP in Turkey.

2.4.3. HR Policy Implementation

The level of involvement of the personnel of the Engineering Division is growing every year. In 2017 it was 81% (in 2016 – 78%, in 2015 – 75%).

Personnel Training

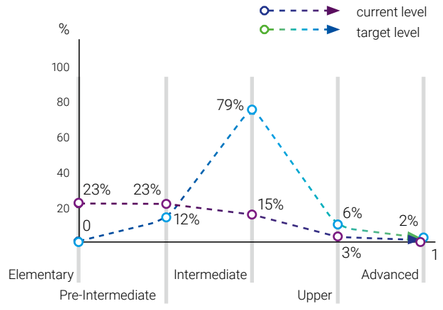
Mentoring development programme is being actively used in the Division. Specialists with high qualification (including those who are retired) share their vitally important knowledge with young specialists.

A system has been introduced that foresees a rotation of specialists to a higher or equal position in a different company or division, a transfer of specialists from completed facilities to new facilities of the Division that are under construction. Such rotation helps obtain new competence and experience in taking management decisions that will be useful at the next career stage.

"Total English" – development of English language proficiency of the Division employees

The employees involved in the implementation of international projects, enhance their competence in English language – 2,850 specialists underwent training in 2017, of them 2,206 were specialists from the designing unit. 21% of the employees of the designing unit reached the required language competence in 2017.

In 2017, the number of the employees of the Engineering Division that underwent training was 9,665 which is 27% higher than in 2016.



Efficiency in reaching the target level

Table 2.14. The number of employees who underwent training, pers.

Company	2015	2016	2017 planned	2017 fact	Δ (2017–2016)/ 2016, %	2018 planned
JSC ASE	120	49	480	271	453	438
JSC ASE EC	1,423	1,570	2,036	2,328	48	2,481
JSC Atomenergoproekt	1,114	1,246	1,200	1,250	0.32	1,240
JSC ATOMPROEKT	1,514	904	1,198	1,123	24.23	1,000
LLC TrestRosSEM	423	321	390	729	127	630
JSC NIKIMT-Atomstroy	1,190	1,014	1,025	1,243	23	1,100
PJSC Energospezmontazh	2,174	2,510	2,000	2,721	8.41	2,976
Total in the Engineering Division	**7,958**	**7,614**	**8,329**	**9,665**	**27**	**9,865**

(GRI 404–2) Total English program is focused on technical vocabulary (NPP construction and designing). Glossaries and specialized courses have been developed by experts, special lessons in English clubs are organized. In 2018, certification program will be developed that will make it possible to identify requirements to technical English knowledge for every designing specialty and to perform periodic assessment of the compliance with the established standards.

Plans for 2018:

- Second stage of certification for 383 specialists of JSC ATOMPROEKT, certification of specialists of the Division in terms of knowledge of international standards (recommendations of IAEA and standards of project customers' countries).
- individual development plans including events in different forms (learning, on-the-job training, coaching, tutorship, etc.)
- creating a program for application of international designing standards with the help of tutors from the most experienced and qualified experts of the designing unit.

Talent Pool

In 2017 the Talent Pool of the Engineering division included 324 people , 114 more than in 2016.

(GRI 404–2) To minimize HR risks within the career and succession management process implementation, a succession plan for key positions was developed. The succession plan includes 24 positions of the senior management level and 49 successors. The successor's status is always accompanied with an individual development plan .

The relevant career maps and requirements to positions in career group "Engineering (designing, supply, construction)" and "Engineering for non-profile equipment", have been developed. In 2018, each employee will have a chance to select his/her next career step, and a manager will have an opportunity to ensure the availability of successors to his/her position within the unified industry talent management system "Record" on the basis of Lumesse ETWeb software.

In order to become a member of the "Talent Pool", it is necessary to undergo an independent assessment that includes the assessment of the potential, the values and the motivation of the employee.

The share of promotion from the talent pool is – 43.8 %.

The share of protection of critically important positions of the top 1 000 – 79.2 %.

Professional skills contests: Atomskills, WorldSkills Hi-Tech, Digitalskills

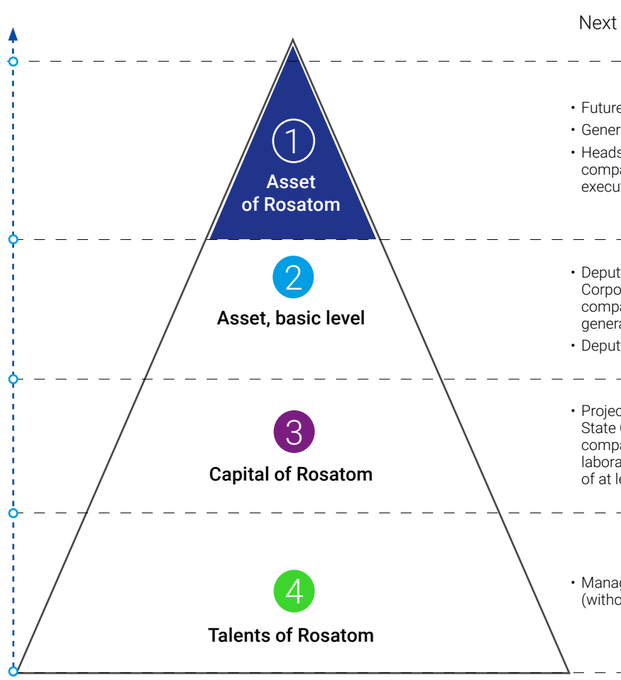
The Division team was the prize winner in three nominations: "Network and system administration" – 3rd place, "Life cycle management" – 3rd place, "Engineering and designing" – 2nd and 3rd places. First place in "Engineering and designing" competence. First place in nomination "Machine learning and big data".

WorldSkills Hi-Tech-2017 competition

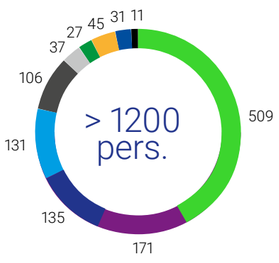
Winner in "Engineering and designing" competence is Maxim Mishin, engineer of JSC ASE EC.

In 2017, the first stage of certification of designers was performed, in order to determine the level of compliance/non-compliance of the specialist's qualification with the established requirements to his/her position. 96.4 % of the certified specialists confirmed compliance with the current level of qualification.

Interaction With Universities



Next career step	2016	2017
• Future TOP 30 managers. • General directors of companies. • Heads of functional areas of managing companies of divisions (deputies of sole executive bodies).	17	38
• Deputy heads of functional areas in State Corporation (subordinate TOP 30). Managing companies of divisions (subordinate to deputy general director). • Deputy general directors of FRC-3 companies	In 2016 there was not such level	31
• Project managers of managing company/ State Corporation, departments of managing company/State Corporation, divisions, laboratories, production shops (with experience of at least 2 years).	82	118
• Managers of initial level (without experience of management).	111	137
Talent Pool levels	210 pers.	324 pers.



- National Research Nuclear University MEPhI
- Moscow University of Civil Engineering
- Moscow Power Engineering University
- St.Petersburg Polytechnic University
- Nizhny Novgorod Technical University
- Moscow State Technical University named after Bauman
- Ivanovo State Power Engineering University
- St.Petersburg University of Architecture and Civil Engineering
- Nizhny Novgorod State University of Architecture and Civil Engineering
- Other universities

Forecast of employment of graduates from the specialized universities – 92%.

Plan for hiring graduated from High schools for the years 2018–2027 is more than 1200 people. Forecast.

General industry directions of work with universities and students

Days of Rosatom career in the key universities – 3 key universities (Moscow, Nizhny Novgorod, St.Petersburg), annual involvement of over 5000 students.

Vacancy fairs for students and graduates – participation in regional events of the leading universities – Moscow Power Engineering University, Moscow State University of Civil Engineering, MEPhI, Nizhni Novgorod Architectural University, Moscow State Technical University, MGTU "Stankin", Nizhny Novgorod Technical University, St.Petersburg Polytechnic University.

TeMP tournament (HiPo selection), annual employment of about 15 graduates with a high potential to the division.

Internship and pre-graduation practice in the units – 236 students underwent practice in the companies of the division in 2017.

Induction excursions to companies.

Industrial internship of Moscow University of Civil Engineering (pilot project "Incubator")

Intensive theoretical and practical training of senior students of the department of thermal power facilities construction and nuclear power engineering by ASE specialists – 21 students underwent such training in 2017.

Selection and employment of graduates with a high potential – 4 best students were employed upon the results of the internship.

- Nizhny Novgorod Technical University named after R.E.Alexeev
- Nizhny Novgorod State University named after N. And. Lobachevsky
- Moscow University of Civil Engineering
- Peter the Great St. Petersburg Polytechnic University
- Saint-Petersburg State University
- National Research Nuclear University MEPhI
- National University of Science and Technology
- Moscow Power Engineering University
- Russian University of Chemical Technology. D. I. Mendeleev
- Ivanovo State Power Engineering University
- Tomsk Polytechnic University
- Ural Federal University

Specialized department of Nizhny Novgorod Technical University named after R.E. Alexeev. Corporate scholarships

Additional training of senior students – to be employed by JSC ASE EC, winners of corporate scholarship – 20 students annually.

Professional re-training of specialists of JSC ASE EC, preparation for IPMA certification.

Training at NPP under construction, studying of RPS.

Special program for support of the best students of Nizhny Novgorod Technical University and Nizhni Novgorod Architectural University – annual incentive of 15 students.

National Research Nuclear University MEPhI – JSC ASE EC

Implementation of joint master's programs in three areas of training – 20 students in 2017, 40 students in 2018, 60 students in 2019.

Selection and employment of the best graduates.

Additional training programs of employees of ASE Group of Companies.

2.4.4. Social Policy Implementation

The Social policy of the Engineering Division is aimed at increasing the attractiveness of the Division as an employer and increasing the efficiency of social expenditures.

Special attention is paid to social support and material and non-material incentives aimed an enhancement of the employee's interest in achieving high results.

A special package is formed in accordance with Uniform Industry Social Policy.

Table 2.15. Expenses for social programs, thousand RUR

Организация	2015 fact	2016 fact	2017 fact	2017/2016, %	2018 planned
Social programs	504,018.53	447,065.85	421,184.00	-5.79	515,664.71
Cultural and sports activities	80,243.87	72,701.76	91,332.59	25.63	110,054.43

*Table 2.16. Expenses for health and safety of the personnel, thousand RUR**

Company	2015 fact	2016 fact	2017 fact	2017/2016, %	2018 planned
JSC ASE EC	155,388.54	168,938.19	222,514.49	31.71	253,204.00
JSC ASE	32,910.84	12,963.72	15,440.41	19.10	44,813.09
JSC Atomenergoproekt	141,017.12	247,574.43	137,393.97	-44.50	131,311.00
JSC ATOMPROEKT	77,184.63	61,343.77	56,821.42	-7.37	73,309.00
JSC NIKIMT-Atomstroy	4,098.15	4,843.94	3,146.29	-35.05	4,872.94
LLC Trest RosSEM	0.00	426.00	454.05	6.58	1,706.96
PJSC Energospezmontazh	108.00	83.20	31.47	-62.18	0.00
Total in the Engineering division	**410,707.27**	**496,173.25**	**435,802.10**	**-12.17**	**509,216.99**

A significant scope of work for organization of health care of the employees and members of their families is done by the administration jointly with the trade union committee. The companies organize cultural events for employees and their children, getaways for strengthening the health of employees and veterans.

Over 2000 employees of the Engineering Division go in for sports. The Company's employees are active participants of various sports competitions: athletic events, festivals, contests. There are sports clubs, rented swimming pools and gyms for futsal, volley-ball, hockey, badminton and other sports. The Division has good working relations with Atomsport sports society.

A special support program is offered to employees in their search for further employment or career ending management in case or retirement. (GRI 404-2)

* The figures indicated in tables may differ from same ones calculated in this report due to rounding of figures.

2.4.5. Occupational Health and Safety

The engineering Division demonstrates a systematic approach towards ensuring the safety of both the employees of the Company and employees of subsidiaries, affiliates and subcontractor companies.

The Company's priority goal is to ensure occupational health and safety of its employees

To reach this goal, the Company:

- Develops and implements plans for improvement of the labor conditions and protection in accordance with the legislation of RF;
- Ensures personal responsibility of the managers of all levels for the results of works in the field of labor protection;
- Improves the system of labor protection management in accordance with the international system OHSAS 18001:2007;
- Facilitates the motivation of all the employees of the Company, of subcontracting companies, subsidiaries and affiliates to ensure collective safety during work.

(GRI 403-3) The main risks of engineering, technical and managerial personnel of JSC ASE EC are related to danger of injuries when falling on a slippery surface. Significant risks in the field of occupational safety are concentrated at construction sites where subcontractors work, the main potential hazard at construction site is work at height.

Measures for protection and improvement of labor conditions are taken annually in accordance with the labor legislation of the Russian Federation, a trilateral industry agreement for nuclear power and science, a collective agreement of JSC ASE EC, the approved plans of measures for preventing industry injuries and occupational diseases which includes providing special clothing and protective devices to the personnel, compulsory training on labor safety, ensuring safe conditions of labor at the working place.

JSC ASE EC regulatory documents in the field of occupational safety

The Company's priority goal is to ensure occupational health and safety of its employees. The management guarantees the conditions and resources for implementation of occupational safety policy, ensuring professional safety and health of the employees, the management encourages all the employees to unite their efforts in reaching these goals. The occupational safety policy is recommended to all the subsidiary companies and subcontractors.

The interaction between JSC ASE EC with subcontractors at the construction sites is performed in the basis of concluded contracts which foresee the compliance with labor protection requirements. The main forms of preventive work in the field of labor protection are:

- scheduled daily inspections of compliance with the labor protection requirements at the construction site and work places;
- schedules comprehensive inspections of performance of labor protection measures;
- Labor Protection Days at construction sites and joint steering committee for occupational safety;
- development of measures for preventing industrial injuries and compliance with the requirements for labor protection;
- implementation of "Stimulus" program at the construction site for identification of the best subcontractor in the field of compliance with the labor protection requirements.

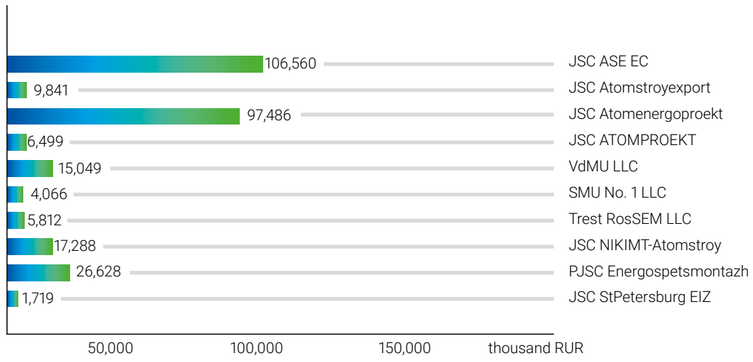
The efficiency of the labor protection system is confirmed by the absence of cases of occupational injuries (OI = 0) and occupational diseases (OD = 0).

The introduction of LTIFR* – (Lost time injury frequency rate) parameter in the division made it possible to ensure efficient monitoring of injury rates for 100% of the employees of the companies of the Division and the subcontractors.

Special attention is paid to regular medical examinations of the personnel who work in hazardous industrial conditions. Medical care of these employees is performed by territorial industry federal centers of the Federal Medical-Biological Agency of RF. During the reporting period, over 4,411 employees of the Division underwent medical examination (825 of them women).

Every year managers and specialists undergo training and examination of their knowledge in labor protection, and workers are trained to provide first aid. In 2017, 1,658 managers and specialists of the Engineering Division underwent the relevant training.

Over 300 mln RUR were allocated for labor protection measures in the Engineering Division.



Expenses for labor protection measures in the Engineering Division

In 2017:

- possible hazards and risks were identified;
- strategic goals in terms of safety and labor protection were set;
- programs for goal achievement were developed4
- complete involvement of the personnel into the valid labor safety system is ensured.

The companies of the Division have adopted a Comprehensive plan of measures for ensuring occupational safety and prevention of injuries of the employees which contain measures for organization of inspections of compliance with the safety requirements by subcontractors, labor safety training, first aid methods, enhancing the role of labor safety service considering the necessity of supervision over labor safety during the performance of the works by subcontractors and affiliated companies at NPP construction sites.

* LTIFR – Lost Time Injury Frequency Rate.

Table 2.17. LTIFR – key efficiency parameter

	2017 fact	2018 plan (max level)
LTIFR and reducing the severity of injuries at construction sites, including the subcontractors.	0.06 / 15 %	0.32 / 20 %

Health and Safety at the Workplace

JSC ASE EC has introduced and maintains labor protection and occupational safety management system which is confirmed by Certificate BS OHSAS 18001:2007 of International Certification authority DQS (valid until 30.07.2019).

The main elements of labor protection and occupational safety management system:

- Policy in labor protection.
- Planning of labor protection management.
- Numerical methods of assessment of labor safety conditions.
- Efficiency parameters in labor safety management.
- Tools of labor protection management.
- Analysis of accidents at work.
- Administrative control over the OHS condition.
- Labor safety culture formation.

Benefits from the introduction of the system:

- Elimination and/or mitigation of risks.
- Control over hazardous industrial factors.
- Prevention of incidents, accidents, emergencies.

Target Inspections of the Contractors

Demonstrative walk-downs of working places of subcontractors are organized at the Rostov, Kursk and Belarus NPP construction sites, within the framework of the accepted Typical Regulation on labor protection management system. The purpose of the demonstrative walk-downs is monitoring by the Customer and the General Contractor of the general OHS status at workplaces of the construction site of the particular contractor, with the participation of its managers and OHS specialists in labor protection. Upon the results of inspections, the reasons of violations by employees of the labor protection requirements and rules are analyzed, the introduction new up-to-date technologies, equipment, automation or industrial processes is facilitated in order to create healthy and safe labor conditions.

Issues of Health and Security are Stipulated in the Official Agreements with Trade Unions (GRI 403–4)

The obligations of the employer for arrangement of medical insurance and health care of the employees are foreseen in the collective agreement of the companies. The issues of labor protection and safety of the employees are reflected in a special section of the collective agreement. Representatives of the trade union are members of commissions for certification of the employees and working places, for investigation of accidents at work, for social issues, labor disputes and other commissions established for resolution of various issues of social and labor aspects.

The employers provide information to the employees about the regulatory requirements to labor conditions at workplaces, about necessary and compulsory individual and collective protection means for disease prevention. All employees of the Company have access to medical examination, timely diagnosis and treatment of diseases. Flu inoculation of the employees is provided every year. Employees and their children are provided with guaranteed financial aid for paid medical services in case of severe diseases. Preventive treatment and sports events are arranged for the purpose of health maintenance.

The Main Goals in the Field of Occupational Safety in 2018:

- Updating and circulation of labor protection management system in companies and branches in the whole management scope of JSC ASE EC.
- Implementation of the comprehensive plan of measures for ensuring safety and injury prevention.
- Assurance of target value of LTIFR at the level of 0.32 in all the companies that are part of the management scope of JSC ASE EC.

2.5. Natural Capital

Natural capital means all renewable or non-renewable natural resources which, this way or another, are used by the Company during manufacture of goods/service rendering. Natural capital includes air, water, land, subsoil assets, forests, as well as biological diversity and ecosystem health. Natural capital management means contributions to respect for the environment and unconditional compliance with all necessary standards and requirements in environmental science and nuclear and radiation safety.

Sergey Streltsov,
Director for Quality Management

– *Which works in the field of environmental, industrial and radiation safety were performed by the Division on the regional and international levels?*

– In 2017 works for ensuring environmental, industrial and radiation safety and issue of permitting documentation, were performed as planned.

Positive conclusions of state environmental expert review on the basis of the materials of justification of the license for operations in the field of use of atomic energy were obtained for power units No. 4 of Rostov NPP. Kursk Branch Office of JSC ASE EC has been granted the right to use water reservoirs, the relevant permitting documentation for discharge of polluting substances was obtained. Nuclear qualification audit has been passed and environmental license for expansion of Paks-II NPP project has been received. In November 2017, license for designing and construction of Rooppur NPP was obtained.

The operation of radioactive sources was organized in accordance with the requirements of regulatory documents in the field of use of nuclear power. No exceeding of annual effective dose of personnel radiation when working with radiation sources was revealed.

– *In view of enlarging of management scope – which works were performed in the Division for creating a unified integrated management system and preparation for its certification in accordance with the requirements of the international standards?*

– At the first stage, it is planned to establish a unified integrated management system in two key companies of the Division – JSC ASE EC and JSC ASE. In 2017 (this work also continued in 2018) a unified Guideline for Integrated Management system and a number of standards for common use were developed. A unified Policy in the field of quality, environmental protection, occupational safety and health was approved. In May 14–18, 2018 a certification audit of the unified Integrated Management System in JSC ASE EC and JSC ASE was performed, in accordance with the requirements of international standards ISO 9001:2015, ISO 14001:2015, OHSAS 18001:2007.

Work in the field of environmental protection performed by the Division is aimed at compliance with the requirements of environmental protection, mitigation of the negative impact on the environment and rational use of natural resources.

The key companies of the division – JSC ASE EC and JSC ASE – are establishing an integrated environmental management system. In 2017, JSC ASE EC and JSC ASE had valid policies in the field of quality, ecology and occupational safety, the environmental aspect and their significance was identified. In January 2018, within the framework of transfer to international standard ISO 14001:2015, joint Policy of JSC ASE EC and JSC ASE in the field of quality, environmental protection, occupational safety and health, was adopted. The strategic goal of the companies indicated in the joint Policy, is leadership strengthening on the global market of the power units to be constructed with a priority of nuclear, radiation, industrial and environmental safety of facilities, provision of safe labor conditions and environment preservation.

In 2017, the Division facilities performed relevant works for ensuring environmental, industrial and radiation safety. Permitting documentation was issued, including JSC ASE EC where certificates for hazardous waste were re-issued, Kursk Branch of JSC ASE EC was granted the right to use the Seim river. Standards of allowable discharges were approved, permission for discharge of substances and microorganisms into the river was received. Novovoronezh Branch Office of Atomenergoproekt JSC developed the plan of maximum permissible release and received a permit for discharge of pollutants.

Planning the environmental parameters for 2018 is performed by structural divisions, separately by each area of activity. Consolidated data for 2018 on the planned environmental parameters of the Division were not generated.

Consideration of Facilities Having a Negative Environmental Impact

In 2017, the companies of the Division registered facilities that have a negative environmental impact (NEI), 18 NEI facilities were identified that belong to category II–IV (there are no category I facilities in the Division).

Table 2.18. Facilities having a negative environmental impact (NEI)*

Company	Category of NEI facility	Number of NEI facilities
JSC ASE EC	III	1
	IV	2
JSC ASE	No NEI facilities	
JSC ATOMPROEKT	III	4
JSC Atomenergoproekt	III	4
	IV	1
VDMU LLC	III	1
LLC Trest RosSEM	No NEI facilities	
SMU No.1 LLC	III	1
JSC NIKIMT-Atomstroy	II	1
	III	2
PJSC Energospezmontazh	No NEI facilities	
SPB NIII EIZ JSC	III	1

We regard safety and reliability of nuclear facilities as our primary concern and we are responsible for the results of our business.

In 2017, which was announced the Year of Economy in Russia, the Engineering Division achieved the following:

• reduced the total volume of waste by 7%;

• reduced the consumption of electricity for in-house needs by 19%;

• reduced the consumption of thermal energy for in-house needs by 22 %;

• increased of expenses for environmental protection by 18%.

* In accordance with Article 4.2 of Federal Law No. 7-FZ "On Protection of Environment", four categories of facilities are identified depending of the level of the impact on the environment:

• Facilities of category I – having a significant negative impact on the environment, related to the fields of application of the best accessible technologies;

• Facilities of category II – having a moderate negative impact on the environment;

• Facilities of category III – having an insignificant negative impact on the environment;

• Facilities of category IV – having an minimal negative impact on the environment;

Natural Factors that Influence the Performance of the Division

Natural and man-induced and environmental factors be studied and considered in the area and site of NPP location:

Hydro-meteorological processes and phenomena	Flood, tsunami, ice phenomena on water streams (jams, dams), sea coast mode (upsurges, downsurges, storm waves), seiches, rise and fall of tides, changes of the water resources: extremely low discharge, anomalous decrease of the water level, strong wind, hurricane, tropical cyclone (typhoon), precipitation, extreme snow fall and snow cover, air temperature, avalanche, lightning stroke.
Geological and geo-technical processes and phenomena	Seismic-tectonic troubles, seismic dislocations, seismic elevations, earth crust recession, modern differentiated earth crust movements, tectonic creep, residual seismic deformations of the earth crust, earthquake (of any origin), volcano eruption, mud volcanoes, land slides, ground falls, mud slides, snow and stone avalanche, broken stones fall, erosion of coasts, slopes and riverbeds, avalanches and breakdowns, underground washing out, including karst erosion; permofrost-geological (cryogenic) processes, deformation of specific ground (karst, thermal karst, liquifaction, soil flow, underwashing).
Factors creating external man-induced impacts	Crash of aircraft and other flying objects, fire due to external reasons, explosion at the facility, releases of explosive, flammable, toxic steam, gas and aerosols into the atmosphere, explosion of creeping clouds; corrosion liquid discharges into surface and ground water, electric-magnetic radiation, spillage of oil and oil products in the near-coast areas of rivers, seas and oceans; burst of natural or artificial dams.

2.5.1. Natural Safety Management at the Stage of NPP Design

(GRI 102–12) During the designing of NPPs to be constructed in the Russian Federation, the developers of design and working documentation are guided by the requirements of the Russian regulatory base valid in the field of use of atomic energy and recommendations of IAEA.

The developed design documentation undergoes public hearing and state environmental impact assessment.

In view of introduction of new regulatory documents in 2017, the design documentation of the operational and designed NPPs were analyzed in terms of compliance with the requirements of the new rules and regulations.

Foreign NPPs are designed considering the regulatory basis of the countries where the NPPs will operate.

Information about compliancewith indicated standards and documents is disclosed in specialized safety reports.

(GRI 416–1) In 2017, design works for implementation of updated measures for mitigation of the consequences of beyond design basis accidents at NPPs with VVER with anomalous external natural and man-induced events, developed with consideration of lessons learned from the Fukushima accident.

NPPs are technically complex facilities, during the operation of which proposals are put forward aimed at enhancing their operational parameters.

Design institutes systematically perform works on the basis of the requirements and instructions of the customers who request to consider the experience of NPP operation. Reports on operational experience are elaborated and sent to operating companies upon

An NPP design envisages and justifies the technical equipment and organizational measures aimed at ensuring the stability of the NPP safety-related systems and elements against external impacts.

results of analyses of the reasons of equipment failure, power losses and shutdowns, analyses of proposals and performed design works.

During the resolution of issues of ensuring safety of buildings and structures not containing nuclear and radiation media or safety related elements and systems , and during the resolution of general issues of technical safety and physical protection of the NPP, state-or-the -art technologies and decisions applied in other industries are taken into account.

The target values of the parameters of the designed NPP, including the requirements and numerical value of the NPP demand in power used for in-house needs, are established by the customer in the Terms of Reference (ToR). The numerical value of the parameter is established by the Customer at the stage of ToR development on the basis of analysis of the operational analogous

NPPs, calculation of energy consumption for in-house loads performed by the designing company at the instruction of the Customer at the stage of the feasibility study.

Reduction of in-house energy needs is reached due to implementation of measures enhancing the energy efficiency, in particular:

- selection of the NPP site with minimal distance from the water reserve and a small difference in elevation between the site and the water reserve, excluding the possibility of flooding the NPP site, to minimize the energy for pumping water for the process water supply systems;
- use of effective heat exchanging equipment with heat exchanging surfaces made from materials with high electric conductivity;
- use of construction materials and elements of civil structures with high thermal insulation properties;
- use of frequency regulation for powerful electric drives;
- use of modern lighting equipment with low power consumption;
- use of high capacity ventilation and air conditioning systems.

Environmental Impact

(GRI 102–11) NPPs are designed in such a way that the radiation impact on the population and environment does not exceed the exposure dozes established by the regulation, and is maintained within the values that are significantly lower than the regulatory thresholds. Engineering and technical solutions of the developed designs ensure releases of radionuclides below the allowable levels.

Non-radioactive emissions into the air from nuclear power plants are insignificant, they occur only from start-up and reserve boilers, diesel generator stations, periodically switched on in the inspection modes or at complete de-energization of nuclear power plants, and from repair work performed by units.

Atmosphere impact

NPP releases into the atmosphere are not radioactive and not significant, their sources being only the start-up and standby boilers that are periodically switched in the check-up modes or during a complete blackout of the NPP, diesel generator stations or repair works.

Table 2.19. Releases of pollutants by different sources of power generation

Type of power source	Releases of NO_x, SO_x and other pollutants
Nuclear power plants	Non-radioactive emissions into the air are less than 0,013 % of all the industrial emissions in RF.
Hydro power plants	Emissions from auxiliary equipment are comparable with NPP emissions.
Thermal power plants	50 % of all industrial emissions in RF.
Alternative types of power source	Emissions from auxiliary equipment.

RAW incineration plants used at NPPs are equipped with effective systems of profound treatment of smoke gases and exhaust control.

Impact on water resources

The valid regulatory base of RF does not allow the application of direct cooling systems. The NPPs that are designed by the Division, use circulation cooling systems with cooling towers where excessive heat is dispelled in the atmosphere. The water needed to replenish the irreparable losses in cooling systems due to evaporation, carry-over and blowdown, process needs, fire-fighting systems, watering the territory, is provided by the

Designed NPPs are not placed in special protected natural areas and in areas with high biological diversity.

The designed NPPs do not produce any significant effect on the growth of carbon dioxide releases in the atmosphere. RAW incineration plants are equipped with effective systems of profound treatment of smoke gases and exhaust control.

No ozone destroying substances are used at NPPs designed by the Engineering Division.

Release of pollutants with discharge water of the designed NPPs does not exceed the permissible values established by environmental protection authorities, they amount to a hundredth of a percent compared to thermal power plants emissions.

Each further design uses the best available technologies of water discharge treatment.

process water supply system. Designed NPPs are large water consumers. E.g., the volume of water consumption by a VVER power unit with the capacity of 100–1,255 MW is ~ 18–20 million m^3 per year.

The volume of water consumed by an NPP depends on the power of the NPP, the cooling technology and climatic conditions of the site.

When the designed NPPs are placed near a source of water (a river, a lake), water for replenishing losses in the cooling systems will be taken from such sources if the required water consumption does not have a negative impact on the water reservoir which shall be confirmed by calculations and a comprehensive expert review of the design.

In case of insufficient water in the reservoir, artificial reservoirs are created which are filled during high water period.

The possibility to use protected groundwater for process water supply, from the legal and environmental viewpoint, and its technical and economic feasibility, shall be determined individually for each specific case. As a rule, ground waters are used for drinking water supply.

The remoteness of municipal centers from an NPP, the expenses and the technical conditions of municipal water supply pipelines does not make it possible to use them to satisfy the need of water of the NPP. During the development of the feasibility study for the NPP construction, municipal water supply pipelines are considered to be an option for water supply to the township for the NPP personnel.

Impact in biological diversity (GRI 304-1, 304-2, 304-3, 304-4)

Land plots on which NPP construction is carried out are not located in areas with high biodiversity value, and, accordingly, there is no need for measures to restore the habitat.

Nuclear power plants are not located in areas with flora and fauna listed in the Red book of Russia and the IUCN Red list.

Strategy for preservation and restoration of habitation areas

Environmental protection legislation of RF and the countries of operation are complied with at all the industrial sites of the operational and future NPPs:

- environment protection measures are performed;
- the impact on the environment is monitored;
- the relevant permitting environmental protection documentation is issued.

The developed designs of NPPs foresee expenses for purchasing by the NPP departments special instruments for environmental monitoring during the NPP operation, as well as devices for rehabilitation of the land areas that were disturbed during the NPP construction. The implementation of these measures facilitate the restoration of the rehabilitation areas of plants and animals.

Climate-related risks (GRI 201–2)

Nuclear power plants are designed taking into account external influences typical for the construction site, including natural (including climatic). The applied design solutions that ensure the stability of the object to natural influences are designed for extreme temperatures and extreme water levels in the range of average repeatability once every 10,000 years. The cost of such constructive solutions are put in the estimated calculation of the cost of construction of nuclear power plants.

2.5.2. Natural Safety Management at the Stage of NPP Construction

(GRI 416–1) Under the RF environmental policy, one of the main criterion used for taking decision about the possibility of implementation of the planned operations is the environmental safety.

Any investment and construction project envisages the development of the documentation justifying the impact on the environment. During the development of environmental sections of design documentation, the Company uses safety standards (the main regulatory documents).

The following criterion is used during the justification of environmental safety: any NPP is the source of three main types of impacts on the land, the aquatic system and population of its region – radiation, chemical and thermal.

In accordance with Federal Law "On environmental expert review", design documentation for NPP construction undergoes state environmental expert review in the course of which it is established that the planned operations comply with the environmental requirements and it is determined whether the implementation of the project is permissible in terms of prevention of possible adverse impacts on the environment.

(GRI 416–2) In the reporting year no cases of non-compliance with the regulatory requirements and international standards in the field of impact of the products on health and safety, were revealed.

Ensuring Nuclear and Radiation Safety During Construction of Nuclear Facilities and NPP Decommissioning

In the course of NPP construction, radiographic examination using radioisotope flaw detectors with closed radionuclide sources are applied to check the quality of welded joints, base metal and weld deposits of equipment and pipelines.

The operation of radioactive sources was organized in accordance with the requirements of regulatory documents in the field of use of nuclear power.

For the purpose of operating with sources of ionizing radiation, licenses are available for the right to perform works in the sphere of nuclear power issued by the state safety regulatory body. FMBA of Russia has granted sanitary and epidemiological permissions for the above operations.

Industrial radiation monitoring is performed in accordance with radiation monitoring program approved by FMBA of RF.

The persons responsible for ensuring radiation safety, accounting and supervision and physical protection from radioactive substances, have undergone training, obtained certification and permissions of Federal Environmental, Industrial and Nuclear Supervision Service of Russia, for the right to perform works in the field of atomic energy use.

Personnel of group A was defined in the order. Individual exposure doses are registered. Quarterly and annual doses as well as the total dose during the whole working period are accounted as well.

No exceeding of annual effective dose of personnel radiation when planning and working with radiation sources was revealed.

Registration and control of radioactive substances are performed in accordance with NP-067-16 "General Rules for Accounting and Control of Radioactive Substances and Radioactive Waste in Organization".

State Environmental Impact Assessment

In 2017, two packages of documents for justification of license for activities in the field of use of atomic energy were submitted for state environmental impact assessment (SEIA).

- Operation of Rostov NPP Power Unit 4;
- Operation of Rostov NPP Power Unit 4 in 18-month fuel cycle with the reactor plant power at 104% of the nominal power.

After the review of the above documentation by the experts of the Southern Federal District Department of Federal Service for Supervision of Natural Resource Usage, positive conclusions of SEIA expert commission were obtained.

Responsibility for organization, regulation and coordination of the activities in the sphere of organization of works for environmental protection is borne by quality director of JSC ASE EC. At construction facilities, responsibility for the compliance with the requirements to environmental protection is borne by heads of structural divisions.

In 2017, there were no accidents, incidents or anomalies during the use of radiation sources or emissions and releases of radioactive substances into the environment. There were no cases of exceeding the control levels, agreed by Federal Medical and Biological Agency, of the main dose limits, internal releases of nuclides, pollution of air, surfaces of rooms, work places and equipment during works performance with radiation safety.

In 2017 there were no incidents according to INES scale of level 2 and higher.

In 2017, stress-tests were performed at Belarus NPP. Stress-tests demonstrated the stability of the facility against external impacts. The expert review of stress-tests materials is performed by international expert organizations and specialists.

Ionizing radiation sources, flaw detectors, transport and storage casks are stored in stationary storage facilities in accordance with the requirements of radiation safety.

In order to ensure readiness to prevention of accidents at nuclear facilities, measures for prevention of accidents and incidents and documents determining the criteria for decision taking after radiation incidents, have been developed. There is a plan available to protect the personnel against radiation accident and its consequences approved by FMBA of RF. Programs and methods of emergency drills were developed. Emergency drills are conducted on a regular basis.

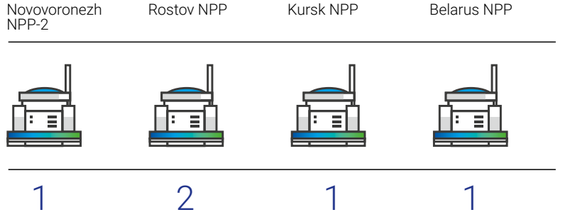
During 2017 there were examinations of the observation of requirements of federal norms and rules in the sphere of the use of nuclear power during the operation of radiation sources. Such examinations are performed by organs of internal control of safety and quality, state regulatory authorities of atomic energy use and state regulatory authorities of safety of atomic energy use.

The radiation safety assurance in organizations operating radioactive substances is assessed as satisfactory.

Ensuring Industrial Safety at Construction Sites

Industrial safety is ensured in accordance with Federal Law of RF 21.07.1997 No. 116-FZ "On Industrial Safety of Hazardous Industrial Facilities", the requirements of regulatory documents of RF and Unified Industry Policy of Rosatom State Corporation in the field of industrial safety.

With the purpose of implementing the Unified Industry Policy of Rosatom State Corporation in the field of industrial safety, JSC ASE EC has issued the approved Policy of JSC ASE EC in the sphere of industrial safety.



Inspections of the industrial safety status at constructed facilities in 2017

In 2017, inspections of control over the compliance with the requirements to observation of industrial safety at hazardous industrial facilities, were performed. In the course of the performed inspections it was established that the companies operating hazardous industrial facilities comply with the requirements of industrial safety:

- hazardous industrial facilities are registered in the state register;
- civil liability for damage as a result of an accident at hazardous industrial facilities is insured;
- local normative acts have nominated the persons responsible for organization and performance of control over industrial safety at hazardous industrial facilities, over the maintenance of lifting structures in operable conditions and safe performance of works with such structures;
- job descriptions for the above persons have been developed, regulations on production control, industrial manuals and manuals for occupational safety for the operating personnel and the personnel involved in cargo slinging.

In branch offices of JSC ASE EC there are appointed persons who are in charge of monitoring of the status of industrial safety at construction sites of hazardous industrial facilities; internal audits of safety are performed, industrial sites are inspected. Upon results of the audits the contractors receive prescriptions about elimination of the identified violations with further control of performing the prescription requirements.

Measures performed within the framework of inspections and industrial control made it possible to avoid accidents in 2017 determined in the RF legislation as accidents at hazardous industrial facilities.

The status of ensuring industrial safety in JSC ASE EC, considering the absence of accidents and incidents at hazardous industrial facilities, is evaluated as satisfactory.

2.5.3. Results in the Field of Natural Protection

(GRI 306–1) In 2017, organizations which are part of the Engineering Division, procuded a certain effect on the environment during industrial activities, construction of NPPs, operation of administrative and industrial facilities, in terms of releases of contaminants into the atmospheric air, placement of waste in specialized waste fields and discharge of contaminants into water.

In 2017, due to addition of sources of emissions in Novovoronezh Branch Office of Atomenergoproekt JSC and changes of the method of accounting of emissions in some facilities, the calculation of the volumes of emissions was made on the basis of actual data (previously, the data specified in permissions for emissions were accounted). Retrospective re-calculation was not performed.

Table 2.20. The volume of pollutants, tons

	2015	2016	2017	Δ (2017-2016)/ 2016, %
Sulphur dioxide	0.32	0.21	1.34	over +200
Carbon oxide	13.90	10.05	13.29	+32
Nitrogen oxide	3.74	2.82	4.75	+68
Other substances	61.55	63.41	57.32	-10
Total	**79.54**	**76.51**	**76.72**	**0**

Impact on Water Resources

(GRI 306–1) The total volume of domestic, industrial and stormwater waste discharged mainly into the city sewage network, amounted to 7,757 thousand m^3, of which:

- 7,641.3 thousand m^3 were discharged without treatment;
- 115.66 thousand m^3 were treated at local treatment facilities.

(GRI 303–3) Circulating water supply is not used, we have no recycled and reused water.

Table 2.21. Water discharge

Branch Office	Water discharge	Receive water dischages*
Volgodonsk Branch	Via central treatment facilities of Rostov NPP.	Central discharge facilities of Rostov NPP
Baltic Branch	Discharged to channel IN-18-8 after preliminary treatment at sewage mechanical and biological treatment facilities.	Canal IN-18-8
Kursk Branch	The discharge of drain water formed in the course of works performance for dewatering of the pit of units No. 1 and 2 under construction of Kursk NPP-2. The discharged water corresponds to conditionally pure water category. No exceeding of maximal permissible concentration was revealed. In 2017: • permission on granting a water reservoir for usage, was issued. • - permission for discharge of substances of microorganisms into water reservoirs was issued. • - the branch office has the obligation to account the volume and quality of the discharged water.	River Seym river (via Dnepr/892/360)

More information in Appendix 14

Table 2.22. Total volume of consumed water with breakdown by sources (GRI 303-1)

List of water supply sources	Source of water supply	Water consumption, thousand m³			
		2015	2016	2017	Δ (2017-2016)/2016, %
Surface waters, including swamps, rivers, lakes and oceans	Tsimlyansk storage lake	35.3	30.5	27.6	-10
Underground waters (at Lesnoy Uyut recreation center, at Baltic NPP construction site)	–	6.9	12.2	11.7	-5
Municipal and other water supply systems	Mosvodokanal JSC, SUE Water channel of Saint-Petersburg, Nizhegorodsky WATER CHANNEL, SE Belorussian NPP	108.1	127.5	115.3	-10
Total without natural water inflow		**150.3**	**170.2**	**154.6**	**- 9**
Natural water inflow	Collector-drainage water in a pit of power units 1,2 of Kursk NPP	-	-	**7,420.4**	-
Total with natural water inflow		**-**	**-**	**7,575.0**	**-**

On the whole the reduction of consumption of water resources is related to the performance of organizational and technical measures. Water intake of organizations of the Engineering Division in 2017 did not have a significant impact on water supply sources. (GRI 303-2)

Impact on the Soil

In 2017, no reclamation works were implemented at Kursk NPP-2 and Rostov NPP sites. The work performance for reclamation is planned by the operating company at the final stage of the NPP construction. The construction of Rostov NPP Power units 3 & 4 was followed by reclamation of 351,812 m² out of the totally disturbed 435,559 m², that was underway within 2015–2017. The remaining part of the disturbed land, i.e. 83,747 m² is to be reclaimed at the final stage of construction.

The constuction of NPPs does not deteriorate the environment, including the soil.

Waste

(GRI 306-2) The Engineering division construction and operation facilities effect the industrial and consumer waste management in line with the environmental legislation of the Russian Federation, the countries of operation and the developed draft standards for waste production and limits for their disposal.

Waste accumulation areas are available at all construction and operation facilities. The Engineering Division's facilities for long-term waste storage and disposal are out of operation.

Waste is accumulated in special containers, and as they are filled, the waste is handed over to specialized companies for further disposal, decontamination and placement in areas that are listed in the state register of waste storage facilities.

(GRI 306-4) Transportation and transfer of waste to third parties for their further use/decontamination/disposal is performed by specialized transport companies that have a license for this performance.

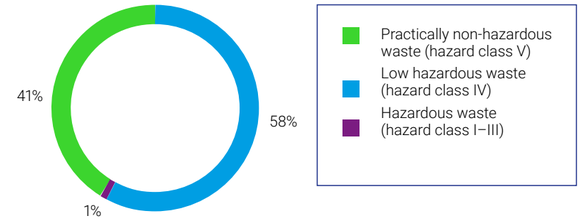
The transportation, import, export or treatment of waste that are hazardous according to the Basel Convention on control over transborder transportation of hazardous waste and their removal, was not performed.

In 2017, the total volume of generated waste decreased, including hazard classes IV and V waste that are removed to waste disposal area. Reduction of the generated waste volume is related to completion of works and commissioning of Rostov NPP Power Unit No. 4.

Table 2.23. Total volume of waste, tons

	2015	2016	2017	Δ (2017-2016)/ 2016, %
Total amount of waste classes I-V	4,728.93	5,492.23	5,109.85	- 7

where:



Energy Resources Consumption

Reduced consumption of energy resources in 2017 was related to commissioning at the end of 2016 of energy conservation equipment and favorable weather conditions during the heating season.

Table 2.24. Consumption of power resources

	2015	2016	2017	Δ (2017-2016)/ 2016, %
Electrical power, GWh	46.21	39.81	32.39	-19
Thermal power, thousand TJ	204.37	202.045	158.31	-22

Table 2.25. Fuel consumption and expenses for its purchase for vehicles and heating

Fuel type	2015		2016		2017		Δ (2017-2016)/ 2016, %
	t	mln RUR	t	mln RUR	t	mln RUR	
Gasoline	1,486.32	59.31	1,476.75	60.93	1,284.6	50.8	-13*
Diesel fuel	3,049.85	99.74	2,219.82	97.53	1,715.29	64.35	-23*
Natural gas	1,435.06	8.69	1,525.01	9.70	1,276.93	9.77	-16*
Coal	116.58	0.46	104.30	0.52	124.00	0.61	+19**

* Due to optimization of expenses for in-house needs, reduction of the number of auxiliary transportation, use of rented transport, de-registration of vehicles, reduction of the volume of performed works, completion of the activity of Volgodonsk branch office of LLC Trest RosSEM, completion of construction of Rostov NPP, procurement of new equpment including diesel generator stations of lower capacity and higher efficiency. A considerable contribution to reducing fuel consumption was made by relocation of the employees of JSC ASE EC in Belarus engaged in the construction of Belarus NPP, from the city of Naroch (70 km from the construction site) to Ostrovets (20 km from the construction site).

** Coal was used for heating in the boiler of Lesnoy Uyut recreation center. Growth of coal consumption was caused by low temperature of atmospheric air at the beginning of the year.

Used Materials

(GRI 301-1)

During civil and erection works, road filling at NPP construction facilities, the Engineering Division uses broken stone, sand and semi-products like bricks, metal structures and pipelines.

Accounting of the use of construction materials in weight and volume is performed by subcontractors that independently purchase raw materials in accordance with the working documentation.

During the performance of administrative, economic and design activities, paper products are used that are purchased from external suppliers. The total volume of consumption of paper products by the Division in 2017 was 331.16 tons.

The Engineering Division keeps no record of treated or re-cycled waste.

Financing of Environmental Protection Activities

In 2017, the expenses for environmental protection amounted to 18 mln RUR, which is 18.2 % higher than in 2016.

In 2017, the growth of expenses was related mainly to increased costs of industrial environmental monitoring and the necessity to re-issue permitting documentation in the field of environmental protection.

*Table 2.26. Expenses for environmental protection measures, mln RUR**

	2015	2016	2017 planned	2017 fact	Δ (2017-2016)/ 2016, %
Expenses, mln RUR	22.5	15.2	8.4	18.0	18.2

* Expenses are planned for each business. Consolidated data of the Division on the planned environmental parameters for 2018 have not been generated.

The figures indicated in tables may differ from same ones calculated in the report due to rounding of figures.

2.6. Social and Relationship Capital

Social and relationship capital includes: constructive cooperation with the main stakeholders, public acceptability of nuclear technologies, brand management, contributions to the development of the areas of operation, charity programs, etc.

Nina Dementsova,
Head of Communications Division

– Which measures does the division undertake to enhance public acceptance of the development of nuclear technologies in the regions of operation?

– In our corporate commuications's work we are guided by the strategy of external communications of Rosatom State Corporation and the goals that face the Division and the industry in general. Our publicactivity is aimed at increasing the trust of the population in regions of operations, social approval of the NPP construction plans, explanation of measures aimed at enhancing the safety of NPPs of the Russian design. The Division fosters trust-based relations with the stakeholders and pursues the strategy of forming the ideology of public demand in nuclear power rather than the public acceptance of nuclear projects.

Information about the events in the Division is regularly presented on internal and external websites, in numerous Russian and foreign publications, in social networking websites. We issue publications, photo and video materials, leaflets, booklets, books, including those for young people and school children, organize festivals and photo exhibitions, fairs for the public, press-tours for journalists to the construction facilities.

In view of the fact that in many countries we do not only construct NPPs but create the nuclear industry, we are engaged in large-scale informational and communication work for elimination of radiological phobia and enhancing the acceptability of nuclear technologies. Considering the fact that the attitude towards the industry is not always emotionally neutral, we are trying to create maximally positive background about our business, we organize various culture events and support social programs.

– Can you give us examples of such events in 2017?

– In the reporting year the Division, jointly with Rosatom State Corporation, implemented project "Oriental horizon of the Russian atom" that demonstrated the reliability and safety of Russian nuclear technologies in India and Bangladesh.

About 300 events were organized in the course of the project. In particular, in Chennai, India, the first festival of science and the first festival of Russian animation films were organized, competitions of pictures and models devoted to nuclear power engineering were held. About 57 thousand people participated in those events.

One of the key events of the project was the opening in December 2017 of the first Public Counseling Office at an NPP, outside Russia. This is the Public Counseling Office of Rooppur NPP in Bangladesh located next to the constructed NPP in Pabna province. The visitors of the Public Counseling Office of the city of Ishvardi can learn more about the nuclear power, about the first NPP in Bangladesh, about modern construction technologies and unique safety systems of power units of the newest generation, and about the course of works at Rooppur NPP site. Public Counseling Offices will be opened at other facilities of the Division.

A number of scientific and educational books were published within the framework of the project: Nuclear ABC in Tamil language, comics about nuclear power in Bengali language.

I would like to point out that "Oriental horizons of the Russian atom" was highly acknowledged in the professional PR-community – it received a diploma in nomination "International projects" of "ConTEXt" competition organized with the support of the Ministry of Energy of the Russian Federation.

2.6.1. Awards in 2017

Table 2.27. Awards in 2017

Competition	Achievements
Power Awards for 2017	Power Unit No. 6 of Novovoronezh NPP was among the three winners in nomination "The best power plant" of the rating of POWER Magazine (USA).
IPMA Project Excellence AWARDS 2017	Project "Construction of power unit No. 3 of Rostov NPP" got 2nd place on nomination "Mega-project".
CETI AWARD 2016	Project management system Multi-d was announced the best in nomination "Mega-project".
All-Russian competition "BIM-technologies"	Kursk NPP-2 project has been announced the winner in nomination "Technologies of information modeling during design of real estate facilities" Industrial and civil construction".
All-Russia competition Worldskills in the field of information technology Digitalskills	Team gold medal in nomination "Machine learning and big data".
Competition "IT-project of the year" of the Ministry of Information Technologies, Communication and Mass Media of Nizhny Novgorod region	Project "Digital trade platform Multi-D-Market" was announced the winner in nomination "The best IT-project of the state sector".
Industry competition "TeMP-2017"	10 teams, two of which represented the Engineering Division, secured a place in the super final.
'RPS leaders" competition	Of the main six nominations of the competition, three nominations were won by representatives of the Division: • in nomination "The best RPS-project aimed at reducing production cost" – engineers of JSC ASE EC Evgeny Rats and Sergey Mikheev; • in nomination "Enhancing labor productivity" – erection specialists of civil structures of LLC Trest RosSEM Andrey Salnikov ; • for proposal to improve, in nomination "Efficiency of resources use (expenses, materials)", first deputy director – chief engineer of branch office of jsc NIKIMT-Atomstroy of Kursk NPP director, Nikolay Kmitto, was commended.

2.6.2. Main Communication Projects

The main tasks of the Division in the field of communications:

• implementation of unified industry informational, advertisement and brand-policy of Rosatom State Corporation;

• organization of continuous informational exchange with mass media on the performance of the Division, organization of press-tours to NPPs, organization of PR-support of important events within the framework of the Company's business;

• creating an image of the Company that is open for any partners interested in cooperation and communication, with companies, mass media. Public groups in Russia and abroad;

• informational support of implementation of long-term events plan, large investment projects implemented with the participation of the Division;

• advocacy of the advantages of Russian nuclear technologies on the Russian and foreign markets, also via informational centers in regions of operation.

Table 2.28. Participation in large international and federal communication projects and events

Communication project	Form of participation
Opening of the public counseling office at Rooppur NPP	24.12.2017 – public counseling office was opened at Rooppur NPP in Bangladesh For the first time project "The Public Counseling Office of Rosatom" was implemented outside the Russian Federation.
The ceremony of first concrete pouring at Rooppur NPP	During the official ceremony of first concrete pouring at Rooppur NPP (Bangaldesh), a press-tour of Russian federation mass media was organized. A number of image events in Pabna province was organized prior to first concrete pouring ceremony.
Organization of a cultural event for foreign partners in Hungary	A gala-concert of the famous Russian and Hungarian opera singers was organized within the framework of Atomex-Europe Forum.
An official ceremony of commencement of works in the open pit of the main buildings of power unit No. 2 of Bushehr NPP (Iran) was held	Within the framework of the summit of the Caspian bordering states that took place in November 2017 in Tehran (Iran), a press-tour of Russian federal mass media was organized to Bushehr NPP – the first nuclear power plant in the Middle East.
The Russian-Indial festival of animation films in India	In partnership with All-Russia state television and broadcasting company, children's channels "Karusel" and "Mult", a Festival of Russian-Indian animation films was organized in India.
Festival of science and technology in India	The first Festival of science and technologies was organized in the city of Chennai (India). The central site of the Festival was planetarium named after B.M. Birla. The event was organized at 7 sites in Chennai, including schools and universities. Over 5000 children from 90 schools of Chennai visited the festival.
International ecological expedition to Belarus NPP site	In November 2017, at the initiative of JSC ASE EC, the second International ecological expedition to Belarus NPP construction site was organized. The data obtained in the course of environmental monitoring at the construction site were the basis for the ecological certificate of Belarus NPP.
NUCKIDS-2017	Qualification contests for children's participation in theatrical performances. Active participation in circulation of information about the first performance of the musical in St.Petersburg, distribution of tickets in social and non-governmental organizations of St.Petersburg and Leningrad region.
Forsage-2017	Thirty two young specialists of the Division participated in the Forum. Nineteen employees of the company were the prize-winners of Forsage, one specialist was the finalist of competition "Innovation leader of the nuclear industry – 2017".

2.6.3. Contribution to the Development of Regions of Operation

In 2017, significant attention was paid to initiatives aimed at creating conditions of public acceptability of NPP construction abroad and to the development of supporting infrastructure. A huge scope of works was performed at Rooppur NPP and Paks-II NPP sites.

In the reporting year, a joint project with the Government of Nizhny Novgorod region was successfully implemented for the third time. Agreement on interaction in sports development for the amount of 25 mln RUR creates additional conditions for support of children's and amateur sports in the region.

On the whole, contribution to the development of regions of operation are made mainly via investment projects (construction of nuclear facilities) which entails the creation of new jobs, development of public infrastructure, tax payment, etc. A certain contribution to the development of the regions of operation of the Division is made via implementation of charity projects.

Charity Projects

ASE Group of Companies – the Engineering Division of Rosatom State Corporation, pursuing the principles of corporate social responsibility in the nuclear industry, pays significant attention to fostering relationship with local communities in areas of operation.

This work is of a systematic character, it is based on long-term trustworthy relations with regions of operation. One mechanism for fostering communication channels with the regions is suppport of local initiatives within the framework of implementation of charitable events of the Company.

The priorities of the Engineering Division during charitable programs are:

- enhancing a positive image of the Company;
- maintaining high social and cultural standards in the areas where nuclear facilities are located;
- support of projects aimed at strengthening the socio-economic development of the regions;
- support of environmental protection projects.

In 2017 a fifth competition of charitable projects among non-commercial organizations was held. Nominations:

- Culture and sports.
- Environmental protection.
- Patriotic initiatives.
- Younger generation.

When selecting the winners, special attention was paid to the following criteria:

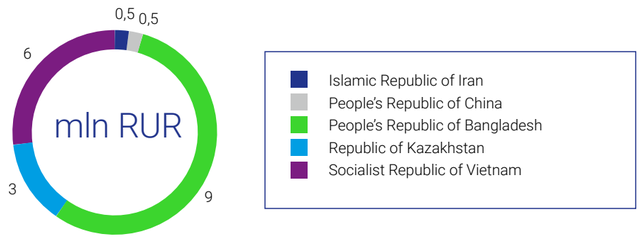
- relevance of the resolved social problem, significance of the project for the social and cultural development of areas where the Company operates;
- importance of the results of activities under the project;
- degree of participation of the population, public, volunteers (this criterion envisages active involvement of the population in the resolution of the problem, identification and support of initiatives);
- partnership with organs of state power and local self-government, commercial and non-commercial companies in the project implementation.

The grant fund amounted to 26.4 mln RUR. The competition was provided with 181 requests, 115 were acknowledged as winners.

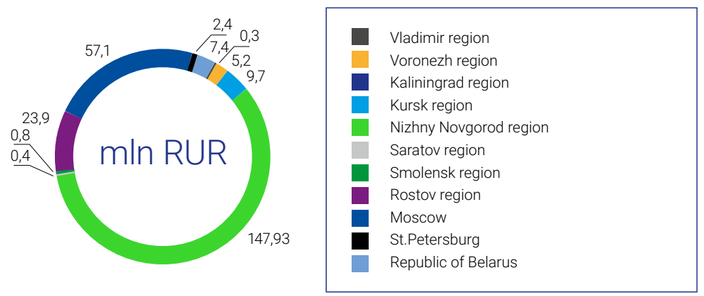
The key local initiatives that are paid special attention to are as follows:

- strengthening the material and technical base of health, culture and education institutions;
- support for veteran organizations;
- support of initiatives aimed at the preservation of live and health (disabled, aged, orphans, children in difficult circumstances, emergency medical help);
- conducting cultural and sports events;
- support of the nuclear industry information centers;
- support and promotion of Russian nuclear technologies development projects on foreign markets;
- support of faith-based organizations.

In 2017, ASE Group of Companies – the Engineering Division of Rosatom State Corporation allocated 274.3 mln RUR, for charity activities. (In 2016 – 195.4 mln RUR).



Charity projects implemented abroad



Charity projects implemented on the territory of the Russian Federation

In 2017, significant attention was paid to implementation of initiatives aimed at creating the conditions of public acceptance of NPP construction abroad and the development of social infrastructure.

The following projects were implemented in the People's Republic of Bangladesh (at Rooppur NPP site): an orthodox church and a public counseling office were opened.

The orthodox cathedral continued working at Kudankulam NPP site.

Traditionally, significant attention was paid to work aimed at reconstruction of cathedrals in the regions of operation: the Assumption Cathedral of Sarov Monastery, the Holy Trinity-St. Sergius Lavra, Serafim Sarovsky Cathedral and Cathedral of Kursk Saints in the city of Kurchatov.

In 2017, a joint project with the Government of Nizhny Novgorod region was successfully implemented for the third time. Agreement on interaction in sports development for the amount of 25 mln RUR creates additional conditions for support of children's and amateur sports in the region.

Plans for 2018

In accordance with the draft list of charitable initiatives for 2018, about 395 mln RUR will be allocated for charity purposes.

Among the most significant events in 2018 we should point out the following:

- In view of entering into force of the contract for El-Dabaa NPP construction in Egypt, ASE Group of Companies, jointly with Private Institution Rusatom International Network, are considering the possibility of construction of an Information Center of Nuclear Industry.
- Jointly with Private Institution Rusatom International Network, it is planned to perform certain works for creating public acceptability conditions of Paks NPP construction in Hungary.
- An orthodox church will be built at Belarus NPP site.

In 2018, ASE Group of Companies – the Engineering Division of Rosatom State Corporation will continue fostering the relations with the local communities in the regions of operation.

Taxes

The Engineering Division plays a significant role in forming the income part of the budget in areas where the company operates.

In 2017, the volume of paid taxes was 6,263 mln RUR

Table 2.29. Taxes and fees imposed on and paid by organizations of the Engineering Division, mln RUR

	2015		2016		2017		Δ (2017–2016)/ 2016, %	
	Charged	Paid	Charged	Paid	Charged	Paid	Charged	Paid
Taxes and fees in total	**3,856,**	**7,968**	**6,239**	**5,453**	**8,597**	**6,263**	**37.8 %**	**14.84 %**
Including:								
To Federal budget	-7,293	-1,382	-2,574	-5,126	-3,041	-2,663	18.13 %	-48.05 %
To RF subjects budget	389	368	157	158	194	158	23.81 %	-0.18 %
Local budgets	37	38	37	36	35	38	-6.05 %	4.69 %
Foreign countries budgets	1,932	913	2,105	2,285	2,958	2,166	40.52 %	-5.21 %
taxpayers consolidated group income tax	4,814	4,088	2,805	4,507	5,011	3,006	78.65 %	-33.30 %
Insurance fees to off-budget funds	3,976	3,942	3,709	3,612	3,440	3,559	-7.26 %	-1.47 %

* The main volume of tax payments is VAT to be refunded from the budget (-) due to export operations for sales of equipment (reimbursement during sales charged with VAT 0%) for JSC ASE.

JSC ASE EC, JSC ASE, JSC Atomenergoproekt, JSC Atomproekt, LLC Trest RosSEM are members of taxpayers consolidated group (TCG) due to which they do not pay profit tax independently. The calculated and paid profit tax shows what has been remitted to the responsible member of TCG.

The figures indicated in tables may differ from the same ones calculated in the report due to rounding of figures.

2.6.4. Main Russian and International Agreements of 2017

In 2017, the engineering division was involved in active interaction and cooperation with a number of Russian and foreign companies, also in the field of digital technologies development.

Table 2.23. Main agreements in 2017 (Russian, international)

Partner	Document type	Tasks	Results
Assystem	Memorandum of understanding	• Cooperation in the field of promotion and practical introduction of solutions based on Milti-D technologies for NPP operators in Europe, Middle East, North Africa and other countries. • Joint participation in designing, construction and commissioning of new power units outside Russia. • Cooperation in the field of engineering and management of chains of suppliers of products and services for foreign enterprises and Russian power industry, including NPP and TPP equipment, in the countries of Europe, Middle East, North Africa and so on, • Cooperation in the field of services and works related to research nuclear facilities, joint participation in open tenders for International Thermonuclear Experimental Reactor ITER. • Cooperation in the field of the final stage of nuclear fuel cycle, decommissioning of nuclear facilities land RAW treatment.	Development of strategy for promotion of industrial and technological digital platform on the international market. Conclusion of an income producing agreement with EDF for Multi-D services.
MEPhI	Agreement on educational, scientific and technical cooperation	• Development of new forms of personnel training for knowledge-driven economy considering changes to engineering professions that change under the impact of scientific and technical progress. • Training of personnel for processes management during the whole life cycle of a nuclear facility and complex facilities of other industrial sectors, including training of specialists for development of solutions in the field of digital production. • Target training of foreign students for work at NPPs constructed by JSC ASE EC abroad. • Training of personnel considering requirements to work in multicultural environment with the knowledge of English. • Organization of joint educational and research programs in the field of designing, construction, operation and decommissioning of NPPs, in line with the long-term production program that is implemented by JSC ASE EC. • Development of digital technologies including VirtualReality-engineering, technologies of machine learning and artificial intelligence, development, testing and verification of program solutions, development of solutions of integration of calculation codes with automated design systems, creation and development of electronic catalogues, digital industrial and process and sales platforms for the whole life cycle of a nuclear facility and complex facilities of other industrial sectors. • Development of an infrastructure for implementation of joint projects in the field of engineering, nuclear physics and computer sciences for non-nuclear sector in terms of the strategy of JSC ASE EC and Rosatom State Corporation for diversification of the industry enterprises, joint work for commercialization of the results of research and development by introducing them into production. • Organizing of industry, all-Russia and international conferences, forums and other public events dedicated to technology and personnel training for designing, construction, operation and decommissioning of NPPs.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Creating a personnel reserve for the industry, giving possibilities for training, organization joint educational and research programs.
Association of organizations for development of informational modeling in construction and utility sector (BIM-association)	Memorandum on cooperation	• Development of informational modeling methods in construction. • Development of industry and national standards and methodical guidelines for informational modeling of buildings and structures. • Mastering of informational modeling technologies, gaining experience in work with special software, improvement of organizational and functional structure of projects during designing of capital construction facilities using informational modeling technologies, creation of library elements and project templates.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Joining an international association for promotion of Multi-D and informational modeling in construction. Development of competences in the field of informational modeling in construction.
Limited Liability Company SAP CIS	Memorandum of intent for creation of a Competence Center of nuclear facilities engineering on the basis of SAP solutions	• Development of typical architecture of Unified Information Space of JSC ASE EC. • Inclusion into Muldi-D digital platform of SAP solutions introduced in JSC ASE EC within IPMS project. • Integration with related IT-systems of Rosatom State Corporation and its divisions, contractors and customers within the framework of the unified standard for electronic exchange of information during capital construction and operation.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Creation of a Competence Center of nuclear facilities engineering on the basis of SAP solutions which will make it possible for ASE reach a new level of capital construction management by using tools of big data analysis, artificial intelligence and machine learning.
IBM East Europe/ Asia Ltd.	Agreement on cooperation	Strategic cooperation in the following fields: • development of digital transformation technology, in particular, solutions on the basis of technology for controlling logistical flows, development of predictive analysis, implementation of analytical solutions on the basis of artificial intelligence and machine learning using both the open technology stack and IBM Watson and IoT. • solutions for management of repairs, operation and decommissioning of NPPs.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Development of strategy for promotion of digital platform on the international market.
Hilti Distribution Ltd.	Memorandum on cooperation	Development of strategic cooperation in the field of information technologies aimed at promotion of solutions developed by HILTI, reduction of time period of designing and project implementation.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Conclusion of a long-term agreement on cooperation and interaction in the field of development of Multi-D Market system within the industrial and process platform of the complete life cycle of complex engineering facilities for further use of these data in the format of automated design systems of the largest software vendors like Autodesk, AVEVA, Bentley Systems, Dassault Systemes, Intergraph PP&M, Siemens PLM, ets.
Non-governmental educational institution Moscow school of management Skolkovo. Center for Strategic Research “North-West”	Agreement on cooperation	• Methodical and consulting support for creation of digital platforms of Russian and international companies in various sectors of economy. • Research in the field of digitalization of economy, analysis and transfer of the best management practices. • Audits of companies in terms of compliance with the requirements for digitalization of business-processes, rendering services for improving the “digital maturity”. • Development and implementation of models of organizational changes for execution of projects for digitalization and transformation of companies’ business-models. • Development and launching of personnel training programs for digitalization of economy. • Introduction of digital technologies into the existing production and economic processes of companies, sharing best practices for introduction of successful digital technologies.	Development of strategic direction for establishment and introduction of an industrial and process digital platform. Development of cooperation on the project basis for accumulation and sharing of the experience of digital transformation of state and commercial sectors of the Russian economy.

2.6.5. Engagement with Stakeholders

(GRI 102-40, 102-42)

Principles of engagement with the stakeholders:

• The Principle of "Inclusivity" – the Company pursues the policy of informational openness and involvement of the personnel in the projects (EIA, public reporting, forums/exhibitions, publications, etc.)

• Record and response principle – the Company considers the requests and demands of the main stakeholders, including the interest of those who cannot express their opinion (e.g., the future generations) and timely responds to the grounded requests and proposals.

• Materiality principle – The Company interacts with the stakeholders on all the issues that are significant for the company and all the interested parties.

• Mutual benefit principle – the Company strives to build interactions with the stakeholders on the basis of partnership and mutual benefit.

Engagement with stakeholders is performed in all the Division's regions of operation.

From 2017, the company has been involved in active work with customers, partners, local media, public and environmental organizations, authorities and other stakeholders in the format of regular meetings, forums, conferences, exhibitions, round tables and press tours to NPP construction sites.

In our performance, we are pursuing to establish partnership and mutually advantageous relations with all the stakeholders.

Stakeholders' rank map* (GRI 102-42)

1. Shareholder
2. Bodies representing the interests of workers'
3. Staff
4. Local government
5. State control bodies
6. International organization
7. Union organization
8. Public authority
9. Insurers
10. Financial institution
11. Scientific community
12. Management
13. Population of region
14. MEDIA
15. Educational institution
16. Public organization
17. Customers
18. Suppliers

* The interval of updating the stakeholder Map, adopted in Division, – two years. The previous update was carried out in 2016.

Table 2.24. Key stakeholders

Key stakeholders	Basic interests	Methods of interactions
Shareholders: **Rosatom State Corporation, JSC "Atomenergoproekt", JSC "Atomstroyexport"**	• Strategy implementation Economic efficiency. • Business sustainability Business process transparency.	• Participation in implementation of the shareholder's strategic objectives Improvement of the corporate management system Implementation of the Rosatom production system. • KPI implementation. *Please refer to chapters "Strategic review", "Corporate governance".*
Customers: **JSC Rosenergoatom Concern, NPPD Company of Iran, JSC Slovenske Elektrarne", NPCIL, Akkuyu Nucleer JSC, Jiangsu Nuclear Power Corporation (JNPC), Chinese Nuclear Power Engineering Corporation (CNPE), Chinese Nuclear Energy Industry Corporation (CNEIC), GU DSAE, EVN, FSNPC, NN EGC "Energoatom"**	• Implementation of construction plans. • Reduction of construction periods and cost. • Improvement of the quality of works.	• Performance of contractual obligations. • Participation in the work of steering committees. • Mastering of up-to-date engineering technologies. • Bilateral visits. *Please refer to chapters "Manufactured capital", "Natural capital", "Strategic review".*
Partners: **suppliers, contractors**	• Acquisition of new orders. • Company's financial status. • Prospects of cooperation.	• Open bidding. • Entering into long-term contracts with transparent pricing principles. • Participation in exhibitions and forums. • Bilateral visits. • Building up of strategic partnerships. *Please refer to chapter "Manufactured capital".*
Personnel and companies representing employees' interests: Trade union, Young professionals board, Veterans Board	• Company's development. • Professional and career promotion. • Labor safety requirements. • Fair remuneration.	• Qualification training of personnel. • Staff pool programs. • Social support of employees. • Social partnership. *Please refer to chapter "Human capital", "Natural capital".*
Local bodies of self-governance	• Environmental and radiation safety. • Infrastructure development. • Taxes. • Creation of new jobs. • Implementation of social programmes.	• Personnel qualification upgrade. • Management staff pool programmes. • Social support of employees. • Social partnership. *Please refer to chapter Natural capital", "Social and reputation capital".*
State inspection/regulatory authorities **Federal Environmental, Industrial and Nuclear Supervision Service of Russia**	Meeting Russian and international legal requirements.	• Obtaining licenses. • Conducting inspections. • Reporting. • Development of proposals for improvement of legislation. *Please refer to chapters "Manufactured capital", "Financial capital", "Human capital", "Natural capital".*
International organizations, including organizations of the nuclear sector: **IAEA, WANO, WNA, Nuclear Energy Agency of the** **Economic Cooperation and Development Organization**	• Nuclear power development. • Environmental and radiation safety.	• International conferences/exhibitions/forums. Joint programmes. • Work in joint committees, commissions, expert teams dealing with nuclear power issues. *Please refer to chapters "Manufactured capital", "Intellectual capital", "Natural capital.*
Professional associations: the RF Chamber of Commerce and Industry, the Russian Union of Industrialists and Entrepreneurs	Prospects of cooperation.	Forums/conferences/exhibitions.
Bodies of state power: the RF Government, RF State Duma, RF Federation Council	• Nuclear power development. • Environmental and radiation safety. • Infrastructure development. • Taxes. • Creation of new jobs. • Implementation of social programmes.	• EIA development. • Work in joint committees, commissions, expert teams dealing with nuclear power issues. • Public accountability. • Contribution to the development of regions of operation. *Please refer to chapters "Strategic review", "Corporate governance", "Financial capital", "Manufactured capital", "Social and Relationship capital", "Human capital".*

Key stakeholders	Basic interests	Methods of interactions
Insurance organizations: JSC SOGAZ and other	Civil liability for causing harm due to deficiencies in works in the area of construction, design and engineering surveys that affect the safety of capital construction facilities.	Insurance of civil liability risks and other types of insurance. *Please refer to chapters "Risk management", "Manufactured capital", "Human capital".*
Finance and credit institutions: "SAROVBUSINESSBANK" PJSC , Volgo-Vyatskiy-bank JSC, etc.	Financing, debt financing.	Debt financing. *Please refer to chapters "Strategic review", Financial capital", "Corporate governance".*
Scientific community: **R&D, Academy of Sciences and other**	• Development of sectoral research. • Development of innovative technologies.	• Joint programmes. • R&D orders. • Scientific conferences. *Please refer to chapters "Intellectual capital".*
Company's management	Company' strategy implementation.	• Improvement of the management system. • Efficiency improvement programme. *Please refer to chapter "Strategic report".*
Population of the regions of operation	• Creation of new jobs. • Contribution to the development of regions of operation.	• Public counseling offices. • Social and charity programmes. • EIA development. *Please refer to chapters "Human capital", "Natural capital", "Social and relationship capital".*
Mass media	Provision of prompt access to information about the Company's activities.	• Press-conferences and press tours. • Public accountability. • Updating of information at the site, official weblog, resources in the social networks. *Please refer to chaptes "Social and relationship capital".*
Educational institutions: the National Research Nuclear University (NiYaU MIFI), NSTU, NSU named after N.I. Lobachevsky, Ivanov State Power University and other	• Personnel target training. • Development of sectoral research. • Development of innovative technologies.	• Training, retraining and refresher training of employees. • Organization of students' field periods. • R&D orders. *Please refer to chapters "Human capital", "Intellectual capital".*
Public organizations, including environmental organizations. Environmental fund named after V.I. Vernadsky, etc.	• Social and charity programmes. • Social partnership. • Environmental protection.	• Social and charity programmes . • Environmental expeditions. • EIA development. • Public accountability. *Please refer to chapters "Natural capital", "Social and relationship capital".*

Public Reporting System

Public reporting system (PRS) was established in the Company in 2010. In 2016 the establishment of the Engineering Division was completed. Due to expansion of the management scope and new tasks of the Division (transformation into a digital company) reorganization started in 2017.

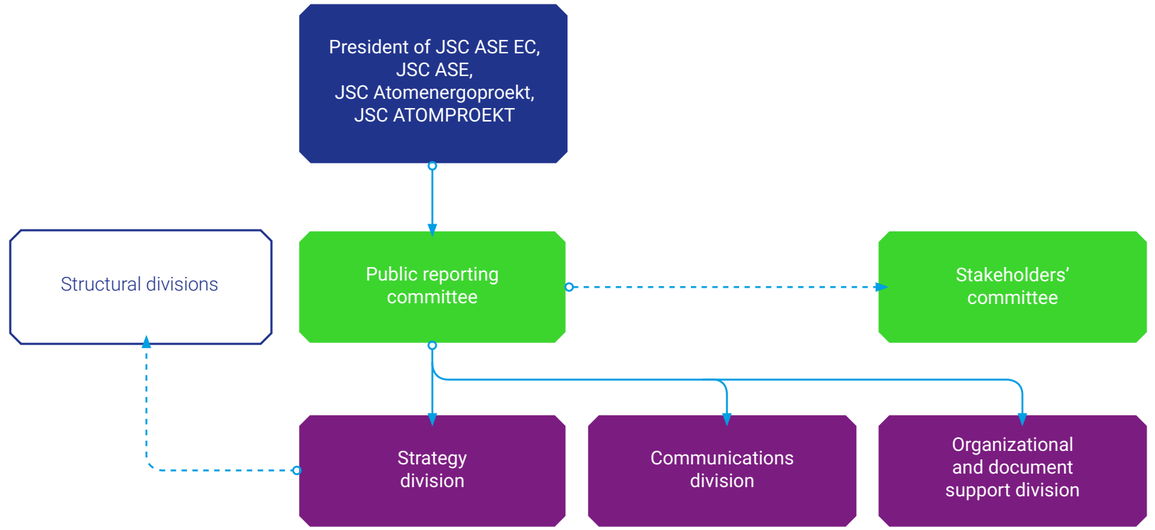


Table 2.25. 2017 results of PRS improvement

Scopes of works	Results of
PRS improvement	PRS improvement project has been developed.
	The membership of the public reporting committee has been updated and expanded.
Interfaces with stakeholders	A concept of the Division interaction with the stakeholders has been developed (within the framework of PRS updating).
	Design and technical assignment for updating of the interactive platform of all the stakeholders, have been developed.
	Works for updating of the stakeholders' environment, also for the purpose of establishing a new 3C commission.
Improvement of the regulatory and methodical basis	A study of the existing processes of information collection for the public reporting purposes was performed, recommendations for their improvement were prepared.
	Regulatory documents for public reporting have been updated. Public Reporting Standard, Regulations on the Public Reporting Committee, Regulation on the Commission of Stakeholders.
Improvement of the public reporting quality	Expert assessment by the Russian Union of Industrialists and Entrepreneurs' Center for Corporate Social Accountability and Non-Financial Reporting.
	Expert assessment of the Report by the Russian Integrated Reporting Network in terms of compliance with the International Standard <IR>.
	Investigation of the best practices of integrated reports preparation.
	Making video films and publishing articles on public reporting ("Economic Strategies" journal, Expert-RA rating agency web-site.)
Personnel qualification upgrade	Training workshop with the dedicated departments specialists, has been held.

Table 2.26. The report's awards for the Annual report 2016

Industry competition	
Competition of public reporting of Rosatom organizations	• Winner in the category "Best annual report" of Rosatom State Corporation. • Winner in category "Public reporting efficiency".
National competitions	
The annual competition of the rating agency annual reports (Expert RA)	• Winner in the "Best integrated annual report" category. • The highest mark – "5 start" in the rating of annual reports for 2016.
International competitions	
League of American Communications Professionals	• 6th place in the top-50 annual reports of the world. • 11th place in the top-80 annual reports of Europe. • 4th place in the top-20 annual reports of Russia. • Platinum award in nomination "The best letter to shareholders" (of all the reports in Europe). • Platinum award in nomination "The best letter to stakeholders" (of all the reports in the world). • Platinum award for achievements in section "Power Engineering " and "Equipment and Services" (1st place), gold award in s в section "Business Services" (2nd – 4th place). • Platinum award in the "The best financial report" category.
Australasian Reporting Awards	• Gold winner. • Debut of the year (2nd place).
MarCom Awards	• Platinum award in the "Corporation – the best corporate annual report" category. • Platinum award in Annual Report / CSR Report "Writing – the best text of the report" category. • Gold award in "Annual Report Cover – the Best Cover" category. • Platinum award in the "E-Annual Report – the best interactive report" category.
CRRA	• The best integrated report (3rd place). • 4th place in "Credibility Through Assurance" category.

Table 2.27. Tasks for 2018 and mid-term prospects for PRS improvement

Scopes of works	Plans
Interfaces with stakeholders	Updating of the interactive platform of interaction with stakeholders, launch of 1.0 version of the Platform for engagement with stakeholders.
	Development of new membership of stakeholders commission.
Improvement of the regulatory and methodical system	Development of draft of new system of information collection for the purpose of public reporting of JSC ASE EC on the basis of the results. A study of the existing processes of information collection for the public reporting purposes , recommendations for their improvement.
Improvement of the public reporting quality	A dialogue with stakeholders at an NPP construction site.
	Expert review of the Report by Center for Corporate Social Responsibility and Non-financial Reporting of the Russian Union of Industrialists and Entrepreneurs Russian Integrated Reporting Network.
	Study of the best practices of preparation of international reports by companies – international leaders in digital transformation.
	Issue of pilot booklets upon the results of the year at construction site of Rooppur NPP and Paks-II NPP.
	Expansion of the list of partners for promotion of public reports of the Division.
Personnel qualification upgrade	Training workshop with specialists from profile divisions and seminar (webinar) with representatives of the main stakeholders.

Engagement with Stakeholders During Report Preparation (GRI 102-43)

Statement of Chairman of the Committee for Public Reporting

Ivan Borisov,
Senior Vice-President
for Development

Since we are an engineering company taking efforts on both national and global markets, the informational transparency is an issue of primary importance. We understand that the attitude to the nuclear power industry directly depends on the quality and volume of information available to a wide range of stakeholders, therefore we consider the annual report to be one of the effective tools for communication and information.

This is the third public annual report of the Engineering Division. High-priority topics of this Report are "Transformation of the Engineering Division of Rosatom State Corporation into a digital company" and "Personnel Training and Development under digital transition conditions". This topics are extremely important for the Division, as in 2017 a new goal was set – transformation of the Engineering Division into a digital company.

Each year we step up our requirements to public accountability. This year we for the second time published a short report – a booklet upon the results of the year. It turned out to be of demand – 400 copies were distributed in two days. We are improving organizational processes of reports preparation – we prepared the previous reports 41 days earlier than the previous one.

In 2017, for the first time, a dialogue with the stakeholders was held at a construction site – at Novovoronezh NPP-2. We believe this practice to be very useful and intend to continue it in the future. We are looking for efficient methods of interactions with the stakeholders. First of all, these are our foreign partners. Last year, representatives of 50 countries of the world got acquainted with the interactive report.

The solution of the task of digital transformation of the division will inevitable lead to appearance of new partners. Its means that we plan to develop useful report about our performance for them as well, including our joint activities. It also means that the reporting processes themselves will undergo digitalization.

We are responsible for the information provided in the report, we believe that the report includes all the necessary elements. It was prepared considering the principles and fundamental concepts, it complies with the Integrated Reporting International Standard (International <IR> Framework).

I would like to express my special gratitude to representatives of our stakeholders for ongoing close cooperation and their interest in the activities of our Company.

We are continuously looking for ways of further improvement of our annual reports. We will use up-date-methods and approaches for this purpose. I'm sure we will meet all the challenges ahead of us!

Stakeholder visit to the construction site Novovoronezh NPP-2 within dialogue on material topics of the report for 2017

In 2017, tasks for improvement of engagement with the stakeholders were put within the following framework:

• completion of the formation of the Engineering Division in 2016 (expansion of the management scope);

• the goals of Rosatom State Corporation for enhancing the efficiency of all the stakeholders (in terms of public reporting);

• the new goal of transformation of the Engineering Division into a digital company.

To increase the transparency and accountability of the Engineering Division, representatives of the main stakeholders are involved in the preparation of the report by participating in discussions of the important aspects of the Division performance and its reflection in the report and by participating in public assurance of the report. Interface with stakeholders is a requirement of international standards AA1000SES Institute of Social and Ethical Accountability, Global Reporting Initiative (GRI, version SRS), Integrated Reporting International Framework.

GRI (102–44) During the preparation of this Report, public consultations and two dialogues with representatives of the main stakeholders were held (protocols of the dialogues are published at panel of interface with stakeholders http://stakeholderpanel.ru/.

A dialogue for determining the important subjects to be reflected in the Report was held in the Moscow Branch Office of JSC ASE EC on 07.11.2017. The dialogue was held with application of Rapid Foresight technology which made it possible to perform a full cycle of works for the development of matrix of significance due to joint work of the Company top-management and representatives of the main stakeholders.

Dialogue for priority subjects of the Report: "Transformation of the engineering division into a digital company" and "Training and enhancement of personnel qualification during the digital transformation" was held on 27.02.2018 during the Steering Committee meeting at Novovoronezh NPP-2 in the mode of video-conference with the Moscow branch of JSC ASE EC.

Public consultations on draft report were held in the Moscow Branch Office of JSC ASE EC on 18.04.2018. In total 52 proposals and recommendations were presented during all dialogs totally.

Fifty two proposals and recommendations were put forward in the course of all the dialogues; 92.3% of proposals were related to request for publication of certain information in the Report. Proposals related to the performance of the Company were submitted to appropriate structural divisions. The company has responded to recommendations to the draft report (about the structure, contents, format of the reporting documentation). In total, 78.8 % of proposals were taken into account; 5.8 % were not taken into account (argumented answers were provided); 15.4 % of proposals will be taken into account or reviewed during the preparation of reports for the next reporting periods.

Table 2.28. Consideration of the main proposals put forward by the stakeholders in the course of dialogues during the preparation of the report for 2017 (GRI 102-44)

Stakeholders' proposals	Consideration of proposals by the Company
Demonstrate how the company participates in the implementation of the program "Digital Economy of the Russian Federation.	Taken into account, see chapter "Digital Transformation of the Engineering Division".
Reflect real growth of labor productivity due to enhancing the complexity of the works, competence and specialization of the personnel.	Taken into account, see "Key indicators" chapter.
Include data about digital solutions in facilities construction comparable with international assessment of digitalization.	Taken into account in chapters "Digital Transformation of the Engineering Division" and "Social Reputational Capital".
Disclose the profile of personnel competence required for a digital transition.	Taken into account in chapters "Digital Transformation of the Engineering Division" and "Human Capital".
Demonstrate the relations between the company goals and sustainability goals.	Taken into account in the chapter "Agenda for the sustainable development".
Reflect the influence of introduction of Multi-D and IMS on the time frame, cost, quality and operation of facilities.	Partially taken into account (without information about the impact on the facility operation).
Reveal the efficiency parameters of implementation of digital initiatives.	Not taken into account. this information is considered to be commercial secret
Reveal information about the protection by the company of its intellectual property, about the amount of its investments into R&D and the effect of those investments, including the scope of the received intellectual deliverables.	Taken into account in the chapter on intellectual property protection and scopes of intellectual deliverables. The information about investments into R&D cannot be disclosed, it is commercial secret.
Provide a comment in the report – why does the division perform international patenting of NPP technologies with VVER reactor plants, and why does it submit such an amount (107) national and regional applications for inventions abroad.	Taken into account, see "Intellectual capital" chapter.
Explain how the savings during procurement were increased.	Taken into account, see "Financial capital" chapter.
Add information about the investments aimed at digitalization in 2017 and the plans for 2018.	Taken into account, see "Financial capital" chapter.
Add information about cyber-security measures.	Not taken into account. this information is considered to be commercial secret.
Tell in more detail about projects, structure of financing of foreign projects, add information about commissioning of power units and plans for 2018.	Partially taken into account, see "Manufactured capital" chapter The structure of financing of foreign projects is commercial secret.
Identify separately the growth of the number of personnel related to increase of the number of construction sites abroad.	Taken into account in Appendix 12 of the Bood of Appendices to the Report.

Table 2.29. Fulfillment of obligations undertaken by the Company during preparation of the 2016 report

Proposals	Taking into account
Confirm information on future prospects of nuclear industry state financing.	Taken into account, see "Financial capital" chapter.
Cover the topic of public involvement in the company's projects in more detail.	Taken into account in chapter "Social and reputation capital".
Add information on cooperation with higher educational institutions within the framework of scientific and research activities into the chapter 2.3.	Will be taken into account in the report for 2018.
Identify RAW and SNF activities and NPP decommissioning, as important elements of operational sustainability and view them as key elements of integrated proposal during construction of Russian NPPs abroad, also as part of LCOE parameter.	Taken into account. Chapter "Strategic Review" describes the performance of the division for construction and modernization of RAW and SNF treatment facilities. The proposal to consider the parameters/results of this performance in LCOE has been handed over to Strategy Division.
Prepare a program of actions on sustainable development.	The works are planned for 2018.
Show the connection between charity and the principal activity of the company.	Taken into account in chapter "Social and reputation capital".
Consider new NPP safety standards in preparation of the report (GSR Part 2 "Management for Safety") and updated version of "General Provisions on Nuclear Power Plants Safety " (OPB 88/15) and disclose in the reports the progress in this area at the stages of designing and construction of Russian NPPs.	It is considered partially in the section "Natural capital". Information about compliance with these standards and documents is disclosed in specialized reports on safety and others.

Table 2.30. Obligations for consideration of proposals made by representatives of the stakeholders in the course of dialogues during the preparation of 2017 report

Stakeholders' proposals	Company's obligations
Demonstrate global industry picture of competitive advantages of the company in the field of digitalization.	Shall be considered in the process of concept development for the 2018 report.
Demonstrate how intellectual property is capitalized, its influence on the business value and business-model (should be reflected visually).	
Describe how the process of digitalization and introduction of digital models and platforms will influence the company revenue in the long-term perspective.	
Describe how equipment suppliers who are beyond the management scope of Rosatom State Corporation, get interface with Multi-D and IMS.	
Analyze the structure of the Division personnel with a break-down into competences and specialties, compare its results with the university specialties. Reflect the work of the Division related to personnel training.	
Disclose information about the scope of intellectual deliverables as a result of joint work with universities.	
Add information about training personnel anti-corruption procedures.	Shall be accounted for in the 2018 report.
Describe the number of digital platforms in the company, if there are several of them – their interrelation.	
Add information about cases for using Multi-D, taking RPS as a basis.	
Disclose the results of application of Multi-D in the Division, in digital values (time frame, cost, processes, expenses), quote cases.	
The annual report and the communication plan of the Division shall contain the effective, not technical part of Multi-d introduction.	
Formulate the advantages of Multi-D as a flagship project of the nuclear industry in the field of digitalization, demonstrate the platform character of Multi-D and the possibility of its transfer to other areas (space, digital cities, etc.)	
Describe how the business-model will change due to the commenced processes of digital transformation.	
Specify which requirements are put to designers and environmental specialists in view of model environmental quality management.	

Conclusion on the Public Assurance of the Report

Introduction

Engineering Division (hereinafter referred to as the Company, Division) has provided us with a possibility to evaluate the Annual Report for 2017 (hereinafter, the Report), including the completeness and the materiality of the disclosed information and response of the Company to requests of the stakeholders. For this purpose, we and our representatives were given a possibility to participate in the public consultations on Draft Report which took place on April 18, 2018, as well as in two dialogs with the stakeholders:

- dialog on definitions of the material topics to be disclosed in the Report, which took place on 07.11.2017;
- dialog on disclosure of a priority topic "Achievement of leading positions in project management", which took place on 27.02.2018.

Report Assessment Procedure

Our conclusion is based on the comparative analysis of two versions of the Report (Draft Report for public consultations and final version of the Report) and submitted materials following the results of the dialogs and consultations (records of events, summary tables on comments of the stakeholders), as well as comments made by Company managers and employees in the course of the external assurance of the Report.

In the process of the external assurance of the Report we did not set a task to check the data collection and analysis system of the Company. Reliability of the actual data presented in the Report is not a part of this assurance.

All participants of the public consultations could freely express their opinion. We have not received any remuneration from the Company for participation in the external assurance procedure.

Assessment, Comments and Recommendations

We agree in the positive assessment of the Report concerning its format and the scope of disclosed information.

The integrated nature of the Report made it possible to comprehensively disclose reporting information on the results of the main activities of the Company, its performance in the field of sustainable development, strategy and plans for the future.

In 2018, the Report was for the second time prepared with such a wide scope: all key organizations within the Division's framework (JSC EC "ASE", JSC "Atomenergoproekt", JSC "ATOMPROEKT" and JSC ASE) and a number of subsidiaries within the governance scope.

Company operates in 23 countries of the world. Following the integration the stakeholders' scope has been increased. Therefore, the importance of the report preparation in compliance with international standards and absolute transparency of operations, including for the foreign stakeholders is extremely high.

The Report is prepared in accordance with the International Integrated Reporting Framework (International <IR> Framework), AA1000 Series Standards (Institute of Social and Ethical Accountability), GRI Sustainability Reporting Sandards (comprehensive option).

In 2018, the Company for the first time held a dialogue with stakeholders at the construction site – Novovoronezh NPP-2 with video connection of the Moscow branch of JSC ASE EC. During the dialogue, material topics of the Report were discussed: "Digital Transformation of the Engineering Division" and "Training and Professional Development of the Personnel under the Conditions of Digital Transformation". We recommend to continue the practice of conducting dialogues at the Company's facilities in the future, we consider it very useful.

We also approve the choice of material topics of the Report and recommend the Company to disclose the topic of digitalization in future reports, especially the results of the implementation of the Multi-D technologies.

The Report shows the commitment of the Division to the UN* sustainable development goals adopted by the United Nations (hereinafter – the UN) and the contribution of the Division to the goals achievement. In further reports, we recommend to show basis of the selection of these five sustainable development goals, a detailed information about the tasks declared by the UN and the contribution of the Division to the tasks fulfillment, as well as the connection between them and with the strategic goals of the Division.

We also hope that in the next years, solving the tasks of transforming the Engineering division into a digital company, the Company will contribute to the digitalization of reporting processes.

Materiality of Information

We consider that the Company has taken into account the requirements of international standards for determination of materiality. During the report preparation, the Company for the third time was using the Rapid Foresight technology to define the material topics. The innovative technology allowed the top management of the Company and stakeholder representatives, including members of the Stakeholders Panel to fully develop a materiality matrix.

The suggested material topics were checked for compliance with GRI SRS. The material topics were disclosed in sufficient details. The priority topics of the Report are: "Digital Transformation of the Engineering Division" and "Training and Professional Development of the Personnel under the Conditions of Digital Transformation". All sufficient data on the priority topics was disclosed.

In our opinion, the Division consistently adheres to the principles of materiality and conciseness of reporting information and this has a positive impact on the volume of the Report and the significance of the information contained therein.

Response of the Company to Suggestions and Recommendations of the Stakeholders

In the process of preparing the Report, the company demonstrated the shaft a high degree of willingness to engage in open dialogue with stakeholders in various areas. Most of the recommendations to the draft Report were taken into account, or the Company has taken on commitments to take them into account in subsequent report cycle. The Report also contains information about the execution commitments made by the Company in previous cycles reporting that is, in our opinion, good about a model for other companies.

The practice of dialogues conducted by the Division, in our opinion, is a good example of raising the level of the Company transparency, both in terms of public reporting and in public assurance of nuclear technology.

We hope that the Division will continue the practice of information openness on all key issues socially significant issues and trends figure activities of the Company and every year will improve public reporting mechanisms.

Anikin E. A.	Director of key IBM customers
Belousov P. A.	The head of the school of CIS and the working group on the preparation personnel for CIS member States in the Council for cooperation in the field of the use of nuclear energy for peaceful purposes in the integration the Committee of the CIS
Danchina Y. M.	Program Manager digital transformation of the Moscow school of management SKOLKOVO
Kezin S. N.	The head of the program operating experience WANO MC
Kochergina E. M.	Chairman of the trade Union Committee of JSC ASE EC
Martyushev S. M.	Executive Director of NP "ARF"
Nakvasin S.Yu.	Director of the direction "Formation of research competencies and technological reserves" of the non-profit organization "Digital economy"
Pliamena O. V.	Executive Director of the environmental Fund. V. I. Vernadsky
Putilov A. V.	Dean of the faculty of Management and Economics of High Technologies, National Research Nuclear University MEPhI

Additional Information

Information on the Report

Report Scope

(GRI 102–50) This Report summarizes the Division performance from 01.01.2017 to 31.12.2017.

According to the minutes of the meeting of the public report Committee- Division news from 01.11.2017 in p. 3 the basic contour of the consoligali defined as "JSC ASE", JSC ASE EC, JSC "Atomenergoproekt", JSC "ATOMPROEKT", their affiliated organizations and other organizations in the contour of management of JSC ASE EC with a planned revenue of more than 2 bln RUR or numbering 2 thousand people.

The company can change The report Boundaries depending on the topic to be disclosed.

The boundaries of each material topic was established by officials in charge of this subject management. The boundaries of reporting is determined according to the list of organizations within the Division's framework.

Accounting (financial) reporting of JSC ASE EC, JSC ASE, JSC Atomenergoproekt, JSC Atomproekt, PJSC Energospezmontazh, JSC NIKIMT- Atomstroy, was prepared in accordance with RAS placed at Interfax web-site:

- JSC ASE EC http://www.e-disclosure.ru/portal/company.aspx?id=19054;
- JSC ASE http://www.e-disclosure.ru/portal/company.aspx?id=36765;
- JSC Atomenergoproekt http://www.e-disclosure.ru/portal/company.aspx?id=19524;
- JSC ATOMPROEKT http://www.e-disclosure.ru/portal/company.aspx?id=20205;
- PJSC Energospezmontazh http://www.e-disclosure.ru/portal/company.aspx?id=25762;
- JSC NIKIMT-Atomstroy http://www.e-disclosure.ru/portal/company.aspx?id=26995.

(GRI 102-45, 102-49) As compared to the previous reporting period, the consolidation framework was not changed. Starting from 2015, consolidated financial management indicators are generated on the basis of eleven FRCs (Financial Responsibility Centers): JSC ASE EC, JSC ASE, JSC Atomenergoproekt, JSC ATOMPROEKT and seven organizations within the management framework (ASE-Engineering LLC, NUKEM Technologies GmbH, NIAEP-Service LLC, Trest Rosspetsenergomontazh LLC, Nukem Technologies Engineering Services GmbH, JSC NIKIMT Atomstroy, JSC Energospezmontazh).

In some sections of the Report part of indicators is given by organizations that have a significant impact – the specific aspect of the Company's activities. In such cases, the consolidation perimeter is described separately.

(GRI 102-51) Integrated Engineering Division's annual report for the previous year (2016) published on the website Company 30.05.2017 G.

Information about the Auditor

Audit of accounting reporting of JSC ASE EC, JSC ASE, JSC Atomenergoproekt, JSC Atomproekt, PJSC Energospezmontazh, JSC NIKIMT- Atomstroy was performed by Nexia Pacoli LLC.

Address: 119180, Moscow, Malaya Polyanka, 2, tel. +7 (495) 640 64 52, fax +7 (495) 640 64 53, e-mail: pacioli@pacioli.ru.

Certificate of the state registration No. 856.235 of the Moscow Registration Chamber dated 23.06.1995, entered into the Uniform State Register with No. 1027739428716 issued by the Moscow Interdistrict Tax Inspectorate № 39 of the Ministry of Taxes and Levies on 22.10.2002.

Membership in the self-regulatory organization of auditors – Member of Self-regulatory Organization of Auditors Association "Sodruzhestvo" (included into the list of auditors and auditing organizations Sodruzhestvo on 28.10.2016).

The Report comprises target and estimated parameters in view of short-, mid- and long-term forecasts. The timing of plans/forecast disclosure in terms of separate indicators depends on the degree of confidentiality of information.

Responsibility for Report Elaboration

(GRI 102-32) The report approved by President of JSC ASE EC and by chief accountant of JSC ASE EC, the Board of Directors of JSC ASE EC, the Board of Directors of JSC ASE, the Board of Directors of JSC Atomenergoproekt, the decision of the sole shareholder of JSC ATOMPROEKT.

Defining of the Report Content

(GRI 102–46) **Materiality determination process**

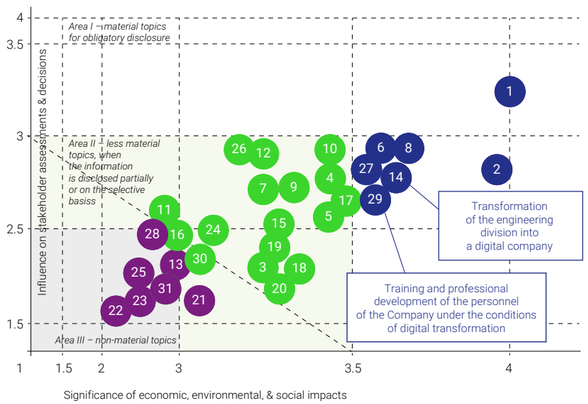
During the report preparation, the material topics to be reflected in the report were identified. The works were performed as part of the communication with stakeholders based on Rapid Foresight technology. Materiality foresight has been arranged in accordance with the GRI and International <IR> Framework procedures for defining the report content.

The priority issues of the Report are defined by JSC ASE EC management and stakeholders' representatives in due course of material issues identification. The priority issues of the Report are as follows:

- transformation of the Engineering Division of Rosatom State Corporation into a digital company;
- training and professional development of the personnel of the Company under the conditions of digital transition.

GRI index include information about 90 GRI indicators as per essential issues.

(GRI 102-47) Materiality Matrix



Area I – essential issues for obligatory disclosure

1 – NPP safety (GRI 416).

2 – Environmental and industrial safety and construction facilities.

6 – Ensuring the performance by the Company of its obligations under the contracted projects.

8 – Reducing NPP construction timelines and costs.

14 –TRANSFORMATION OF THE ENGINEERING DIVISION INTO A DIGITAL COMPANY.

27 – Professional development of the Company employees (GRI 404).

29 – TRAINING AND PROFESSIONAL DEVELOPMENT OF THE PERSONNEL OF THE COMPANY UNDER THE CONDITIONS OF DIGITAL TRANSFORMATION.

Area II – less material issues, when the information is disclosed partially or on the selective basis

3 – Industrial waste management in construction (GRI 301, GRI 306).

4 – Occupational health and safety (GRI 403).

5 – Projects of decommissioning of nuclear power units.

7 – Development of project management system.

9 – Providing the Company's portfolio for the long-term period.

10 – Implementation of innovation projects.

11 – Rendering services on new markets (business diversification).

12 – Enhancing operational efficiency and labor productivity.

15 – The Company's participation in the digital economy of RF.

16 – Sustainable development management system.

17 – Comprehensive economic efficiency of the Company.

18 – The Company's impact on socio-economic development of regions of operation.

19 – Procurement management, fighting unfair competition.

20 – Anti-corruption Policy.

24 – Evaluation of suppliers and contractors in terms of compliance with the sustainable development requirements.

26 – Ensuring proper labor conditions, observation of the employees' rightsю

30 – Scientific and innovation activities.

Area III – non-material topics for which information disclosed in part or not disclosed

13 – Intellectual property of the Company.

21 – Rational use of natural resources.

22 – Impact of the Company on biodiversity in the regions of its presence.

23 – Emissions of greenhouse gases and other harmful substances.

25 – Compliance by the Company with regulatory requirements in the field of sustainable development.

28 – Respect for human rights in the implementation of the Company's projects.

31 – Participation in the implementation of the strategy of the Russian Federation STD.

Report Verification

(GRI 102-56) An independent auditor NP Consult, LLC was involved in verification of the non-financial information in the Report.
Conclusion is provided in Appendix 3 of the Book of Appendices.

The Report was subject to public/stakeholder verification procedures aimed at checking of materiality and completeness of the reporting data and the Company's response to stakeholders' requests. Conclusion is provided in chapter "Social and reputation capital".

The Report was subject to public/expert assurance by Non-Financial Reporting Board of the Russian Union of Industrialists and Entrepreneurs and Russian Integrated Reporting Network.
Conclusion is provided in Appendices 4 and 5 of the Book of Appendices.

An internal audit of the process of elaboration of integrated public annual report of the Engineering Division was performed.
The conclusion of the Internal Audit is provided in Appendix No. 2 of the book of Appendices.

Disclaimer on Disclosure of Forecast Data

The Report contains statements of forecast nature with regard to production, financial, economic, social and other indicators characterizing the further development of the Company. Implementation of plans and intentions depends on the changing political, economic, social and legal situation in Russia and worldwide. In this connection, the actual performance results in the subsequent reports may differ from the forecasted ones.

List of Abbreviations

NPP	Nuclear Power Plant
RCP	Reactor Coolant Pipeline
KPI	Key Performance Indicator
IWL	Individual work limit
MCPL	Minimum Controllable Power Level
MTR	Material and technical resources
R&D	Research and development
IMP	The Initial (maximum) price of the contract
NP	Non-commercial partnership
EIA	Environmental impact assessment
NF	Nuclear Facilities
GPA	General parameters of performance
SNF	Spent Nuclear Fue
CW	Commissioning Works
PSAR	Preliminary Safety Analysis Report
COP	Costs optimization program
BoD	Board of Directors
RPS	Rosatom Production System
RAW	Radioactive wastes
RS	Radioactive substances
WD	Working documentation
RIN	Rosatom International Network
PCT	Patent cooperation treaty
RP	Reactor plan
CEW	Construction and erection works
AFCF	Adjusted Free Cash Flow
FE	Financial estimate
SRW	Solid radioactive waste
FSTEC of Russia	Federal Medical-Biological Agency of Russia
CFD	Center for Financial Responsibility
PU	Power unit
NFC	Nuclear fuel cycle

Glossary

Box-models	Simplified 3D-models.
EPC companies (EPC contractor) (EPC-engineering, procurement, construction)	Companies implementing a project on a turn-key basis. The functions of EPC companies include designing, procurement and construction.
EPCM companies (EPCM-Engineering, Procurement, Construction, Management)	Companies using methods of portfolio management of turn-key projects. The functions of EPCM companies include designing, procurement, construction and project management.
ISO	A set of international standards on management the organization of a company aimed at ensuring a predictable and stable level of services.
LCOE (Levelized Cost of Electricity)	Levelized Cost of Electricity – [KW*h] during the whole life cycles, it is expressed in monetary unit for generation of 1 KW*h. LCOE is determined as the unit cost of electricity, as the sum of all the expenses (capital, operational, including the cost of fuel, treatment of spent nuclear fuel and radioactive waste, personnel expenses, NPP decommissioning and other costs) during the whole life of an NPP (considering the time value of money) in relation to the NPP capacity (design or actual).
LEAN	Concept of company management aimed at elimination of all types of losses. LEAN production assumes the involvement of each employee in the optimization process.
Rapid Foresight	Technology which allows the people who participate in the foresight, to agree upon the future concept, their performance in relation to such future and their desired future. The basis of the method: joint work of the participants in a time map; working with images and diagrams instead of texts.
Smart Grid	Smart Grid – upgraded electrical supply networks that use information and communication technologies for collection of information about power generation and power consumption making it possible to automatically increase efficiency, reliability, economic return and stability of power generation and distribution.
Worldskills	International non-commercial movement aimed at improving the profile and recognition of skilled people, developing professional education by harmonization of the best practices and professional standards all over the world by arrangement and conduct of professional skills contests.
Business "Equipment"	Economic activities of the Division aimed at gaining revenue from supply of equipment for nuclear power plants construction.

VVER.1000	NPP design of enhanced safety developed with consideration of the national experience in construction and operation of the previous reactor plant (B-320) at Zaporozhye, Balakovo, South-Ukraine and Kalinin NPP and the latest world achievements in the field of NPP design and operation. According to the international classification, VVER.1000 is included into the category of nuclear power plants of III generation. When designing the nuclear power plant, the designers focused on maximum reduction of the human factor. Such concept was implemented in two directions. Firstly, the design included passive safety systems. This term refers to systems operating almost without any external power supply and requiring no human intervention. Secondly, the concept of the dual-purpose active safety systems was adopted, which considerably reduced the possibility of undetected failures. To avoid the uncontrolled chain reaction in the reactor, the special control rods made of neutron-absorbing materials are used which immediately suppress nuclear reaction when inserted in the core.
VVER.1200E	The most advanced typical design of the Russian nuclear power plant of 3+ generation with improved technical and economic characteristics. This design is aimed at achievement of modern safety and reliability indicators with optimized capital investments in power plant construction. The design foresees a VVER reactor with a minimum electric power level of 1150 MW (and possible boost up to 1200 MW). According to the approved Terms of Reference, designs of two nuclear power plants were developed: Novovoronezh NPP-2 (General Designer – JSC Atomenergoproekt, Moscow) and Leningrad NPP-2 (General Designer – St. Petersburg Research and Design Institute Atomenergoproekt JSC).
BN-800	A sodium-cooled fast reactor for final fine-tuning technologies of the fast-fission reactors using uranium-plutonium MOX-fuel. The electrical power – 880 MW.
Back end	The final life cycle stage of nuclear facilities and materials.
VVER.1300TOI	Standard optimized and information-based design for a two-unit NPP with VVER.1300 reactor (pressurized-water reactor). The VVER-TOI design is developed on the basis of the VVER.1200E design materials with maximum consideration of the experience obtained by industry organizations designing NPPs based on the VVER technologies (Novovoronezh NPP-2).
General Contractor	Party to the contract which assigns performance of certain types and packages of work under the contract to specialized contracting organizations – subcontractors. The General Contractor is fully responsible to the customer for performance of the contractual work package and proper quality thereof, timely removal of defects and faults, etc.
Customer	A person or legal entity intending to carry out construction, reconstruction or other type of construction works which require a construction permit.
Expenses for environment protection	Total expenses of companies (organizations, institutions), individual entrepreneurs, the state (the budgets of RF, the subjects of the Russian Federation, municipal formations) having a target environmental protection designation (collection, treatment, mitigation, prevention or elimination of pollutants, pollution as such or any other types and elements of deterioration of the environment which are the results of business performance) at the expense of all sources of financing.
Engineering	Engineering and consulting services of research design and engineering, calculation and analytical nature, preparation of projects feasibility studies, elaboration of recommendations in the field of production and management, i.e. a package of commercial services for preparation and support of the production and product distribution process, maintenance and operation of industrial, infrastructure and other facilities.
Obeya or Oobeya room	In Japanese means "Big room or big conference hall" where work is coordinated and decisions are taken. Obeya room is a humanistic approach to new products development.
Local population	The population whose permanent address is in the region of the Company's operation (e.g. – the population living in Rostov oblast is local for Rostov region). For foreign projects – the whole country is viewed upon as the region.
Local supplier	A supplier registered in the area of the facility location.
International Project Management Association (IPMA Delta) Model	Enhancing the efficiency of the Company's project performance in accordance with the best international practices in the field of project management. Confirmation of the company competence in the field of project management on the international level.
Plan-Do-Check-Act Model	A cyclic process of decision taking used in quality management.
Design documentation	Documentation containing materials in textual form and in maps (diagrams) determining the architectural, functional, process, structural, engineering and technical solutions to ensure construction, reconstruction of capital construction facilities, their parts, capital refurbishment if during such refurbishment structural and other properties of reliability and safety of capital construction are affected.
Engineering Survey works	Works related to engineering survey, development of feasibility studies for construction, development of designs, working documentation, budget documentation for construction (new construction, expansion, reconstruction, technical refurbishment) of buildings and facilities.
Working Documentation (Detailed Design Documentation)	Documentation developed on the basis of approved design documentation and meant for construction works performance.
Radioactive substances	Substances with radioactive nuclides in their structure.
Construction	A whole process of NPP construction from survey and design works to handing over to the Customer for operation.

Digital Economy	Economy based on new methods of generation, collection, processing, storage, analysis and transfer of data and new digital technologies: • Robot technology. • Cyber physical systems. • Industrial Internet of things. • Communication networks of 5th generation. • Additive technologies. • Cognitive technologies. • Artificial intelligence. • Machine learning. • Big Data. • Block chain. • Multimachine systems.
Environmental safety	Protection of environment and vital human interests against possible negative effects of economic and other activities, natural and man-induced emergency situations and their consequences.
NPP Power Unit (power unit)	A part of a nuclear power plant representing a set of main and auxiliary equipment, combined in a unified process system designed to generate electricity by using one or two turbine units with/without heat generating by converting the nuclear fuel energy.

List of Appendices

All annexes hereto are given in the Book of Appendices. See http://www.niaep.ru/information_disclosure/Annual_reports/:

Appendix 1.
GRI Content Index, table of compliance with Standard <IR>.

Appendix 2.
Opinion of Internal Control and Audit Department.

Appendix 3.
Independent Assurance Report.

Appendix 4.
Opinion of Non-Financial Reporting Board of the Russian Union of Industrialists and Entrepreneurs.

Appendix 5.
Opinion of the Russian Integrated Reporting Regional Network.

Appendix 6.
Organizational structure of JSC ASE EC, the Managing company of the Engineering Division.

Appendix 7.
Operating assets of organizations within the management scope of JSC ASE EC.

Appendix 8.
Corporate governance in JSC NIKIMT-Atomstroy, Trest RosSEM LLC and PJSC "Energospetsmontazh".

Appendix 9.
Information about the members of the Board of Directors.

Appendix 10.
Report of the Board of Directors on Performance Results.

Appendix 11.
The information about major transactions and transactions with interest.

Appendix 12.
Additional information to chapter "Human capital".

Appendix 13.
Additional information to chapter "Manufactured capital" (results of Rosatom Production System introduction).

Appendix 14.
Additional environmental parameters.

Feedback Questionnaire

Dear reader,

You have read the public annual report of the Engineering Division intended for a wide range of stakeholders. The reader's opinion, for whom the report was created, is extremely important for us. We will be grateful for your contribution in improvement of the quality of the Division reporting, by answering the questions in the questionnaire:

Please assess the report on the basis of the following criteria:

Reliability and objectiveness

☐ Excellent ☐ Good ☐ Satisfactory ☐ Unsatisfactory

Did the independent auditors' report and the independent public assurance of report – the expert (RSS,RSPP) and the stakeholders assurance – influence your assessment?

☐ Yes ☐ No

Completeness and materiality of information

☐ Excellent ☐ Good ☐ Satisfactory ☐ Unsatisfactory

Structure of the report, convenient search of the required information, style

☐ Excellent ☐ Good ☐ Satisfactory ☐ Unsatisfactory

2. Mark the chapters of the report that were important and useful for you.

3. Which subjects should, in your opinion, be included into the next report?

4. Your recommendations and comments:

5. Which group of stakeholders do you belong to:

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☐ Bodies representing the interests of the employees, personnel
☐ Bodies of state power
☐ State supervisory authorities
☐ International organizations
☐ Professional associations
☐ Financial institutions, insurers
☐ Partners (customers, suppliers)
☐ Scientific community, educational institutions
☐ Public organizations
☐ Representative of expert community
☐ Other (specify)

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