Investment activities

Investment policy

RusHydro's investments are governed by the Regulations on Managing Investing Activities Performed in the Form of Capital Investments.

RusHydro's investment policy principles

Compliance of investment decisions and projects with statutory requirements, building codes and regulations, and environmental standards	**Step-by-step approach to implementation of investment projects**
Compliance of investment decisions and projects with risk-return profiles approved by the Board of Directors	Analysis of costs and benefits associated with alternative investment decisions (performed at the end of each stage in case of a change in key project metrics)
	Access to financing for all investment projects

Investment programs are approved by the Company's Board of Directors and respective boards of directors in RusHydro Group's subsidiaries, with the programs of electricity supplying subsidiaries additionally reviewed by the authorized government agencies. The draft investment programs of subsidiaries are based on the Group's consolidated investment program, which is approved by the Management Board and presented to the Board of Directors of PJSC RusHydro. As far as electricity suppliers are concerned, the drafts are submitted to the authorized government agencies after being reviewed by the boards of directors in respective subsidiaries.

People in Russia and abroad appreciate the professionalism and expertise exhibited by RusHydro's workers. You use modern high-tech equipment to upgrade existing hydroelectric power plants and design and construct new ones. Thanks to your work, RusHydro is a leading renewable energy producer. It is important that the company does so much to promote social development, as well as to support culture, education, and spectator sports by operating charity projects nationwide and regionally.

Vyacheslav Volodin,

Chairman of the State Duma of the Russian Federation

Investment objectives

- Ensure stable power supply with no disruptions for the consumers
- Satisfy the growing energy consumption
- Upgrade generating facilities
- Reduce grid losses
- Reduce power equipment failures and wear and tear

Role of federal and regional governments in the investment program development

In line with Investment Approval Rules for Electricity Suppliers approved by Resolution of the Russian Government No. 977 *On Investment Programs of Electricity Suppliers* dated December 1, 2009, investment programs of RusHydro's electricity supplying subsidiaries are reviewed and approved by the authorized government agencies (the Russian Ministry of Energy or regional authorities) with inputs from government agencies in the regions where such investment projects are implemented and federal government agencies, including the Ministry of Finance, Ministry of Construction, Housing and Utilities, Ministry of Industry and Trade, Ministry of Economic Development, Federal Antimonopoly Service, Market Council Non-Profit Partnership and System Operator of the Unified Energy System.

Pursuant to Resolution of the Russian Government No. 1502 *On Procedure for the Ministry of the Russian Federation for the Development of the Russian Far East and Arctic to Approve the Investment Programs and Development Plans of State Corporations, State Companies and Other State-Owned Organizations As Regards Their Implementation in the Far Eastern Federal District of Russia* dated December 27, 2016, draft investment programs of RusHydro's subsidiaries that are not electricity suppliers but engage in investment activities in the Far Eastern Federal District of Russia are subject to approval by the Ministry for the Development of the Russian Far East and Arctic.

Our cooperation with the country's federal and regional governments extends beyond developing and reviewing our investment program, with working on proposals and updates to energy policy papers (the "Policy Papers") also on our agenda. These documents include:

- schemes and programs for the future development of the power industry in Russian regions;
- schemes and programs for the development of Russia's Unified Energy System;
- general layout of power generation facilities in Russia;
- territorial planning layout for the Russian power industry.

RusHydro Group works to ensure that the Policy Papers contain only the most recent information on its generating facilities and comply with the Group's plans.

The Group's cooperation with regional governments focuses on drafting proposals and updating information on heat supply project blueprints for Russian cities and towns. For example, PJSC RusHydro's subsidiaries participated in public hearings on heat supply project blueprints for Khabarovsk, the Vladivostok and Artyom municipal districts, and other Far Eastern municipalities.

Investment program for 2019–2029

RusHydro's updated investment program for 2019 and investment program for 2020–2029 were approved by Order of the Russian Ministry of Energy No. 20@ *On Approval of RusHydro's Investment Program for 2020–2029 and Amendments to RusHydro's Investment Program Approved by Order of the Russian Ministry of Energy No. 6@ of October 22, 2018* dated December 9, 2019.

RusHydro's updated consolidated investment program for 2019 was approved as part of the Group's Consolidated Business Plan for 2019 by resolution of the Board of Directors[1]. RusHydro's consolidated investment program for 2020–2024 was approved as part of the Group's Consolidated Business Plan for 2020–2024 by resolution of the Board of Directors[2].

[1] Minutes No. 295 of September 23, 2019.

[2] Minutes No. 301 of December 26, 2019.

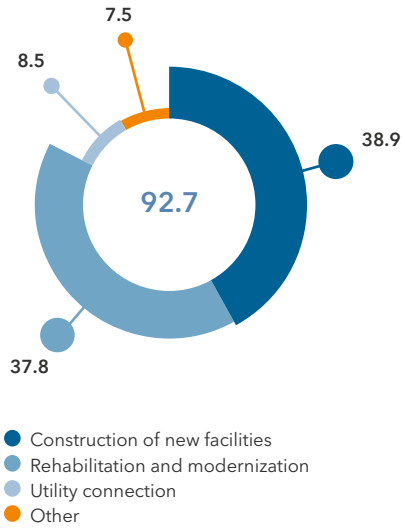
Implementation of RusHydro Group's consolidated investment program[1]

Spending on the consolidated investment program in 2019 amounted to RUB 92.7 bn, including RUB 65.5 bn for the investment projects of RusHydro Subgroup and RUB 27.2 bn for the projects of RAO ES East Subgroup.

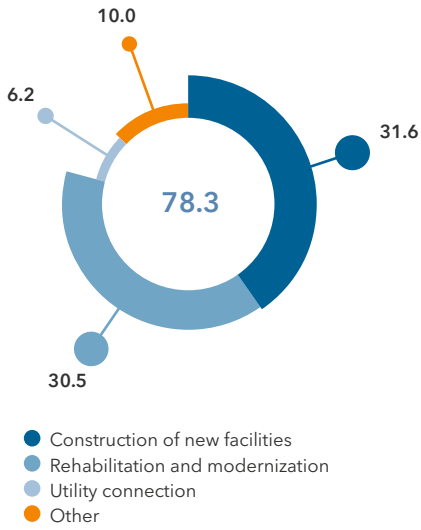
New capacities commissioned in 2019:
- 854.6 MW in electricity generation;
- 326.4 Gcal/h in heat generation;
- 399.8 MVA of transformer capacities;
- 1,549.2 km of power transmission lines.

Key investment areas under RusHydro Group's consolidated investment program in 2019[2]

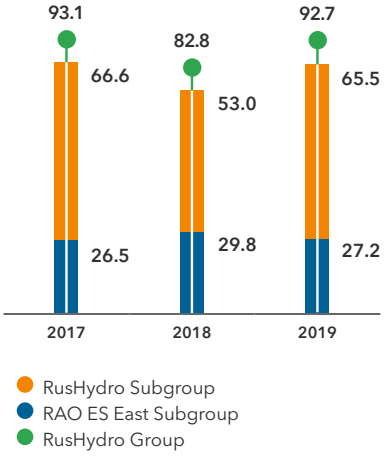
Spending, RUB bn (incl. VAT)



CAPEX, RUB bn (excl. VAT)

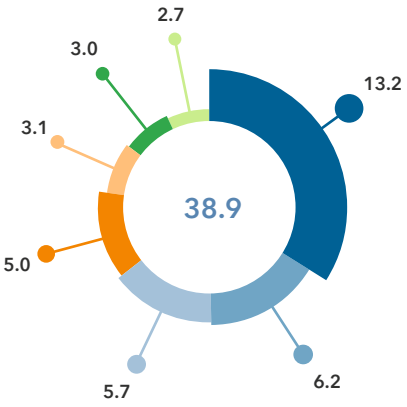


Actual spending in 2017–2019, RUB bn (incl. VAT)

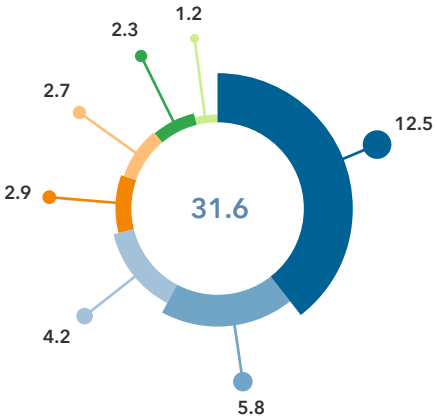


Investments in construction of new facilities in 2019

Spending, RUB bn (incl. VAT)



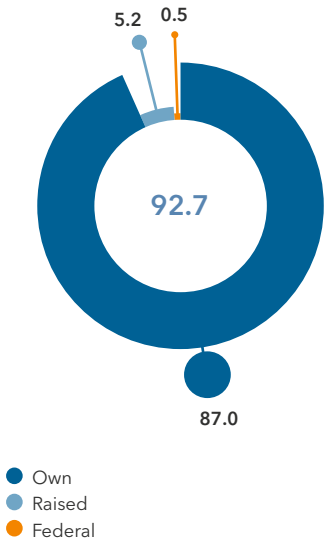
CAPEX, RUB bn (excl. VAT)



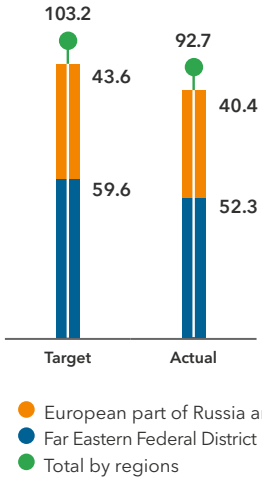
[1] Includes RusHydro's subsidiaries covered by the Consolidated Business Plan for the respective period, including SHPPs of Stavropol Territory and Karachay-Cherkess Republic, Verkhnebalkarskaya SHPP, RusHydro's R&D institutes, Pauzhetskaya GeoPP, NDES, Rodnik Zdorovya, HUA and Hydroinvest.

[2] Under the adopted management accounting standards:
- investment program spending means the total amount spent by the members of RusHydro Group to implement investment projects, including disbursements to suppliers and contractors and project administrators' expenses; and
- CAPEX means the capital investments recognized on the basis of amounts specified in delivery and acceptance certificates signed with suppliers and contractors and accounted for as the respective project administrators' expenses.

Spending by source of funds in 2019, RUB bn (incl. VAT)



Spending by region in 2019, RUB bn



The significant difference between the actual spending under the consolidated investment program and the 2019 target (– RUB 10.5 bn) was mainly attributable to:

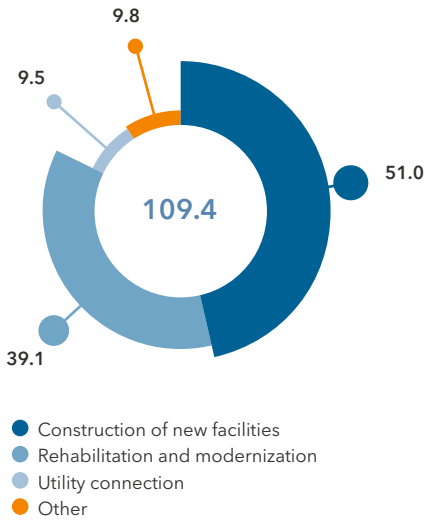
- updates on the work schedules for rehabilitation and modernization, with the reasons including more time required for contractors to complete their assignments and reductions in project costs following approval of design documentation (– RUB 4.3 bn);
- updates on the work schedules for utility connection contracts based on customer requests (– RUB 3.2 bn);
- revision of actual spending with savings achieved upon the completion of such investment projects as Construction of GTP-CHPP at the Central Steam and Water Boiler Site in Vladivostok, Construction of Hot-Water Peaking Boiler Plant at Yakutskaya GRES, and Construction of Power Distribution System at the CHPP in Sovetskaya Gavan (– RUB 1.0 bn);
- review of the contractor guarantee payment timing based on the actual acceptance certificate dates at Sakhalinskaya GRES-2 commissioned in Q4 2019, with RUB 0.9 bn worth of financing postponed until 2020.

Capacity commissioning in 2019

Type	Russian Far East		European part of Russia and Siberia	
	Target	Actual	Target	Actual
Electricity generation, MW	442.2	446.1	394.6	408.5
Heat, Gcal/h	324.0	326.4	–	–
Power lines, km	1,615.3	1,547.2	3.4	2.0
Transformer capacities, MVA	525.3	399.4	1.7	0.4

Investment plans for 2020

Planned spending,
RUB bn (incl. VAT)



Targets for capacity commissioning

Type	Target
Electricity generation, MW	169.3
Heat, Gcal/h	202.5
Transformer capacities, MVA	614.6
Power lines, km	1,556.3

Construction and modernization of production facilities

Construction of generating facilities *[EC]*

RusHydro builds and commissions power plants and develops energy infrastructure in the Far Eastern Federal District, helping to further national goals related to supplying electricity to citizens and industrial facilities. RusHydro Group's investment projects are focused on replacing the retiring energy capacities with new ones fitted with efficient cutting-edge equipment, makeing the energy system more reliable, eliminating energy shortages, and creating a capacity margin and conditions to spur local economic development. RusHydro's investment projects in the Russian Far East are included in the Comprehensive Trunk Infrastructure Upgrade and Extension Plan until 2024 as approved by Decree of the Russian Government No. 2101-r of September 30, 2018.

We are sincerely grateful to RusHydro for our partnership, which stretches back decades. After all, the friendship between power engineers and machinists was struck up many years ago. We appreciate the trust you have in us as equipment manufacturers and strive to keep changing to improve its efficiency and quality. Each time we collaborate, we gain new invaluable experience because all stations and all machines are unique, with their own story and character.

For Power Machines, RusHydro is not just an important customer. It is, above all, the people with whom we work hand in hand to solve joint challenges. These are masters of their trade who take part in developing projects, coordinating design documentation and accepting equipment, and sharing the excitement and joy of commissioning powerful, reliable machines.

Timur Lipatov,

Chief Executive Officer at Power Machines OJSC

Key investment projects and their impact on local economies across the Group's footprint *[103-2] [203-2]*

Project	Investments, RUB mn		Indirect economic impact
	2019	Total	
Nizhne-Bureyskaya HPP Installed capacity: 320 MW Average annual output: 1,670 mn kWh Year of commissioning: 2019	3,055.2	53,409.4	**Social and economic effects:** • reducing current heat generation expenses for the Unified Energy System of the East; and • creating an opportunity for nearby settlements to use electric boiler facilities instead of expensive coal or fuel oil and lower heat tariffs for customers. • higher tax revenues at every government level. **Supply stability effects:** • managing load irregularities of Bureyskaya HPP, and contributing to power generation and supply within the Unified Energy System of the East, and ensuring flood control.
Sakhalinskaya GRES-2 Installed capacity: 120 MW Average annual output: 840 mn kWh Year of commissioning: 2019	6,183.9	35,611.3	**Social and economic effects:** • bringing about a positive social and economic effect on Sakhalin's west coast by creating new jobs and driving housing and social infrastructure development, and providing a capacity margin for connecting new customers. **Supply stability effects:** • making the isolated Sakhalin energy system more reliable; and • replacing retiring capacities at the existing Sakhalinskaya GRES.
Zaramagskaya HPP-1 Installed capacity: 346 MW Average annual output: 842 mn kWh Year of commissioning: 2019	5,025.9	47,968.7	**Social and economic effects:** • higher tax revenues at every government level. **Supply stability effects:** • addressing the electricity shortage in the Republic of North Ossetia – Alania; and • reducing exchange-related grid losses; and • addressing supply disruptions that might be experienced by remote communities.
CHPP in Sovetskaya Gavan Installed capacity: 126 MW, 200 Gcal/h Average annual output: 630 mn kWh Year of commissioning: 2020	7,066.9	33,820.8	**Social and economic effects:** • satisfying the rising local demand for electricity as a result of the sea port expansion, the construction of the the Russian Far East's largest coal terminal and the town's development as a transport hub; • providing for centralized heat supply to Sovetskaya Gavan; and • higher tax revenues at every government level. **Supply stability effects:** • replacing retiring capacities and inefficient equipment at Mayskaya GRES; and • making the Sovetskaya Gavan energy hub more reliable.
Second stage of gasification at Anadyrskaya CHPP Year of commissioning: 2020	130.9	394.2	**Social and economic effects:** • allowing a slowdown in tariff increases; and • making power generation in Anadyr more sustainable. **Supply stability effects:** • ensuring stable power and heat supply for the Anadyr energy hub; and • improving the power generation efficiency at Anadyrskaya CHPP by using a cheaper fuel.
Ust-Srednekanskaya HPP Installed capacity: 570 MW (142.5 MW third stage commissioned in 2018) Average annual output: 2,555 mn kWh Year of commissioning: 2022	5,721.2	76,927.3	**Social and economic effects:** • generating power for Matrosov Mine (the Natalka gold deposit) to support the mining industry in driving the region's economic growth; and • higher tax revenues at every government level. **Supply stability effects:** • making the isolated Magadan energy system more reliable.

Project	Investments, RUB mn		Indirect economic impact
	2019	Total	
Construction of two single-circuit 110 kV Pevek-Bilibino power lines (construction stage No. 1) Length: 490.59 km Year of commissioning: 2023	114.5	24,733.3	**Social and economic effects:** – supporting the development of the mining and metals cluster within the Chaun and Bilibino energy hub. **Supply stability effects:** – allowing the Chaun and Bilibino energy hub to carry out power exchange for the construction of a floating nuclear power plant; and – making the local energy system more reliable.
Upgrade of turbo generators No. 1, 2 and 3 and boiler units No. 1–8 at Vladivostokskaya CHPP-2 Installed capacity: 360 MW, 570 Gcal/h Year of commissioning: 2025	58.2	26,452.8	**Social and economic effects:** – improving the quality and reliability of energy supplies to consumers in the Far East. **Supply stability effects:** – replacing retiring power and thermal capacities of obsolete and worn-out equipment; and – improving the quality and reliability of energy supplies to consumers in the Far East.
Construction of Khabarovskaya CHPP-4 Installed capacity: 328 MW, 1,374 Gcal/h Year of commissioning: 2025	114.6	52,396.8	**Social and economic effects:** – helping to cover projected shortage of power in the region. **Supply stability effects:** – replacing retiring thermal and power capacities of Khabarovskaya CHPP-1; and – improving the reliability and efficiency of power supplies in the region and heat supplies in the southern part of Khabarovsk.
Construction of Yakutskaya GRES-2 (second stage) Installed capacity: 154 MW, 194 Gcal/h Year of commissioning: 2025	35.4	30,275.5	**Social and economic effects:** – developing centralized energy systems in line with social and economic needs of the Republic of Sakha (Yakutia). **Supply stability effects:** – replacing retiring capacities at the existing Yakutskaya GRES; – improving the reliability and efficiency of power supplies in the region, and improving the reliability of heat supplies in Yakutsk.
Construction of Artyomovskaya CHPP-2 Installed capacity: 420 MW, 483 Gcal/h Year of commissioning: 2026	122.5	130,132.8	**Social and economic effects:** – ensuring the social and economic development of the Primorsky Krai. **Supply stability effects:** – replacing retiring capacities at the existing Artyomovskaya CHPP; and – improving the quality and reliability of energy supplies to consumers in the Far East.

Two people were physically displaced due to the construction of Krasnogorskaya SHPP-2. RusHydro Group's construction projects did not involve economic migration.

As part of constructing Ust-Dzhegutinskaya SHPP, Krasnogorskaya SHPP-1 and Krasnogorskaya SHPP-2, the Group signed agreements to purchase five land plots with a total area of 20,473 m^2. The land plots are classified as urban lands for subsistence farming. No other compensations were paid with regard to RusHydro Group's construction projects.

In 2017, two people received RUB 4,170 thousand in compensations under the project to build Ust-Dzhegutinskaya SHPP. In 2018, two people received RUB 6,383 thousand in compensations under the project to build Krasnogorskaya SHPP-1. In 2019, two people received RUB 4,592 thousand in compensations under the project to build Krasnogorskaya SHPP-2. *[EU22]*

Construction projects in the Far East *[OS]*

A CHPP in Sovetskaya Gavan is one of RusHydro Group's four projects to erect new generating facilities in the Far East in line with a Decree by the President of Russia.

Under the Russian President's Decree No. 1564 dated November 22, 2012, RusHydro received RUB 50 bn as contribution to its authorized capital from the state budget to finance the construction of the following power generation facilities in the Far East:
- a CHPP in Sovetskaya Gavan;
- Sakhalinskaya GRES-2, launched;
- Yakutskaya GRES-2 (first stage), launched; and
- Blagoveshchenskaya CHPP (second stage), launched.

Three facilities have already been commissioned: Blagoveshchenskaya CHPP (second stage) in December 2016, Yakutskaya GRES-2 (first stage) in November 2017, and Sakhalinskaya GRES-2 in November 2019.

The CHPP construction site in Sovetskaya Gavan currently has over 1,500 employees and over 50 units of equipment. The bulk of construction and installation work has been completed, with the key equipment already installed. Efforts are now underway to install auxiliary equipment, tank farm, fuel supply systems, complete interior finishing, put in place engineering systems, and construct on-site access roads. Pre-commissioning has entered its active stage, including energization of 110 kV outdoor switchgear equipment and balance-of-plant switchgear, and boiler plant No. 1 has gone through test runs to fine-tune modes of combustion using diesel fuel.

The new CHPP will require a lot of municipal consumers in Sovetskaya Gavan to be transitioned to centralized heat supplies, making it advisable to have the plant commissioned in 2020 after the peak load period of 2019–2020 autumn and winter season is over.

Commissioning is projected for Q3 2020[1].

Measures being taken to accelerate the construction process:
- contracting and delivery processes are in place to ensure that there are no shortages leading to potential idle time;
- additional personnel have been recruited to work on the construction site;
- all staff work in two shifts;
- a detailed project design group operates on the site.

[1] Commissioning is projected for Q3 2020: Minutes No. 4 of December 23, 2019 of a meeting by the Government Commission on the Development of the Electric Power Industry led by Deputy Chairman of the Government of the Russian Federation, Chairman of the Government Commission on the Development of the Electric Power Industry Dmitry Kozak approved the postponement of the facility commissioning to 2020 due to objective reasons. The commissioning of the facility in 2020 was approved by RusHydro's Board of Directors as part of signing off on the consolidated business plan (including the consolidated investment program) of RusHydro Group for 2020–2024 (Minutes No. 301 of a meeting held by the Board of Directors dated December 26, 2019).

Construction quality assurance

Construction and installation quality assurance at RusHydro's facilities aims to:
- ensure compliance of works, materials, products and structures with the design documentation, construction and other applicable regulations, and construction and installation agreements under capital construction projects; and
- prevent violation of laws and regulations governing construction procedures.

Key quality assurance activities include:
- monitoring the scope and timeliness of incoming inspections performed by contractors and controlling the accuracy of their inspection reports;
- monitoring contractor compliance with the warehousing and storage requirements for materials and equipment and controlling the accuracy of relevant documents;
- monitoring the scope and timeliness of contractor controls focusing on the sequence of capital construction procedures and controlling the accuracy of respective reports;
- inspecting hidden works jointly with the field supervisors and contractors and conducting interim acceptance of critical structures that may affect safety of capital construction facilities;
- controlling, jointly with contractors, compliance of completed construction facilities with design and construction documents and technical specifications.

Regulation and supervision

Our quality assurance procedures for construction and installation, materials, structures and assemblies are compliant with Russian laws, industry standards and regulations, internal engineering standards, and regulatory requirements for design documentation.

In addition to primary and secondary federal legislation, all construction works are subject to both industry and RusHydro own internal quality assurance standards. Our key design quality management principles and the employees in charge are specified in the Regulations on Managing and Monitoring Investment Projects during the Development of Documentation for Construction of RusHydro Group's New Facilities as approved by RusHydro's Order No. 1021 of December 28, 2018.

The Supervisory Board of the Uniform System of Conformity Assessment for Health, Safety and Environment, and Safety in the Energy and Construction Industries is developing the Uniform System of Conformity Assessment in Construction (Modernization and Renovation of Immovable Property) and requirements in respect of the corresponding control activities. Compliance monitoring is performed by the Federal Environmental, Industrial and Nuclear Energy Supervision Service.

Before a power plant is commissioned, it receives an automated diagnostic control system that will read and process measurements to help analyze the status of facilities across the hydrotechnical complex. After completion of a hydraulic structure, its measuring equipment, along with all data collected, is handed over by the construction company to the project administrator.

Quality assurance systems for new energy facilities are developed individually under agreements with the respective general contractors.

For the CHPP in Sovetskaya Gavan,
- the project administrator and developer (JSC CHPP in Sovetskaya Gavan) has adopted construction and installation quality assurance guidelines for building control; and
- contractors (JSC Ust-SrednekanGESstroy, JSC Hydroremont – VCC, ARSENAL PLUS, and Corporation of JSC ESKM) have developed a quality assurance system to facilitate planning and management in the corresponding domain.

For Zagorskaya PSPP-2 and Ust-Srednekanskaya HPP, the respective project administrators have developed acceptance regulations and quality assurance systems.

For the smaller HPPs in the Stavropol Territory and Karachay-Cherkess Republic, the respective project administrators have adopted construction and installation quality assurance guidelines.

Both JSC Chirkeigesstroy and JSC Ust-SrednekanGESstroy have developed and implemented quality management systems for all hydropower facilities they have been assigned to as the general contractor. The systems are now certified under ISO 9001:2008 and ISO 14001:2004 (GOST R ISO 14001-2007).

Program to develop the energy system in the Far Eastern Federal District with a view to accelerating local economic growth *[EU23]*

In 2019, RusHydro produced a program to develop the power system in the Far Eastern Federal District with a view to promoting economic growth (the Program)[1].

The Program's key objective is to offer optimal solutions for the development of the power system in the Far Eastern Federal District as a way to achieve projected demand for electricity and capacity in the context of large-scale investment projects (including projects in priority development areas, the Far Eastern Hectare program, and plans to develop energy clusters) that are inherently linked to the construction of generating facilities.

The 10-year Program is designed as one of the key elements in the mid- and long-term planning strategy for the energy sector of the Russian Far East.

It also provides a list of first priority facilities required to replace the retiring capacities and meet the demand of the Far Eastern energy systems going forward[2]:

- construction of Artyomovskaya CHPP-2 to replace Artyomovskaya CHPP-1 slated for decommissioning (project details: 420 MW, 483 Gcal/h, to be commissioned in 2026);
- construction of Khabarovskaya CHPP-4 to replace Khabarovskaya CHPP-1 slated for decommissioning (project details: 328 MW, 1,374 Gcal/h, to be commissioned in 2025);
- construction of the second stage of Yakutskaya GRES-2 to replace Yakutskaya GRES slated for decommissioning (project details: 154 MW, 194 Gcal/h, to be commissioned in 2025);
- upgrade of turbo generators No. 1, 2 and 3 at Vladivostokskaya CHPP-2, rehabilitation of boiler units No. 1–8 (upgrade/rehabilitation details: increases up to 360 MW and 570 Gcal/h, to be commissioned in 2025).

The above projects were approved by Decree of the Russian Government No. 1544-r of July 15, 2019 and included in the Comprehensive Trunk Infrastructure Upgrade and Extension Plan until 2024 as approved by Decree of the Russian Government No. 2101-r of September 30, 2018. The work on relevant design and cost estimates is currently underway.

Today, RusHydro Group is rightly considered one of the largest electric power companies in the world. Throughout the country, including in the Far East, it implements large-scale projects that define how a region develops for decades to come. RusHydro Group offers a considerable contribution to Russia's energy security. All of the company's success is the result of the daily painstaking work of a team of professionals wholeheartedly dedicated to their cause. This is who works at RusHydro.

Alexander Kozlov,

Ministry for the Development of the Russian Far East and Arctic

In 2019, PJSC RusHydro intensely participated in the implementation of a project by the Association "Hydropower of Russia", targeting the development of an assessment system of operated hydropower facilities' compliance with the sustainable development criteria, taking into account the requirements of current Russian legislation regarding the analysis of existing methods. The project implementation will be resumed in 2020, with the assistance of the International Hydropower Association. *[OS]*

[1] Based on instructions from Yury Trutnev, Deputy Prime Minister of the Russian Federation and Presidential Plenipotentiary Envoy to the Far Eastern Federal District (Minutes No. YuT-P9-2454 of April 25, 2018). The Program was reviewed at a meeting of the Board of Directors (Minutes No. 292 of June 24, 2019).

[2] The commissioning details and schedules may be adjusted after the final versions of design and cost estimates are approved.