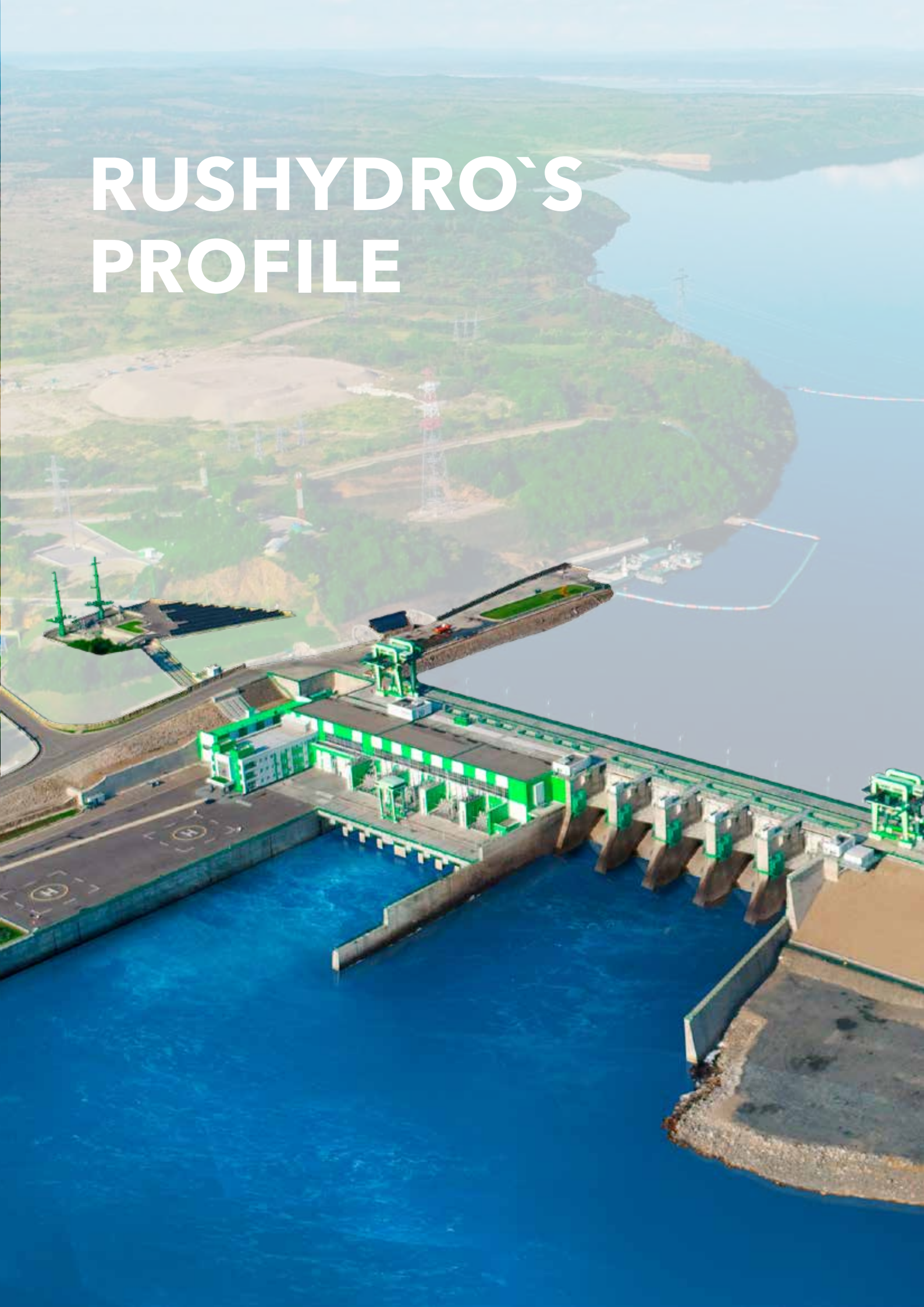


RUSHYDRO'S PROFILE



About Company

PJSC RusHydro is Russia's largest hydro-generating company, ranking among the world's leading hydropower players. RusHydro Group is the leading national producer of renewable energy from water flows, solar, wind, and geothermal energy. [102-1][102-2]

The Company is registered in Krasnoyarsk and headquartered in Moscow. [102-3] RusHydro Group operates as part of the Unified Energy System (UES) of Russia. One of the Group's key assets is JSC RAO ES East Subgroup representing a major part of the Far Eastern Federal District's power grid.

Currently, RusHydro Group comprises over 400 power generation facilities, including Russia's largest Sayano-Shushenskaya HPP named after P.S. Neporozhniy (capacity of 6,400 MW), nine facilities of Volga-Kama cascade (total installed capacity of over 10,500 MW), Bureyskaya HPP (capacity of 2,010 MW), Zeyskaya HPP (capacity of 1,330 MW), Novosibirskaya HPP (capacity of 490 MW), several dozen hydroelectric power

plants in the North Caucasus and highly maneuverable capacities of pumped storage power plants (PSPP). Group companies also operate thermal power plants in the Far East with a total capacity of over 8,300 MW and geothermal power plants in Kamchatka, provide electricity transmission services, and sell electricity and heat to end consumers. In addition to that, RusHydro Group includes a wide variety of R&D, planning and surveying, engineering, and construction organizations and energy retailers.

In accordance with the Russian President's Order No. 1009 dated August 4, 2004, PJSC RusHydro has been included in the list of strategic enterprises and joint-stock companies since 2012.



Since the day it was founded, RusHydro has played a significant role in Russia's electricity industry and is one of the largest electric power holdings in the country. Carrying out all types of activities RusHydro's companies operate in more than 30 regions of Russia. RusHydro is the national leader in generating renewable energy. RusHydro doesn't just supply energy to consumers and ensure the Unified Energy System of Russia operates stably. Its hydropower plants perform essential infrastructure functions, such as water supply, shipping, and flood protection for populated areas and economically vital facilities. A team of professionals – skilled experts and managers who perform diligent work every day – stand behind the energy holding's outstanding performance and achievements.

Dmitry Kozak,
Deputy Chief of Staff of
the Executive Office of the
President of the Russian
Federation



Installed electrical capacity
of RusHydro Group is¹

39.7 GW

Installed heat capacity
of RusHydro Group is

19,021
Gcal/h

Total length of transmission
power lines is

105.0
ths. km

Headcount as at December 31,
2019 is

69.5
ths. employees

¹ The indicator includes the electric capacities of RAO ES East Subgroup and Boguchanskaya HPP built and jointly operated with UC RUSAL.

2019 Milestones

January

- DEK was authorized to distribute electricity in Sakhalinenergo's regions of operation. Redistribution of electricity retail functions among the Group's companies helped reduce selling expenses.
- The Central and Western energy hubs of Yakutia were connected to the Unified Energy System of Russia. Yakutskenergo transferred the supervision and control over the territory to the UES System Operator.



- As part of its strategy to promote advanced utility payment technologies in the Russian Far East, RusHydro Group pioneered single billing and payment centers in the Primorsky Krai, specifically in Vladivostok and Artem.



4 single billing and payment centers

were launched in 2019 by RusHydro in the Far East

February

- The engineering and blasting works conducted to clear a landslide at the Bureyskoye water reservoir helped bring the hydrological conditions back to normal, with Bureyskaya HPP now operating as usual.
- The divestment of RusHydro's 40% share in VolgaHydro, a hydropower equipment manufacturing joint venture in the Saratov Region, to Voith. The sale price was determined by an independent appraiser and fully offset the Company's investments in the project.



450 mn RUB

estimated share of RusHydro

March

- RusHydro Group and UC RUSAL commissioned, within two start-up complexes, the first train of the Boguchansky Aluminum Smelter, part of the Boguchansk Energy and Metallurgical Association project (BEMO).



The first train of the Boguchansky Aluminium Smelter was commissioned

May

- Volzhskaya HPP piloted a phase angle regulator, first of its kind in Russia. This unique ground-breaking equipment manufactured by the Power Machines – Toshiba. High-Voltage Transformers JV is set to support power transmission from Volzhskaya HPP.



The phase angle regulator at Volzhskaya HPP was fully developed in Russia

April

- PJSC RusHydro paid coupons on and fully redeemed its series BO-P04 exchange-traded bonds for a total of RUB 15 bn¹, which helped reduce its rouble-denominated weighted average cost of debt to 7.8% p. a. and improve its financial performance.
- The Board of Directors approved an updated version of RusHydro's dividend policy aiming to enhance dividend distribution transparency and predictability. The new document suggests that 50% of its profit under the IFRS consolidated financial statements be distributed as dividends in the base-case scenario. It also sets out the minimum dividend payout determined as the average amount of dividends paid for the previous three years.
- RusHydro held a public hearing on the 2018 annual report draft involving the representatives of the main groups of stakeholders.
- As part of the Comprehensive Modernization Program, RusHydro started upgrading Kubanskaya PSPP in the Karachay-Cherkess Republic, Russia's longest-standing pumped storage power plant.



all 6 hydropower units

will be replaced for the newer highly-efficient equipment

June

- As part of the Comprehensive Modernization Program, Novosibirskaya HPP saw all of its turbines replaced with new equipment boasting enhanced capacity and higher efficiency (94% vs 87%). The new turbines meet the latest environmental safety requirements. The upgrade is designed to increase the plant's installed capacity.
- RusHydro started constructing two smaller HPPs (Krasnogorskaya HPP-1 and HPP-2) on the Kuban River in the Karachay-Cherkess Republic, each with an average annual output of 83.8 mn kWh. Both HPPs are expected to be launched in 2021-2022.



24.9 MW

is the projected installed capacity of both smaller HPPs



¹ In accordance with the Securities Issue Resolution (state registration number: 4B02-04-55038-E-001P dated April 1, 2016), the coupon amount totaled RUB 774.15 mn. The accumulated coupon was paid for the period from October 4, 2018 to April 4, 2019.

August

- ➔ RusHydro sponsored projects to restore populations of the snow leopard in the Krasnoyarsk Territory and cranes in the Republic of Khakassia, with the Sayano-Shushensky and Khakassia nature reserves as its key partners.
- ➔ RusHydro commissioned a 300 GCal/h hot water peaking boiler plant, a major heat supplier in Yakutsk. The new energy facility ensures a more stable heat supply in the capital of Yakutia, partially replacing the capacity of the decommissioned Yakutskaya GRES.
- ➔ RusHydro fully paid the 2018 dividends, which amounted to RUB 15.9 bn (up 42% y-o-y), or 50% of its IFRS net profit for 2018.



50%

of net profit under IFRS was assigned for dividend payments

September

- ➔ RusHydro Group launched a chain of ten fast charging stations for electric vehicles, first of its kind in the Far East. The new facilities are installed in such cities of the Primorsky Krai (the leading region in terms of EV numbers) as Vladivostok, Ussuriysk and Artem.
- ➔ RusHydro Group opened shared utility payment centers in the Primorsky Krai and Khabarovsk territories. The high-tech facilities meet all the latest requirements to provide a seamless customer experience.
- ➔ Zagorskaya PSPP, Russia's largest pumped storage power plant, started distributing electricity through a new 500 kV gas-insulated switchgear. Installation of the 500 kV gas-insulated switchgear at Zagorskaya PSPP was carried out as part of RusHydro's Comprehensive Modernization Program.
- ➔ RusHydro Group put into operation Nizhne-Bureyskaya HPP in the Amur Region, Russia's most powerful hydroelectric plant constructed in the post-Soviet period. With the fourth hydropower unit launched, Nizhne-Bureyskaya HPP reached its design capacity of 320 MW.



320 MW

Installed capacity of the Nizhne-Bureyskaya HPP

July

- ➔ The Government of Russia approved the TPP construction and upgrade projects in the Far East proposed by RusHydro, including the construction of Artyomovskaya CHPP-2, Khabarovskaya CHPP-4 and the second stage of Yakutskaya GRES-2 and the upgrade of Vladivostokskaya CHPP-2. Sufficient return on investment will be secured via a mechanism offered by the government program for the thermal power plant modernization in Russia.
- ➔ As part of the Comprehensive Modernization Program, RusHydro Group started upgrading Chirkeyskaya HPP, the largest hydroelectric power plant in Dagestan and the North Caucasus. It plans to replace most of the HPP equipment and reconstruct the hydraulic structures, thus adding 100 MW to its capacity.



100 MW

will be the capacity gain of Chirkeyskaya HPP resulting from modernization



November

- ➔ PJSC RusHydro successfully completed the offering of its RUB 15 bn five-year rouble-denominated Eurobonds on the Irish Stock Exchange. The coupon rate was set at 6.8% per annum (an all-time low for corporate rouble-denominated Eurobonds at the time of placement) and the issue was oversubscribed by almost five times.
- ➔ RusHydro and VTB signed an agreement on amending the forward contract. The forward rate was reduced by 0.5% per annum, with the contract's term extended by three years up to 2025.
- ➔ RusHydro put into operation Sakhalinskaya GRES-2 in the Sakhalin Region. This state-of-the-art 120 MW thermal power plant was built to replace the obsolete Sakhalinskaya GRES. It is expected to produce 840 mn kWh annually, covering a third of Sakhalin's demand for electricity.
- ➔ RusHydro Group completed the 15th season of oBEREGAi, a nationwide charitable environmental program designed to engage the Company's employees and volunteers in cleaning up the banks of rivers, reservoirs and lakes. The total number of eco-marathon volunteers in 2019 exceeded 2,500 people from 20 regions who collected over 3,500 bags of garbage.
- ➔ RusHydro opened the first shared utility payment center in Yakutia.
- ➔ RusHydro commissioned the first charging station for electric vehicles in the Amur Region. Lessons learned from operation of the Company's charging equipment in the Far Eastern Federal District will be used in the joint project of RusHydro and the Amur Region aimed at promoting electrical vehicles and charging infrastructure.

**120 MW**

is the capacity of Sakhalinskaya GRES-2

October

- ➔ PJSC RusHydro began levelling of the Zagorskaya PSPP-2 building. The works to level the station node building at Zagorskaya PSPP-2 are scheduled to be completed in 2022, with a decision on further construction steps to be taken after that.
- ➔ RusHydro made it to the Global 2000 list of the World's Best Employers culled by Forbes and Statista. The world's top 500 employers include seven Russian companies, but RusHydro is the only power generating company on the list.

**top-500**

RusHydro holds a position among top-500 world's best employers

December

- ➔ RusHydro Group completed the restructuring of assets in the Kamchatka Territory by merging JSC Geoterm and PJSC KamGEK with PJSC Kamchatskenergo, the region's largest energy company. The consolidation exercise is key to enhancing our efficiency in the Russian Far East and optimising RusHydro Group's corporate structure.
- ➔ Nizhne-Bureyskaya HPP completed a unique hybrid renewable generation project, with 1,3 MW solar panels installed at a hydropower plant for the first time in the history of the Russian energy sector. The solar plant will help Nizhne-Bureyskaya HPP save on own power consumption, thus increasing net supply of electricity and enhancing the HPP efficiency.

**1.3 MW**

is the total capacity of solar panels

Events after the reporting date

January

→ DEK was authorized to distribute heat and electricity in Kamchatskenergo's regions of operation. The redistribution of sales functions within RusHydro Group will help introduce uniform operating standards, resulting in a more efficient power supply to consumers.



The project

of consolidation of RusHydro's retail assets is implemented in the most of the Far Eastern regions

March

→ A deal was sealed to sell RusHydro Group's stake in International Energy Corporation (CJSC MEK, Armenia) managing Sevan-Hrazdan Cascade HPP. The buyer fully refinanced the credit liabilities of CJSC MEK raised against RusHydro's surety. After the closure of the deal, RusHydro Group's financial debt went down by RUB 4 bn and the Group's loan portfolio was no longer exposed to currency risks.



By 4 bn RUB

decreased RusHydro Group's financial debt as a result of the deal

February

→ RusHydro inaugurated Zaramagskaya HPP-1 in the Republic of North Ossetia. The new facility is the largest power plant in the republic and the third most powerful hydroelectric plant in North Caucasus¹. The 346 MW power plant will produce 842 mn kWh of electricity annually. With Zaramagskaya HPP-1 commissioned, the power system of North Ossetia took a quantum leap as the region's total installed capacity quadrupled and its self-sufficiency in power increased from 20% to 70%.



346 MW

is the installed capacity of Zaramagskaya HPP-1

April

→ The first turbine unit of the TPP in Sovetskaya Gavan was connected to the grid and synchronized with the United Energy System of Russia. As part of the comprehensive tests, the turbine unit pilot run was performed, and it successfully generated first kWh for the power system.

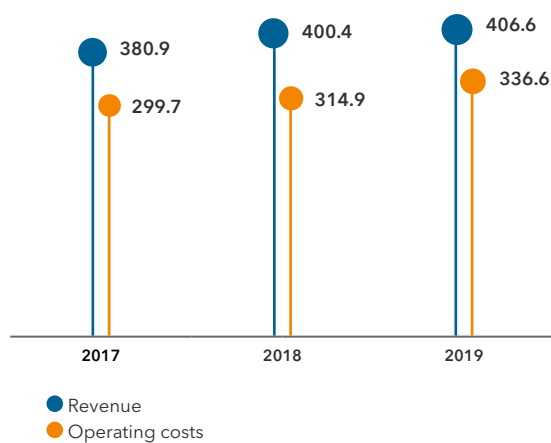


→ RusHydro and the Sakhalin Region signed an agreement on the power charging infrastructure development. The parties agreed that RusHydro will start the installation of charging stations for electric cars on the territory of the Sakhalin Region in 2020.

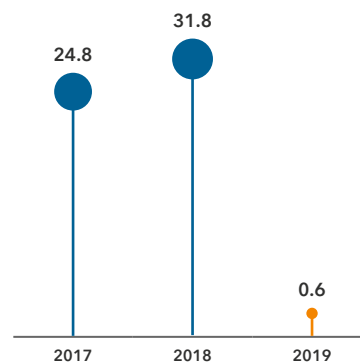
¹ Zaramagskaya HPP-1 was commissioned in December 2019, with power output as at the end of the year totaling 1.7 mn kWh.

Key 2019 figures

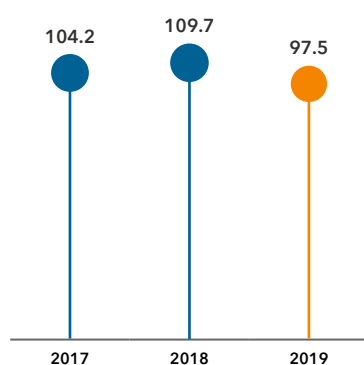
Revenue and operating costs, RUB bn



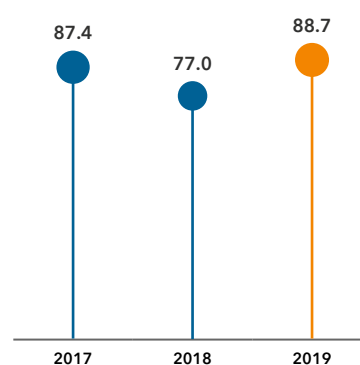
Net income, RUB bn



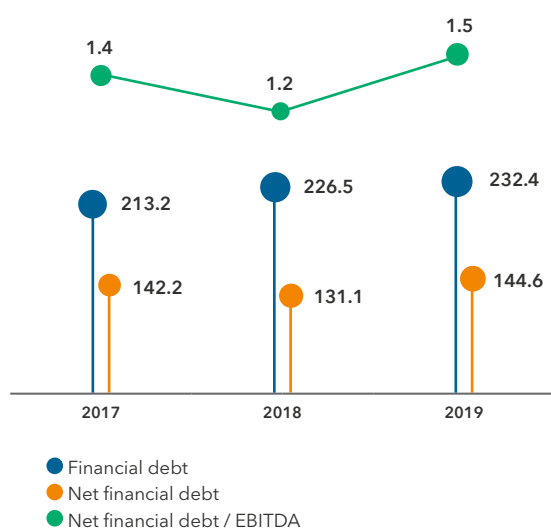
EBITDA, RUB bn



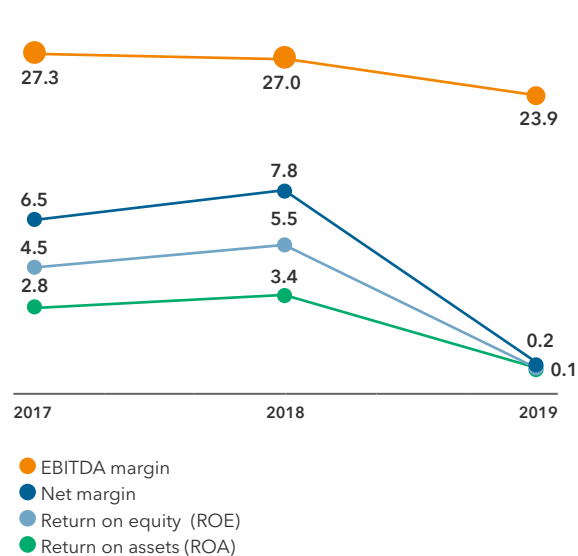
CAPEX, RUB bn



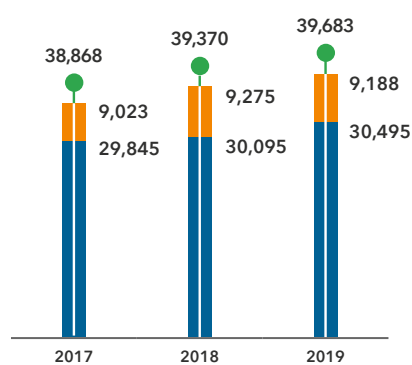
Financial and net financial debt, RUB bn



Margin indices, %

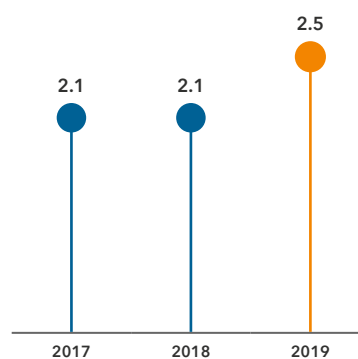


Installed capacity, MW

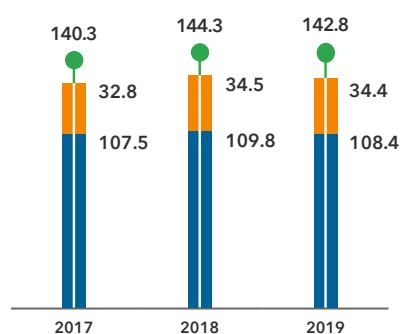


- RusHydro Subgroup
- RAO ES East Subgroup
- RusHydro Group

Health and safety expenses, RUB bn

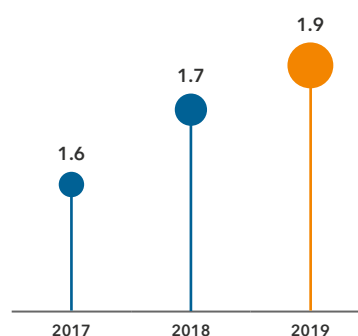


Electricity generation, bn kWh

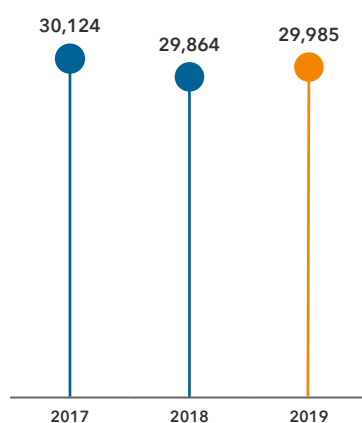


- RusHydro Subgroup
- RAO ES East Subgroup
- RusHydro Group

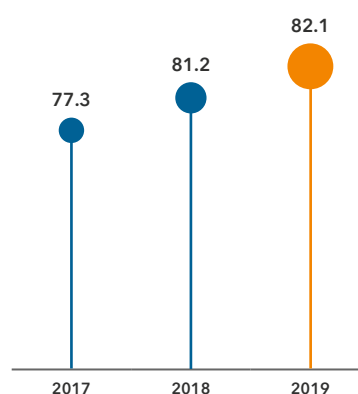
Environmental protection expenses and investments, RUB bn



Heat supply, '000 Gcal



Tax payments to budgets of different levels, RUB bn



Awards and ratings

Credit ratings

International:

S&P Global Ratings

In 2019, the agency maintained the long-term credit ratings of PJSC RusHydro and its Eurobonds at an investment grade BBB- (stable outlook).

Fitch Ratings

In December 2019, the agency affirmed the long-term credit

rating of PJSC RusHydro and the credit ratings of the Company's bonds and all of the Group's Eurobond issues at an investment grade BBB- (stable outlook).

Moody's

In February 2019, the agency upgraded the credit ratings of PJSC RusHydro and all of the Group's Eurobond issues to an investment grade Baa3 (stable outlook).

National:

ACRA

In June 2019, ACRA affirmed its long-term credit rating on RusHydro and its bonds at AAA(RU) (stable outlook), which represents the top reliability level, and also upgraded the Company's standalone creditworthiness assessment (SCA) to aa.

ESG ratings and rankings

FTSE4GOOD

Following a successful independent assessment, PJSC RusHydro continued to be included in this sustainability index.

RobecoSAM

The Company consistently ranks high in the agency's rating, scoring 34 points in economic, environmental and social dimensions in 2019.

Carbon Disclosure Project (CDP)

In 2019, PJSC RusHydro received a D ranking, which is a median result among Russian companies.

ISS-oekom

2019 saw the Company's rating upgraded to C.

Sustainalytics

In 2019, the international agency upgraded PJSC RusHydro's rating to 61 points.

WWF Russia

PJSC RusHydro hit the second spot in Russia's first environmental transparency ranking of heat and power generating companies. Moreover, the Company won the highest scores in two (environmental management and information disclosure/transparency) out of three ranking criteria.

Corporate transparency rating of the largest Russian companies, RRN

PJSC RusHydro scored 94.4 points ranking second and achieving a Premium transparency level.

Leaders of Russian Business by the Russian Union of Industrialists and Entrepreneurs

In 2019, PJSC RusHydro ranked at the top of the Responsibility and Transparency and Sustainability Vector indices. In addition to that, in 2019, the Company won the *Leaders of Russian Business: Dynamics and Responsibility* award for the High Quality of Sustainability Reporting.

Employer awards

➔ In 2019, RusHydro Group's Walking from the Far East to the North Caucasus initiative was named the best project at the contest for best socially responsible companies in the energy and oil and gas industries sponsored by the Russian Ministry of Energy. This project also won the first place at Enabling Our Future, Russia's sixth nationwide contest for best employer practices in human capital development sponsored by the Russian Ministry of Education and Science.

➔ The corporate pension plan for employees at RusHydro's branches won the Grand Prix in the nomination for HR Solution of the Year 2019 at the Crystal Pyramid contest held by the organizing committee of the Russia & CIS HR Directors Summit and the Russian Union of Industrialists and Entrepreneurs.

➔ RusHydro Group received an award from the Russian Ministry of Energy and the Moscow City Government at Russian Energy

Week 2019 for its contribution to the promotion of the energy sector, energy conservation and engineering education.

→ The Presidential National Council for Professional Qualifications commended RusHydro for its participation in developing an industrial framework for professional qualifications, key approaches to professional and public accreditation in the Russian power sector, and timely initiatives aiming to debottleneck the formal procedures for occupational examinations held in the form of independent assessments.

→ PJSC RusHydro made it to the Global 2000 list of the World's Best Employers culled by Forbes and Statista. The world's top 500 employers include seven Russian companies, but PJSC RusHydro is the only power generating company on the list.

Annual report contests and ratings

LACP

RusHydro Group's annual report for 2018 won Vision Awards, ranking highest among global energy companies and No. 37 in the Top 100 Worldwide.

ARC

RusHydro Group's annual report for 2018 won the gold prize beating other global energy companies.

Report Watch

Report Watch maintained its rating on RusHydro Group's annual report for 2018 at B+.

Corporate & Financial Awards

RusHydro Group's annual report for 2018 was shortlisted in the

best online report category and was commended for its exceptionally high quality.

MarCom Awards

RusHydro Group's annual report for 2018 received gold awards in the Best Corporate Annual Report and Best Utilities Annual Report nominations.

Moscow Exchange

RusHydro Group's annual report for 2018 won the 22nd annual competition in the Best Disclosure on Corporate Governance nomination and was one of the runner-ups in the Best Disclosure on Sustainable Development nomination.

RAEX (Expert RA)

RusHydro Group's annual report for 2018 received the highest rating of 5 stars and won the first place in the Best Annual Report (Non-Financial Sector) nomination.

Silver Threads

RusHydro Group's annual report for 2018 won the first place in the Best Annual Report category.

PR awards

→ RusHydro Group's Water Day initiative was named the best project in environmental education at Reliable Partner – Ecology, Russian national contest for best environmental practices held under the auspices of the Federation Council's Committee for Agrarian and Food Policy, Ministry of Energy, Ministry of Natural Resources and Environment, Ministry of Industry and Trade and Ministry of Construction, Housing and Utilities.

→ PJSC RusHydro won top honors at the fifth All-Russian MediaTEK competition held under the auspices of the Russian Ministry of Energy in the *Best Consumer is a Reliable Partner*, *Best Federal Energy Company Press Service*, *Social and Environmental Initiative*, *State-of-the-Art Production Technology* and *Energy Sector Development* and *Best Corporate Media* nominations. The Company's subsidiaries and branches, including Zeyskaya HPP, PJSC Yakutskenergo, JSC DGK and JSC DRSK, were also commended.

→ PJSC RusHydro's Most Beautiful Energy photo album published to coincide with the Group's 15th anniversary won awards at Silver Threads 2019, Russian national contest for media resources, in nominations for the Best Corporate Photo Album and the Best Infographics in Corporate Media.

→ PJSC RusHydro won the Leaders of Corporate Charity competition in the nomination for the Best Environmental Program Contributing to the UN Sustainable Development Goals. The Company was highly praised for its environmental project focusing on the reintroduction of the Persian leopard in North Ossetia as well as the Company's progress in annual corporate charity rankings. The competition is held by the Donors Forum, the Vedomosti business newspaper and PricewaterhouseCoopers, a global network of audit and consulting firms.

→ RusHydro's project for integrated information support to corporate events won a prize at the International Competition for Internal Communication Projects – Intercomm-2019.

GEOGRAPHICAL SPREAD



30

regions
of presence



HPPs

1. Boguchanskaya HPP
2. Bureyskaya HPP
3. Cascade of Verkhnevolzhskiy HPPs
4. Cascade of Vilyuyskiy HPPs
5. Volzhskaya HPP
6. Votkinskaya HPP
7. HPPs of Dagestan Branch
8. Zhigulevskaya HPP
9. Zagorskaya PSPP
10. Zeyskaya HPP
11. Zelenchukskaya HPP-PSPP
12. HPPs of Kabardino-Balkarian Branch
13. Kamskaya HPP
14. Kolymskaya HPP
15. Cascade of Kubanskiy HPPs
16. Nizhegorodskaya HPP
17. Nizhne-Bureyskaya HPP
18. Novosibirskaya HPP
19. Saratovskaya HPP
20. Sayano-Shushensky Branch
21. HPPs of the Northern Ossetian Branch
22. Tolmachevskiy HPPs
23. Cheboksarskaya HPP
24. Zaramagskaya HPP-1
25. Zagorskaya PSPP-2
26. Krasnogorskiy SHPPs
27. Ust-Srednekanskaya HPP
28. Verkhnebalkarskaya SHPP
29. Ust-Dzhegutinskaya SHPP
30. Barsuchkovskaya SHPP



GeoPPs

31. Verkhne-Mutnovskaya GeoPP
32. Mutnovskaya GeoPP
33. Pauzhetskaya GeoPP



Solar PPs

SPPs in the Republic of Sakha (Yakutia),
19 power plants



Wind PPs

34. WPP in Ust-Kamchatsk
35. WPP in Nikolskoe
36. WPP in Novikovo
37. WPP in Tiksi

GEOGRAPHICAL SPREAD

[102-4]



30

regions
of presence



RusHydro Group comprises over 60 hydropower plants, thermal power and RES generating facilities, as well as electric grid, energy retail facilities, engineering and service companies, design and research institutes.



Thermal PPs

- 38. Amurskaya CHPP-1
- 39. Anadyrskaya Gas Engine CHPP
- 40. Anadyrskaya CHPP
- 41. Artemovskaya CHPP
- 42. Birobidzhanskaya CHPP
- 43. Blagoveshenskaya CHPP
- 44. Vladivostokskiye CHPPs
- 45. Kamchatskiye CHPPs
- 46. Komsomolskiye CHPPs
- 47. Kyzym Mobile PP
- 48. Labytnangi Mobile PP
- 49. Magadanskaya CHPP
- 50. Nerunginskaya GRES
- 51. Nikolaevskaya CHPP
- 52. Partizanskaya GRES
- 53. Primorskaya GRES
- 54. Raychikhinskaya GRES
- 55. Urengoy Mobile PP
- 56. Khabarovskiye CHPPs
- 57. Chulmanskaya CHPP
- 58. Egvekinotskaya GRES
- 59. Yuzhno-Sakhalinskaya CHPP-1
- 60. Yakutskaya GRES
- 61. Arkagalinskaya GRES
- 62. Mayskaya GRES
- 63. Chaunskaya CHPP
- 64. Yakutskaya CHPP
- 65. Yakutskaya GRES-2
- 66. Vostochnaya CHPP
- 67. Sakhalinskaya GRES-2
- 68. Sovetskaya Gavan CHPP



Retail companies

- 69. Far-Eastern Energy Company (DEK)
- 70. Krasnoyarskenergosbyt
- 71. Ryazan Retail Energy Company
- 72. Chuvash Retail Energy Company



Research and design organizations

- 73. Vedeneyev VNIIG
- 74. Hydroproject institute n. a. S. Zhuk
- 75. Lenhydroproject institute
- 76. Mosoblhydroproject
- 77. Khabarovsk Energy Technological Company



Electric grid company

- 78. Far-Eastern Distribution Company (DRSK)



RusHydro Group supports
19 specially protected natural
areas, including the conservation
of biodiversity programs



RusHydro Group comprises over 60 hydropower plants, thermal power and RES generating facilities, as well as electric grid, energy retail facilities, engineering and service companies, design and research institutes.

Markets served

Macroeconomic overview

In 2019, the global economy continued to slow down, growing at a mere 2.4%, the lowest rate in the last decade¹. An escalating trade war between the USA and China, the two world's economic superpowers, pushed the growth back to the levels seen in 2015–2016, with an increased global uncertainty hitting the investment activity and demand for durables.

The deteriorating economic outlook has prompted central banks to put on hold monetary

tightening, which led to the relaxation of financial conditions globally. At the same time, many emerging markets saw positive effects from resumed capital inflows offset by weaker external demand.

According to the Rosstat data for 2019, Russia's real GDP grew by 1.3%². In the previous year, the GDP expanded by 2.5%.

Across industries, the non-primary sector saw the biggest

y-o-y decline as regards its positive contribution to GDP, while the production input remained flat as a result of stable growth.



1.3%

was the growth of Russia's real GDP

Global GDP, %

GDP	2016	2017	2018	2019
World	2.6	3.2	3.0	2.4
Advanced economies	1.7	2.4	2.2	1.6
USA	1.6	2.4	2.9	2.3
Europe	1.9	2.5	1.9	1.1
Japan	0.6	1.9	0.8	1.1
Emerging markets and developing economies	4.2	4.5	4.3	3.5

Electricity market outlook for key global markets

According to the International Energy Agency, energy consumption worldwide will

keep growing at 1.3% per annum in line with current trends. At the same time, there is a shift

towards renewables, albeit too slow to match the expansion of the global economy and population.

¹ The World Bank's Global Economic Prospects report, January 2020.

² Statistical datamart at <https://showdata.gks.ru/report/280029/>

Global energy consumption: 2040 outlook¹ ('000 TWh)

Territory	2015	2020	2025	2030	2035	2040
Asia Pacific	8.8	10.6	12.4	14.5	16.8	19.0
North America	4.3	4.3	4.4	4.4	4.5	4.7
Europe	3.2	3.4	3.6	3.8	4.0	4.2
Latin America	1.3	1.4	1.5	1.7	2.0	2.2
CIS	1.0	1.1	1.2	1.3	1.5	1.7
Middle East	0.9	1.0	1.1	1.2	1.4	1.7
Africa	0.6	0.7	0.8	1.1	1.3	1.5
Total	20.1	22.5	25.0	28.0	31.5	35.0

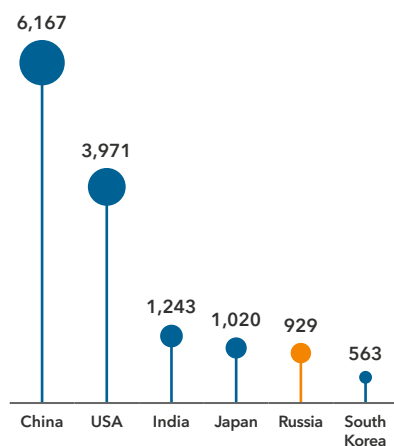
Power generation for the period until 2040 will increase by 70%, with over 85% of this growth

coming from non-OECD countries. Fossil fuel will be used to generate less than 50% of the global power

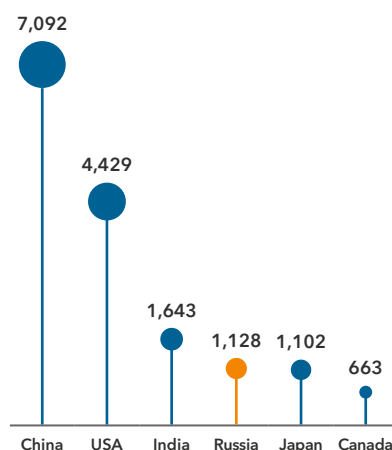
supplies. Global electricity capacities will almost double towards 2040.

Russia's position in the global electrical energy system

Power consumption leaders, TWh



Power generation leaders, TWh



At the end of 2019, Russia was the

4th-largest

electricity producer and

5th-largest

electricity consumer in the world

¹ EnerOutlook 2019.

Russian electricity and capacity market

The Russian electricity and capacity market is comprised of the wholesale electricity and capacity market (WECM) and the retail electricity market (REM).

The wholesale market is a place where a special type of commodities – electricity and capacity – are traded within the Unified Energy System across Russia's economic space. Capacity as a commodity is an obligation to properly maintain power generating facilities in order to timely meet the consumer demand for electric power. The retail market trades in only one commodity – electric power.

Under the law, all electricity and capacity facilities with an installed capacity of over 25 MW located in the price and non-price zones are required to sell their products in the WECM only. Power plants with a capacity below 5 MW are required to trade in the REM only, while power plants with a capacity between 5 MW and 25 MW can trade in both the WECM and REM.

From 2011, system services are a major instrument for maintaining reliability and high quality of the Unified Energy System of Russia in the fully liberalized electricity and capacity markets.

Wholesale electricity and capacity market in the first and second price zones

The WECM participants include generating companies, electric power exporters/importers, electricity retailers, electric grid companies (electricity purchases



Regulatory framework:

- Federal Law No. 35-FZ On Electric Power Industry dated March 26, 2003;
- the Russian Government's Resolution No. 1172 On Approval of Rules for the Wholesale Electricity and Capacity Market and on Amendments to Certain Acts of the Government of the Russian Federation Concerning Organization of the Wholesale Electricity and Capacity Market dated December 27, 2010;
- the Russian Government's Resolution No. 442 On the Operation of Retail Electricity Markets, Full and/or Partial Limitation of Electricity Consumption dated May 4, 2012;
- an agreement for accession to the wholesale market trading system, and WECM regulations.

to cover transmission losses), and large consumers. The wholesale electricity and capacity market covers both price and non-price zones. The first price zone comprises the European part of Russia and Urals, while the second price zone encompasses Siberia.

The WECM has several sectors that offer different transaction terms and delivery times:

- regulated contracts (RC);
- the day-ahead market (DAM);
- the balancing market (BM);
- capacity auctions (KOM);
- capacity supply agreements (DPM);
- capacity sale contracts for must-run generating facilities;
- unregulated bilateral contracts, as well as unregulated electricity and/or capacity sales contracts (FBC, FECC, FCC).

The Market Council Non-Profit Partnership established under Federal Law No. 35-FZ On Power Industry dated March 26, 2003

is responsible for running the wholesale market's commercial infrastructure.

Trading System Administrator of the Wholesale Electricity and Capacity Market (JSC TSA) is responsible for administering electricity and capacity transactions in the wholesale market (the trading system of the wholesale market).

Financial settlements between the WECM participants are handled through the Center for Financial Settlements (CFS).

The WECM technological infrastructure is administered by the System Operator of the Unified Energy System which exercises exclusive and centralized operational management of Russia's Unified Energy System and monitors compliance with the system's technological parameters. The market's technological

infrastructure is also supported by the Federal Grid Company (FGC UES), which manages the Unified National Electric Grid (UNEG), and interregional distribution grid companies (IDGC).

The activities of infrastructure operators, including their pricing policies and counterparty relations, are subject to government regulation and control.

Retail electricity markets

Companies operating within the designated price zones of the retail electricity market are guided by the retail market pricing rules based on the WECM tariffs. They also take into account approved tariffs for

services subject to government regulation.

Electricity sold in the retail market is either purchased in the WECM or sourced from generating companies that do not operate in the wholesale market. In the Russian regions included in non-price zones of the wholesale market, the retail electricity price for end consumers is set based on the wholesale market prices. Prices aligned with the wholesale market apply to all end consumers, with the exception of households and equivalent consumer categories.

Households and equivalent consumer categories are supplied with power at regulated prices (tariffs) approved by the regional executive authorities in charge of tariff regulation.

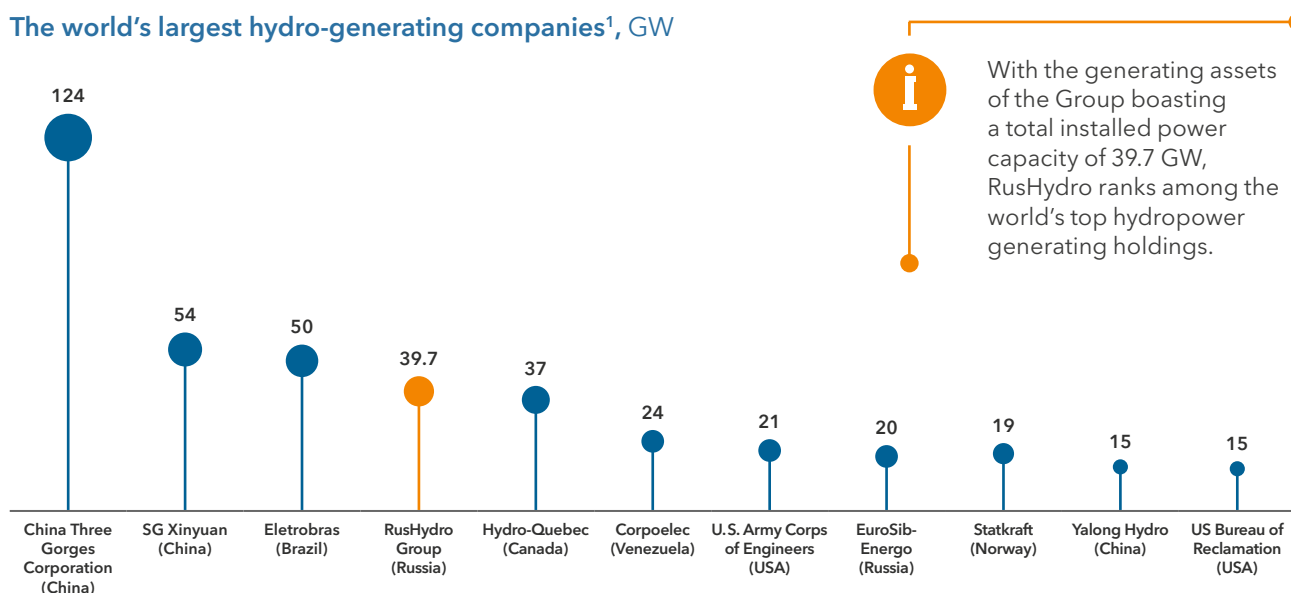
System services market

The types of services to ensure system reliability, the procedure to select power suppliers and consumers in charge of such services, applicable service provision rules and pricing mechanisms are all set out in the Russian Government's Resolution No. 117 *On Selecting Electric Power Suppliers and Consumers to Provide System Reliability Services, Rendering Such Services, and Approving Amendments to Acts of the Government of the Russian Federation Concerning the Provision of System Reliability Services* dated March 3, 2010.

Generating companies and major electricity consumers render system reliability services under the supervision of the System Operator.

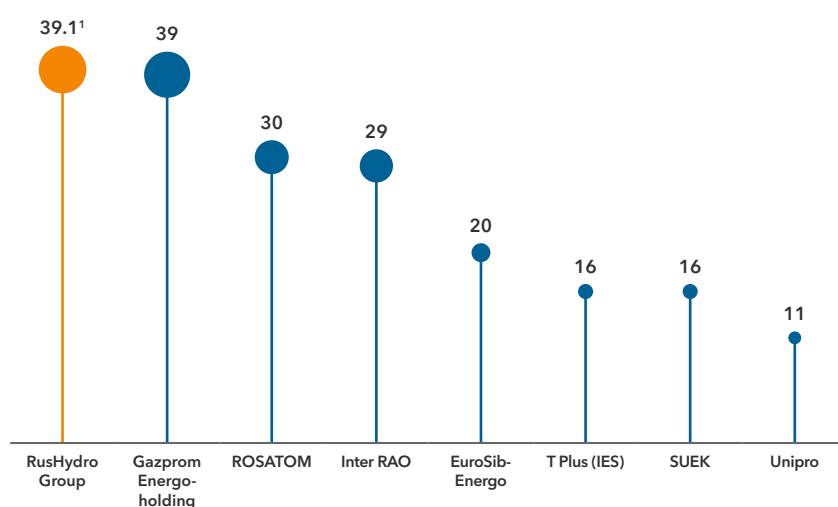
RusHydro's position in the industry ^{[102-6][OS]}

The world's largest hydro-generating companies¹, GW



¹ Hydropower generation has the biggest share in the installed capacity of the listed companies. The chart shows total installed capacity data for all types of generation.

Russia's top generating companies by installed capacity, GW



RusHydro Group is one of Russia's leading electric power producers, with independent energy companies acting as its main competitors.

The Group sells electricity in Russia both in the wholesale electricity and capacity market (first and second price zones and UES East's non-price zone) to major consumers and to retail consumers via its retail companies and guaranteed suppliers.

The Company also provides reactive power capacity adjustment services to the System Operator without generating electricity.

Based on the plans of the Russian Ministry of Energy, the Scheme and Program to Develop the Unified Energy System of Russia in 2019–2025², and analysis of RusHydro's

Investment Program and Business Plan, we expect that:

- RusHydro Group's generation share will decline from 13.0% in 2019 to ca. 12.8% in 2020, with the Group's output expected to drop due to the anticipated fall in water levels;
- the share of RusHydro Group's power generating facilities in Russia's total installed capacity will remain flat at 15.5%.

The key developments affecting the Group's markets in 2019 included:

- the enactment of the Russian Government's Resolution No. 43 On Selecting Projects to Upgrade the Generating Facilities of

Thermal Power Plants dated January 25, 2019. Following the upgrade, the selected facilities will generate power at a special (higher) capacity price to compensate for upgrade costs. RusHydro Group's projects were included in the list;

- the inclusion of Central and Western energy hubs of Yakutia in the non-price zone of the Far Eastern WECM effective from January 1, 2019.

The Group's key competitive advantages include high profitability, flexibility of hydropower generating facilities, eco-friendliness and economic efficiency of production processes.

RusHydro's share in Russia's electric power market³, %

Year	Electricity output, mn kWh		Share, %	Installed capacity, MW		Share, %
	Russia	RusHydro Group		Russia	RusHydro Group	
2017	1,073,700	139,820	13.0	246,868	38,479	15.6
2018	1,091,700	143,853	13.2	250,400	38,803	15.5
2019	1,096,200	142,414	13.0	251,958	39,122	15.6

¹ Excluding the installed capacity of Armenia-based electricity generating facilities (CJSC MEK).

² Approved by Order of the Russian Ministry of Energy No. 174 dated February 28, 2019.

³ Excluding CJSC MEK.

RusHydro Group SWOT analysis [102-15]

Strengths	Weaknesses
<ul style="list-style-type: none"> → strong capitalization upside; → large scale of operations, which enhances the Company's appeal in the capital markets; → power generation not requiring fuel and therefore not susceptible to fluctuations in fossil fuel prices (HPP/PSPP-based); → long lifespan of hydropower facilities; → flexibility of hydropower generation, with HPPs and PSPPs viewed as key providers of system services; → use of HPPs for river runoff control, flood risk mitigation, fresh water accumulation and other water management purposes. 	<ul style="list-style-type: none"> → fundamental dependence on natural conditions; → physical and moral wear and tear of production assets, especially in the Far Eastern Federal District; → a long investment cycle and high capital intensity of CAPEX projects; → economically inefficient infrastructure expenditures and projects; → high leverage of JSC RAO ES East; → fundamentally undervalued shares.
Opportunities	Threats
<ul style="list-style-type: none"> → creating a market model to support the operation of the existing hydropower facilities and new growth projects; → significant untapped hydropower resources and HPP-focused development; → stronger government role in ensuring energy security; → the emergence and use of advanced equipment and technologies to achieve operational excellence; → creating a RES-favourable regulatory environment; → boosting the Company's investment appeal and potentially attracting a strategic investor(s). 	<ul style="list-style-type: none"> → higher interest rates on long-term borrowings; → reduced government capacity to finance infrastructure projects; → shift to a market model which disregards the HPP and PSPP contribution to the UES reliability; → change in the government's regulatory activity to support energy generation from renewable sources; → slow growth of demand from the current and new industrial consumers in Siberia and the Russian Far East; → slow increase in unregulated prices in the wholesale electricity market; → suppliers and contractors lacking resources to implement large-scale industry development programs, an accelerated increase in equipment and materials prices; → risk of industrial disasters.

RusHydro Group PEST analysis

Political and regulatory factors	Economic factors
<ul style="list-style-type: none"> → changes in the electricity and capacity pricing mechanisms in the liberalized segment; → changes in the support framework (DPM, RES-based DPM, surcharges); → new tariff system; → launch of the EAEU common electric power market. 	<ul style="list-style-type: none"> → electricity and heat consumption growth; → water inflow in the reservoir; → change in water taxes; → fuel prices; → change in the key interest rate; → investment activity.
Social and cultural factors	Technological factors
<ul style="list-style-type: none"> → effective demand from the current and prospective consumers; → payment discipline. 	<ul style="list-style-type: none"> → technological emergencies; → delayed commissioning of new energy facilities; → irregular fuel supplies.

Electricity markets in the Far Eastern Federal District

The Far Eastern Federal District is one of Russia's largest regions covering 6,215.9 thousand km² or 36.4% of Russia's total area. RusHydro Group is the region's main electricity supplier¹.

Energy tariffs in the non-price and isolated zones of the Far Eastern Federal District are set by the federal government authorities in charge of tariff regulation (regulators) in line with the applicable pricing policies and rules for the government regulation of electricity and heat tariffs in Russia. There are no unregulated tariff zones in the Far Eastern Federal District due to systemic restrictions.

In the WECM's non-price zone, a single purchaser model has been put in place, with suppliers selling electricity and capacity to a single purchaser at set rates. Wholesale customers buy electricity and capacity from the single purchaser at prices calculated by JSC TSA.

Far Eastern Energy Company (DEK) has been designated as the single purchaser in the Far East. Accounting for over 50% of retail electricity supplies in the Far East, DEK is an electricity retailer created through restructuring of regional energy and electrification companies.² The company is the guaranteed supplier in the Amur Region, Jewish Autonomous Region, and Khabarovsk and Primorsky Krai. DEK's retail supplies account for over 85% of the UES East electricity consumption.

Retail electricity prices factor in the following regulated components: wholesale prices (if applicable), tariffs from the generating facilities that serve the



Macroregion's social and economic development

According to Russia's social and economic development outlook to 2024, the Amur Region and the Chukotka Autonomous Area will be the fastest-growing areas in the Far East, with the biggest increase in the gross regional product (GRP), industrial output and investment activity. The Sakhalin Region will see the weakest GRP growth due to reduced oil and gas production.

GRP GAGR in 2020-2024

Region	Ranking	CAGR, %
Chukotka Autonomous Area	1	108.8
Irkutsk Region	2	108.7
Amur Region	3	106.1
Magadan Region	4	105.4
Moscow Region	5	104.9
Ulyanovsk Region	6	104.8
Republic of Sakha (Yakutia), Yamal-Nenets Autonomous Area	7	104.5
Yaroslavl Region	8	104.2
Republic of Adygeya, Sverdlovsk Region	9	104.1
Novosibirsk Region	10	104.0

retail market, grid transmission tariffs and the sales surcharge.

In some areas of the Far East, including the isolated energy systems of the Kamchatka Territory, Magadan Region, Chukotka Autonomous Area and the Sakhalin Region, the retail market is the only available option as these areas are not linked to the Unified Energy System of the East.

To bring electricity tariffs in the Far East in line with the Russian base (average) rate, a surcharge was added to the capacity price in the first and second price zones

of the WECM. RusHydro has been designated by the Russian Government to collect and transfer the surcharge amount to the Far East governments (Magadan and Sakhalin regions, the Kamchatka Territory, the Republic of Sakha (Yakutia) and the Chukotka Autonomous Area). This measure has helped reduce the accounts receivable from current consumers in the Far Eastern Federal District and attract investments in the macroregion's energy-intensive industrial projects to help create potential effective demand for electricity.

¹ Excluding the Trans-Baikal Territory and the Republic of Buryatia.

² In accordance with paragraph 170 of the Russian Government's Resolution No. 1172 of December 27, 2010.