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GAZPROM ENERGOHOLDING GROUP

SUSTAINABILITY REPORT 2016-2017



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# **GAZPROM ENERGOHOLDING GROUP**

**SUSTAINABILITY REPORT  
2016–2017**



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# STATEMENT FROM THE CEO OF GAZPROM ENERGOHOLDING GROUP

Dear colleagues and partners,

Our companies provide uninterrupted energy supply to industrial and residential consumers across 14 regions of Russia, including the country's two largest cities, Moscow and St Petersburg.

Our business is driven by a focus on reliable and efficient equipment operation, environmental safety, responsiveness to consumer interests and needs, and support for the social and economic development in our operating regions.



## Strategy Execution

2017 marked an important milestone in the history of Gazprom energoholding Group: the 10th anniversary of Gazprom's operation in the electricity sector. In its meeting, PJSC Gazprom's Board of Directors highlighted the successful achievement of the Company's key objectives within the Power Generation Strategy, approved in 2007. Today, Gazprom energoholding is the largest electricity producer in the heat generation industry and the indisputable leader in both heat generation and sales.

## Reliable Energy Supply

Over the last decade, we have met virtually all our investment commitments in capacity construction and upgrades, and commissioned 8.6 GW of new high-performance generating units.

Our companies have significantly contributed to enhancing the overall reliability, performance, and safety of the Russian energy system. By ensuring timely repair and scheduled maintenance of our equipment, we ensure a reliable energy supply to consumers, including during the peak demand autumn/winter period.

## Economic Performance

Since Gazprom's acquisition of major assets in the electricity industry, the average annual revenue of its generating companies has grown by 15% a year, and EBITDA by 18%–30% a year.

In 2017, Gazprom energoholding posted record-high financial and economic results.

We are continuing our operational efficiency and cost optimisation programmes. In 2016 and 2017, these efforts resulted in a total impact of RUB 9.8 bn.

We were able to drive the Group's Debt/EBITDA down to 1.1x in 2017 through accelerated deleveraging.

All our companies are financially stable, both individually and as part of the Group.

## Sustainable Use of Natural Resources and Reducing Emissions

2017 was declared the Year of the Environment in the Russian Federation.

Environmental protection has always been a priority for us. Last year, we reduced our total pollutant emissions by 7.1% year-on-year and our efforts to replace and upgrade equipment have significantly improved our environmental performance.

In addition to our environmental efforts, we also place a strong emphasis on social initiatives by arranging educational tours to our power plants for school students and students from industry-specific programmes, running environmental initiatives and contests, and organising employee volunteering opportunities such as river cleanups and tree planting.

## Prioritising Health and Safety While Creating an Environment for Professional Growth and Social Development

Our companies' performance relies heavily on the qualifications and skills of our people. In our labour practices, we pay specific attention to training, professional development, motivation, occupational safety, and promoting uniform standards of Gazprom Group's corporate culture.

Gazprom energoholding Group's generating companies fully contribute to improving the quality of life in their operating regions – not only through job creation and reliable supplies of heat and electricity to residential areas and both social and industrial facilities, but also by consistently supporting academic, sporting, and cultural events and initiatives. Targeted aid to children, senior citizens, and industry veterans is a priority in our social activities.

## Vision for the Future

In 2018, PJSC Gazprom approved its Power Generation Strategy for 2018–2027.

As our major shareholder, PJSC Gazprom sets key strategic goals for Gazprom energoholding Group such as securing reliable energy supply to consumers and ensuring sustainable profit growth. We are also preparing to engage in an ambitious capacity upgrade programme and will continue decommissioning inefficient equipment.

We pay specific attention to further enhancing our operational efficiency, driving technological advances, and using Russian-made equipment while exploring options to diversify our electricity business into high-potential domestic and international markets.

As part of our commitment to business openness and transparency, we have maintained an ongoing open dialogue with all our stakeholders and see our sustainability report as a crucial part of this dialogue.

Denis V. Fyodorov  
CEO, OOO Gazprom energoholding

# STAKEHOLDERS

GRI 102-43  
GRI 102-44

## Stakeholder Map<sup>1</sup>

The sustainable development of Gazprom energoholding Group's generating companies is directly linked to the quality of its stakeholder relations. The Group companies strive to maintain an open dialogue with all stakeholders, and regard responsibility, transparency, and taking account of all stakeholders in decision-making as essential elements to effective stakeholder relations.

### KEY STAKEHOLDER GROUPS

**GRI 102-42** Principles for defining stakeholder groups:

- Shared interests in, and expectations from, the Group companies
- Their contribution to achieving the Group companies' strategic goals
- Stakeholder engagement tools used by the Group companies

**GRI 102-40** **STAKEHOLDERS MOST CLOSELY LINKED TO GAZPROM ENERGOHOLDING GROUP ACTIVITIES**



## Stakeholder Engagement<sup>2</sup>

Stakeholder group	Topics	Key events
Shareholders and investors	<ul style="list-style-type: none"> <li>• Financial and operational results</li> <li>• Investment programmes</li> <li>• Dividend policy</li> <li>• Shareholder value growth</li> <li>• Operational efficiency improvement and cost reduction</li> <li>• Business development strategy</li> <li>• M&amp;A activities</li> </ul>	<ul style="list-style-type: none"> <li>• General Shareholders Meetings</li> <li>• PJSC Gazprom's Investor Day</li> <li>• OOO Gazprom energoholding's Energy Day</li> <li>• Gazprom energoholding Group's Analyst and Investor Day</li> <li>• Conference calls disclosing Gazprom energoholding Group's financial results, as well as conference calls with analysts and investors</li> <li>• Shareholder, analyst, and investor meetings at the RUSSIA CALLING! forum, ATON Energy Day, and BCS Finance Group Energy Day</li> <li>• Publishing presentations and information on the Group's corporate websites</li> </ul>
Lenders and rating agencies	<ul style="list-style-type: none"> <li>• Financial and operational results</li> <li>• Investment programmes</li> <li>• Debt ratios and debt portfolio structure</li> <li>• Credit policy</li> <li>• Business development strategy</li> <li>• M&amp;A activities</li> <li>• Dividend policy</li> </ul>	<ul style="list-style-type: none"> <li>• Obtaining and maintaining ratings from Standard &amp; Poor's and Fitch Ratings</li> <li>• Undertaking activities to obtain an ACRA rating</li> <li>• Negotiations to place bonds and secure bank loans</li> <li>• Negotiations within Gazprom Group regarding intragroup loans</li> <li>• Reporting the Group companies' performance results (financial position, liabilities, and potential risks)</li> </ul>
Local communities, civil society organisations, and local authorities	<ul style="list-style-type: none"> <li>• Uninterrupted heat and electricity supply</li> <li>• Compliance with environmental regulations and standards</li> <li>• Energy saving and energy efficiency</li> <li>• Compliance with safety standards and rules</li> <li>• Job creation and wage levels</li> <li>• Taxes</li> <li>• Philanthropy</li> <li>• Joint activities with NGOs and local authorities</li> <li>• Participation in local infrastructure development</li> <li>• Business development</li> </ul>	<ul style="list-style-type: none"> <li>• Reporting the Group companies' performance results (investment and social projects, including those aimed at developing the regions in which the Group's generating facilities operate)</li> <li>• Cultural and educational initiatives</li> <li>• Publication on the Group companies' corporate websites and circulation through the media of information affecting the interests of local communities, other companies, and local authorities in the Group companies' operating regions</li> </ul>

<sup>1</sup> The Report preparation process and the process we followed to identify material topics are described in APPENDIX 1.

<sup>2</sup> Stakeholder engagement activities undertaken as part of the Report preparation process are described in APPENDIX 2.

Wholesale electricity and capacity buyers, including suppliers of last resort and major industrial consumers of heat

- Uninterrupted heat and electricity supply
- Commissioning and decommissioning of generating equipment
- Production programmes
- Investment programmes
- Connection terms
- Efficiency improvement
- Business development strategy
- Interactions with consumers on matters relating to the connection, sale, and purchase of heat, electricity, and capacity under standard contracts or under free bilateral contracts through the intermediary Trading System Administrator and System Operator

The Government of the Russian Federation, industry regulators, ministries and agencies, and regional executive authorities

- Uninterrupted heat and electricity supply
- Financial and operational results
- Investment programmes
- Efficiency improvement
- Business development strategy
- M&A activities
- Tariff applications
- Participation in meetings of the Government Commission on the Development of the Electric Power Industry and meetings of the Ministry of Energy Conciliation Committee
- Interaction with organisations that regulate the Russian heat and electricity market (the Federal Antimonopoly Service and the Ministry of Economic Development, etc.), as well as with the Trading System Administrator and System Operator
- Cooperation with the Supervisory Board of NP Market Council and with the Supervisory Board of NP Council of Power Producers

Environmental groups

- Compliance with environmental regulations and standards
- Environmental Policy
- Reductions and increases in all environmental impacts from operations
- Environmental protection programmes and initiatives
- Investment programmes
- Energy efficiency improvement
- Business development strategy
- ISO 14001:2015 (Environmental management system) certification of Mosenergo generating facilities
- Public hearings involving environmental groups
- Environmental audits and reporting

Suppliers of goods and services

- Creditworthiness
- Procurement policies and transparency
- Environmental, technical, and other regulations and standards for supplier selection
- Investment programmes
- Business development strategy
- Full disclosure of procurement information and supplier selection procedure
- Application of universal requirements and criteria in the supplier selection process compliant with international standard ISO 9001:2008
- Disclosure of the amount and total price of contracts awarded through the Group's goods and services procurement process

Employees and trade unions

- Uninterrupted heat and electricity supply
- Compliance with environmental regulations and standards
- Compliance with safety standards and rules
- Job creation and wage levels
- Social security and healthcare
- Professional growth and development opportunities
- Corporate culture
- Business development
- Collective bargaining agreements
- Employee professional training and upskilling
- Occupational health initiatives carried out in line with Russian law
- Sports and cultural activities
- Employee social security: voluntary health insurance, accident insurance, recreation for employees and their families, and private pension plans



# GROUP OVERVIEW

Russia's largest heat  
supply holding company

2017 revenue  
**RUB 569 bn**

2017 EBITDA  
**RUB 113.6 bn**

SCALE OF THE ORGANISATION	12
BUSINESS MAP	14
POSITION IN THE INDUSTRY	19
GOVERNANCE STRUCTURE	24



GRI 102-2 **GROUP OVERVIEW**

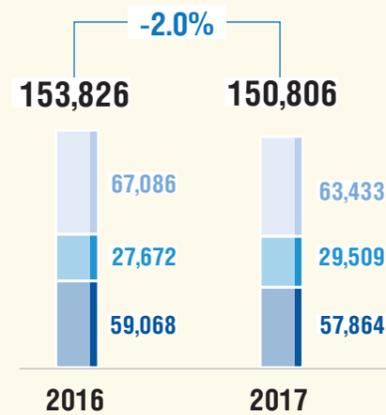
GRI 102-7 **Scale of the Organisation**

OOO Gazprom energoholding is a vertically integrated holding company (a wholly owned subsidiary of PJSC Gazprom) that operates Gazprom Group's electricity generating companies to uniform corporate standards.

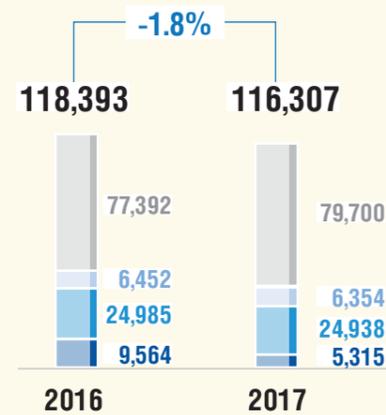
Gazprom energoholding Group ranks among the top ten European electricity producers and owns Russia's largest generation fleet with a combined installed capacity of approximately 39 GW, or close to 16% of the installed capacity of the

entire Russian electricity industry. The Group is also the world's largest heat supplier, providing heat for approximately 20 million people.

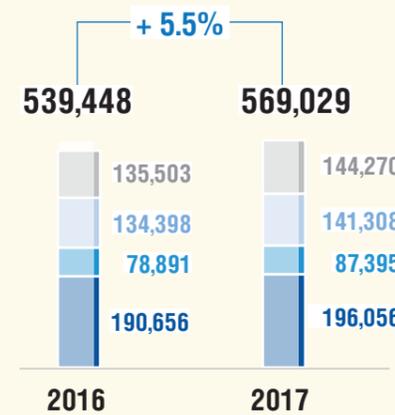
**ELECTRICITY OUTPUT, MM KWH**



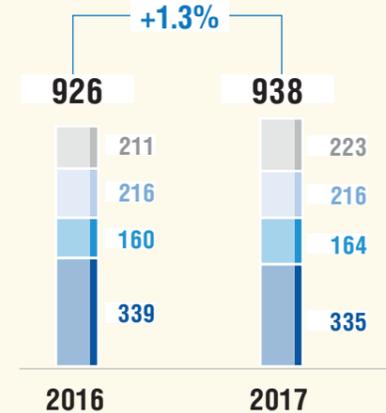
**NET HEAT SUPPLY, '000 GCAL\***



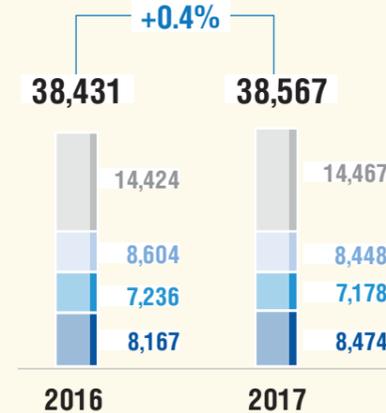
**REVENUE, RUB MM**



**TOTAL ASSET VALUE, RUB BN\*\***



**HEADCOUNT, EMPLOYEES\*\*\***



- Mosenergo
- TGC-1
- OGK-2
- MOEK

\* Includes TSK Mosenergo

\*\* Based on data from IFRS consolidated financial statements of the Group's generating companies for 2016 and 2017

\*\*\* Including contractors employed under independent contractor agreements and part-time employees as at year end

The largest assets operated by OOO Gazprom energoholding include:

- **Mosenergo** – supplies over 60% of all electricity consumed in the Moscow Metropolitan Area, covering over 90% of Moscow's heat needs
- **TGC-1** – comprises power plants across four Russian regions: St Petersburg, the Republic of Karelia, and the Leningrad and Murmansk Regions. All feature a high share of hydro generation in their installed capacity
- **OGK-2** is Russia's largest generating company, operating Krasnoyarskaya GRES-2, Surgutskaya GRES-1, Kirishskaya GRES, Novocherkasskaya GRES, Pskovskaya GRES, Ryazanskaya

GRES, Serovskaya GRES, Stavropolskaya GRES, Troitskaya GRES, Cherepovetskaya GRES, and Adlerskaya TPP. The Groznenskaya TPP is currently under construction

- **MOEK** is the leading infrastructure company in Moscow and the city's sole heat supplier. The company also operates the world's longest heat distribution system, totalling over 15,700 km of heat distribution pipelines

The Group's financial performance is disclosed in the Sustainability Report (the "Report") in accordance with GRI Standards. All financials presented in the Report are based on the audited consolidated financial statements of Mosenergo, TGC-1, OGK-2, and

MOEK, prepared in accordance with International Financial Reporting Standards (IFRS). Financial statements are further disclosed on the official websites of the Group's generating companies:

Mosenergo  
[http://www.mosenergo.ru/investors/reports/msfo/;](http://www.mosenergo.ru/investors/reports/msfo/)

TGC-1  
[http://www.tgc1.ru/ir/reports/;](http://www.tgc1.ru/ir/reports/)

OGK-2  
[http://www.ogk2.ru/rus/si/finances/finotch/;](http://www.ogk2.ru/rus/si/finances/finotch/)

MOEK  
[http://www.moek.ru/akcioneram/otchetnost/otchetnost-po-msfo/.](http://www.moek.ru/akcioneram/otchetnost/otchetnost-po-msfo/)

The Group's electricity output decreased year-on-year in 2017. While the decline was in line with industry-wide trends and due to increased generation at nuclear power plants, it was also a result of the policies pursued by the Group to minimise utilisation of inefficient equipment.

The integration of MOEK into Gazprom energoholding Group in 2013 initiated changes in the heat supply structure for Moscow, with heat generation shifting from MOEK's boilers to the combined generation CHP plants operated by Mosenergo. By shifting heat generation to more efficient generating facilities we optimised loads on existing heat sources, and achieved fuel savings.

In parallel, we consolidated the Group's Moscow-based heat network assets within MOEK. The consolidation effort streamlined management and maintenance of these assets, including through the elimination of redundancies. As a result, all electricity generating facilities have been concentrated within Mosenergo, and all heat distribution networks and distribution functions within MOEK.

In 2017, over 91% of all heat generated by Mosenergo was supplied to MOEK, Moscow's single heat supply company since 2015, for further distribution to consumers.

**Business Map<sup>3</sup>**

GRI 102-4  
GRI 102-6

The core business of Mosenergo, TGC-1, and OGK-2 is generation and sales of electricity and capacity in the wholesale market, and generation and distribution of heat to end consumers, while MOEK focuses primarily

on transmitting, distributing, and marketing heat, as well as on maintaining and developing the centralised heat distribution system of Moscow.

**Mosenergo**

**SUPPLIES**

over **60%**  
of electricity

c. **90%**  
of heat consumed in the Moscow Metropolitan Area (Moscow and the Moscow Region)

**GENERATES**

c. **5%**  
of all electricity produced in Russia

**COMPRISES**

**15** power plants  
with a combined installed electricity capacity of 12.9 GW and a combined heat capacity of 42.8 thousand Gcal/h

**TGC-1**

**COMPRISES**

**53** power plants  
in St Petersburg, the Republic of Karelia, and the Leningrad and Murmansk Regions, with a combined installed electricity capacity of 7 GW and a combined heat capacity of 13.6 thousand Gcal/h

**HAS**

a unique mix  
of generating assets, with hydro generation accounting for c. 40% of its combined installed capacity

**PROVIDES**

management  
of Murmanskaya CHPP, a subsidiary generating company covering c. 75% of heat supply to Murmansk

**19** power plants

operated by the company  
are located beyond the Arctic Circle

**OGK-2**

**ONE OF THE LARGEST**

electricity generating companies in Russia

**ITS GENERATION FLEET INCLUDES**

**12** branch power plants  
(including Groznenskaya TPP to be commissioned in 2019) across 12 Russian regions with a combined installed capacity of 19.0 GW

**ACCOUNTS**

for over **6%**  
of the total electricity generated in Russia and c. 0.5% of the total heat supply in Russia

**MOEK**

**OPERATES**

over **15.7 thousand km**  
of heat networks (including c. 8 thousand km of heat mains and 7.8 thousand km of secondary heat networks)

**COMPRISES**

**101** generating facilities  
with a combined heat capacity of 4.279 thousand Gcal/h.

<sup>3</sup> The generating facilities of Gazprom energoholding Group are located exclusively within Russia, which is also our key distribution market. Locations of generating operations and markets served by the Group's generating companies in Russia are listed in APPENDIX 2.

**GRI 102-6 Categories of Consumers Served by Our Companies in Russia**

The Group mainly sells electricity and capacity in the Wholesale Electricity and Capacity Market (WECM), where buyers are large consumers, energy distribution organisations (utilities) and suppliers of last resort who buy electricity (capacity) to resell it to

end consumers, including residential consumers. The Company divides heat energy consumers into the following groups:

- Industrial and equivalent consumers
- Wholesale buyers / resellers
- Public sector consumers
- Utilities (including managing companies, condominiums (TSZh) / cooperative housing corporations (ZhSK)
- Other consumers

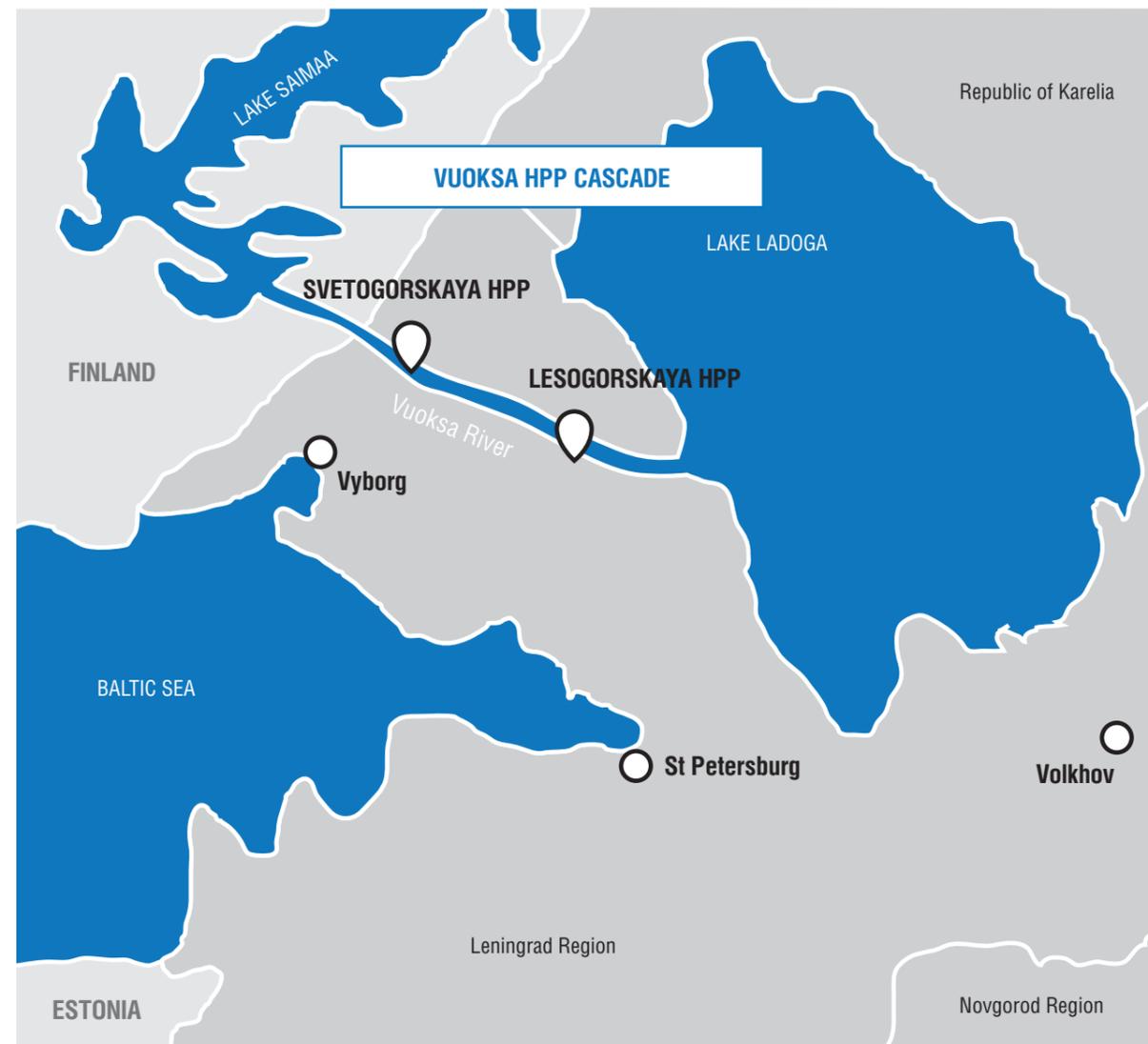
**Exports**

Some of the power plants operated by TGC-1 are uniquely located to

export part of the electricity they generate to Finland and Norway.

Estonia is another possible destination.

**LOCATION OF THE VUOKSA HPP CASCADE**



Electricity exports, mm kWh

Supply destination	Supply source	Electricity exports, mm kWh			
		2016	2017	2018 (plan)	2019 (plan)
Finland	<ul style="list-style-type: none"> <li>• From Svetogorskaya HPP of the Vuoksa HPP Cascade in the Leningrad Region via the 110 kV Imatra-1 line</li> <li>• From Kaitakoski HPP of the Paz HPP Cascade in the Murmansk Region via the 110 kV L-82 line. In winter, the maximum supply capacity may reach 75 MW</li> </ul>	577.4	757.5	470.0	525.0
Norway	<ul style="list-style-type: none"> <li>• From Borisoglebskaya HPP of the Paz HPP Cascade in the Murmansk Region via the 154 kV L-225 line. The maximum supply capacity may reach 56 MW, while the normal operating capacity is 28 MW</li> </ul>	59.3	103.7	100.0	–
<b>Total</b>		<b>636.7</b>	<b>861.2</b>	<b>570.0</b>	<b>525.0</b>

TGC-1 exports wholesale volumes under existing contracts with major energy companies based in Norway and Finland.

Contract validity	Counterparty	Country	Contract date
2016	Fortum Power and Heat	Finland	21 December 2015
2017–2018	Fortum Power and Heat	Finland	27 December 2016
1 November 2012 – 31 December 2018	RAO Nordic Oy*	Norway	31 October 2012
1 November 2012 – 31 December 2018	RAO Nordic Oy*	Finland	31 October 2012

\*Contracts with RAO Nordic Oy were signed through PAO Inter RAO acting as an agent on its own behalf, but for the account of TGC-1.



## International Business Development Prospects

### SERBIA



A power plant is currently under construction in Pancevo, Serbia, under a Shareholders' Agreement between PAO Centerenergyholding (Gazprom energoholding Group) and NIS Novi Sad (Gazprom Neft Group). Under the agreement, Pancevo Refinery (an asset of NIS Novi Sad) will be an off-taker of electricity and heat, with an option to market electricity both in Serbia's domestic market and at energy exchanges of other European countries.

In late 2017, SHANGHAI ELECTRIC GROUP Co. Ltd. won a bidding process to provide sub-contractor services for the turnkey construction of a c. 200 MW TPP with two Ansaldo Energy 64.3A gas turbines scheduled for commissioning in 2020.

### CHINA



PJSC Gazprom and China National Petroleum Corporation (CNPC) signed a Memorandum of Understanding on Underground Gas Storage and Gas-fired Power Generation in China, with the 960 MW Sunyuan TPP project selected for pilot construction under the Memorandum. Replacing coal-fired power plants with gas-fired TPPs will contribute to addressing environmental issues through reduced carbon emissions. The parties are discussing the key terms and principles of their engagement.

### VIETNAM



We view Vietnam as one of the most promising Asia-Pacific markets to pursue energy projects.

The benefits of a gas-fired power plant include synergies from sourcing natural gas locally from Vietnamese offshore fields operated by Vietgazprom, a joint venture between PJSC Gazprom and PetroVietnam State Oil and Gas Corporation.

In October 2017, Gazprom EP International B.V. signed a contract with PECC2, a design institute of Vietnam-based EVN, for a feasibility study for a power plant project in Quang Tri Province to be supplied with natural gas from the Bao Wang gas condensate field.

## Position in the Industry

### Installed Capacity by Primary Energy Source

Regulated installed capacity of generating facilities, MW, as at 31 December 2017 (by primary energy source).

Primary energy source	Capacity regulation mechanisms			Total
	CSA (Capacity Supply Agreement)	CCO (Competitive Capacity Outtake)	Must-run	
<b>MOSENERGO</b>				
Gas-fired generation (including generating facilities that can use coal as backup or startup fuel, but actually used gas)	2,877.3	9,773.3	77	12,727.6
Other generating facilities (failed to pass the CCO pre-qualification procedure; did not apply for CCO; to be decommissioned, etc.)		145		145
<b>Total</b>				<b>12,872.6</b>
<b>TGC-1</b>				
Gas	1,430	878	1,425	3,733
Coal	–	–	174	174
Hydro	–	2,767	–	2,767
Fuel oil (Murmanskaya CHPP)	All electricity generated by Murmanskaya CHPP is used to meet own operational needs			12
Other generating facilities (failed to pass the CCO pre-qualification procedure; did not apply for CCO; to be decommissioned, etc.)	–	–	–	264
<b>Total</b>				<b>6,950</b>
<b>OGK-2</b>				
Gas	2,000.6	7,931		9,931.6
Coal	660	1,745		2,405
Dual-fired generation (power plants that used both gas and coal during the reporting period)	1,080	3,440	1,886	6,406
Other generating facilities (failed to pass the CCO pre-qualification procedure; did not apply for CCO; to be decommissioned, etc.)				255
<b>Total</b>				<b>18,997.6</b>

## Electricity Output and Heat Supply by Primary Energy Source

CHPP-17 and CHPP-22 operated by Mosenergo, as well as OGK- 2's Novocherkasskaya GRES, Cherepovetskaya GRES, and Serovskaya GRES can use both gas and coal for heat and electricity generation, enabling adjustments to their fuel mix to reflect fluctuations in prices for these fuels.

	2016		2017	
	Electricity output, mm kWh	Heat supply from own sources, '000 Gcal	Electricity output, mm kWh	Heat supply from own sources, '000 Gcal
<b>MOSENERGO</b>				
Gas	53,246	73,019	52,670	70,679
Dual fuel (gas/coal)	5,822	8,807	5,194	8,768
<b>Total</b>	<b>59,068</b>	<b>81,827</b>	<b>57,864</b>	<b>79,447</b>
<b>TGC-1</b>				
Gas	14,362	20,830	15,342	20,999
Coal	430	1,500	465	1,513
Hydro	12,863	–	13,686	–
Fuel oil (Murmanskaya CHPP)	17	2,115	16	2,203
<b>Total</b>	<b>27,672</b>	<b>24,445</b>	<b>29,509</b>	<b>24,715</b>
<b>OGK-2</b>				
Gas	38,056	4,786	36,827	4,790
Coal	6,937	1,586	6,880	1,452
Dual fuel (gas/coal)	22,093	525	19,726	517
<b>Total</b>	<b>67,086</b>	<b>6,898</b>	<b>63,433</b>	<b>6,759</b>
<b>MOEK*</b>				
Gas	0	10,167	0	9,846
<b>Total</b>	<b>0</b>	<b>10,167</b>	<b>0</b>	<b>9,846</b>

\* Including OOO TSK Mosenergo and OOO TSK Novaya Moskva.

## Electricity and Heat Sales

### ELECTRICITY SUPPLIES BY SALES CHANNEL, '000 MWH<sup>4</sup>

	Mosenergo		TGC-1		OGK-2	
	2016	2017	2016	2017	2016	2017
Regulated contracts (RCs)	11,037	11,117	4,946	5,276	11,985	13,823
Day-ahead market (DAM)	47,138	46,406	23,832	25,008	56,485	51,958
Balancing market (BM)	2,684	2,728	1,087	1,286	2,980	2,447
Exports	-	-	637	861	-	-
Retail market			89	148	1,489	1,494
<b>Total</b>	<b>60,858</b>	<b>60,251</b>	<b>30,591</b>	<b>32,579</b>	<b>72,938</b>	<b>69,722</b>



<sup>4</sup> As from 1 January 2015, MOEK does not operate in the wholesale market and therefore does not use the above mechanisms to sell electricity.

CHPP-12 (Mosenergo)



## NET HEAT SUPPLY BY REGULATION TYPE / CONSUMER GROUP, '000 GCAL

	Mosenergo			TGC-1			OGK-2			MOEK <sup>5</sup>		
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016 <sup>6</sup>	2017
	Nevsky, Kolsky and Karelsky Branches			Murmanskaya CHPP			000 TSK Mosenergo and 000 TSK Novaya Moskva					
Wholesale buyers / resellers (including heat suppliers)	71,079.2*	73,698.0*	4,348.6	4,501.2	0	0	2,698.1	2,676.7	1,599.29	1,852.52	23.0	936.2
Public sector consumers	213.7	121.0	1,929.5	1,913.2	165.9	249.7	34.7	53.1	10,130.69	9,972.68	445.0	525.8
Industrial and equivalent consumers	1,714.7	1,245.4	982.9	910.7	57.1	56.7	2,332.3	2,242.7	1,912.15	2,184.13	158.0	150.1
Utilities (including housing administrations (UZhKh), municipal housing administrations (GZhU), condominiums (TSZh) / cooperative housing corporations (ZhSK)	1,766.6	853.1	10,706.8	10,359.2	1,165.5	1,159.1	157.0	216.4	50,124.31	48,853.56	3,502.0	3,868.1
Domestic customers (residential consumers)	0.0	0.0	955.3	1,116.5	261.6	245.5	11.7	37.6	1.05	1.45	0.0	0.0
Other consumers	6,576.7	3,092.2	1,735.0	1,805.3	207.8	218.6	1,191.7	1,100.9	9,905.74	11,504.15	728.3	650.5
Thermal energy to compensate for heat losses	80.3	55.3	2,359.6	2,293.6	107.2	108.9	26.8	27.0	0.00	0.12	13.0	0.7
<b>Total</b>	<b>81,431.3</b>	<b>79,065.0</b>	<b>23,019.5</b>	<b>22,899.7</b>	<b>1,965.1</b>	<b>2,038.5</b>	<b>6,452.3</b>	<b>6,354.4</b>	<b>73,673.24</b>	<b>74,368.61</b>	<b>4,869.3</b>	<b>6,131.3</b>

<sup>5</sup> Includes heat losses in domestic hot water systems totalling: 3,638,800 Gcal in 2016, and 3,900,400 Gcal in 2017.

<sup>6</sup> Including Zelenograd Branch from 1 January 2016 to 30 June 2016.

\* In 2016 and 2017, MOEK accounted for 87.7% and 91.8% of Mosenergo's net heat supply, respectively.

GRI 102-18

## Governance Structure

Gazprom energoholding provides management of subsidiaries and affiliates in line with the procedures set out by applicable laws, Articles of Association, and internal regulations of the companies.

The key governance mechanism used by Gazprom energoholding in management of subsidiaries and affiliates is representation

in the Boards of Directors and Board Committees of the Group companies.

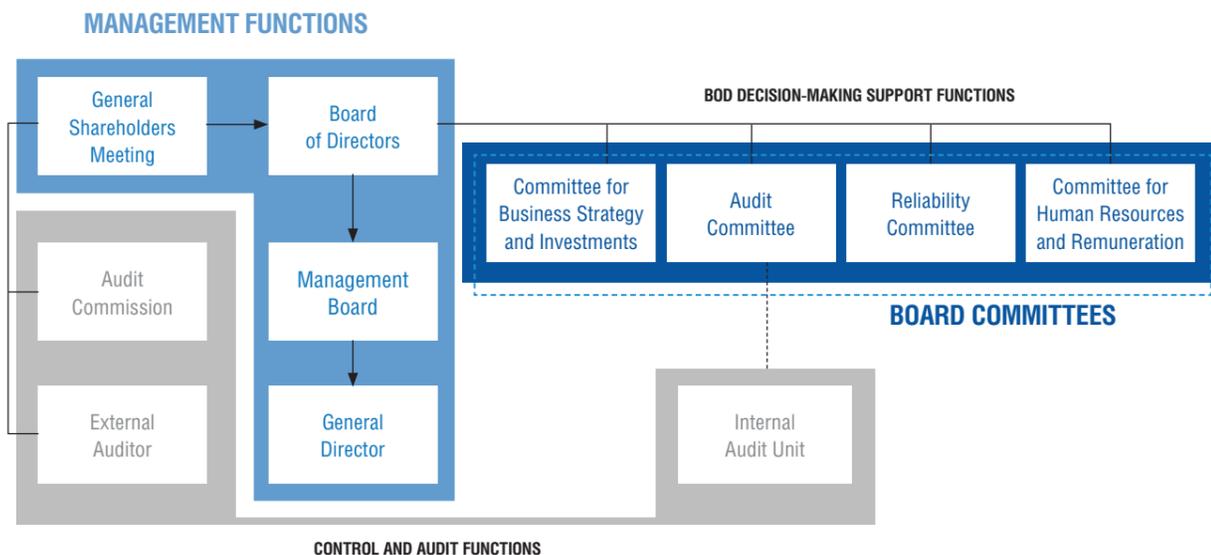
The governance structure of the Group's generating companies is built to uniform standards. Corporate governance bodies at TGC-1 include the General Shareholders Meeting, Board of Directors, Management Board, and General Director. The

Management Board and General Director are executive bodies.

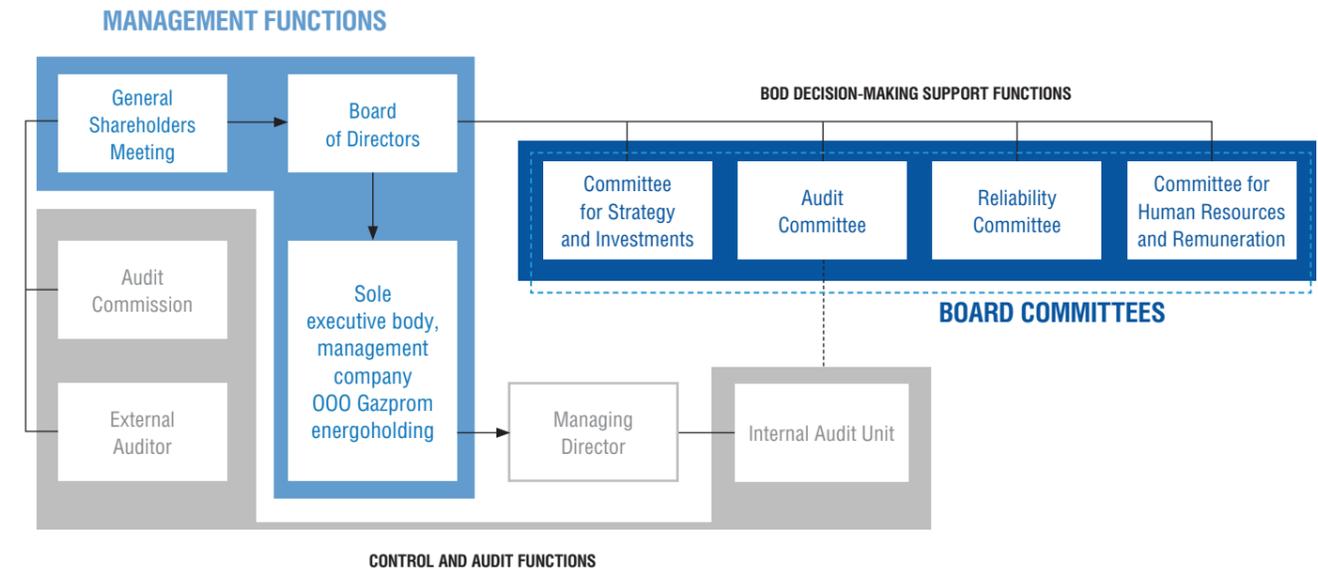
At Mosenergo, OGK-2, and MOEK, executive powers are delegated to Gazprom energoholding, with positions of Managing Directors added to the governance structure (Mosenergo since May 2015, MOEK since November 2016, and OGK-2 since July 2018).



### GOVERNANCE STRUCTURE AT TGC-1



### GOVERNANCE STRUCTURE AT MOSENERGO, OGK-2, AND MOEK



**General Shareholders Meeting** is the supreme governing body at each generating company.

The Board of Directors of each generating company provides overall management of the companies, makes decisions on significant matters, oversees the implementation of resolutions passed by the General Shareholders Meeting, and monitors the protection of rights and legitimate interests of the company in line with statutory requirements.

The **Board of Directors** of each generating company has four committees in place: the **Committee for Strategy and Investments**<sup>7</sup>, **Audit Committee** (except for MOEK), **Committee for Human Resources and Remuneration**, and **Reliability Committee**. These Committees are advisory and deliberative bodies that ensure effective performance by the Board of Directors of its duties for the overall management of the company's operations

The **Management Board** is a collective executive body that manages day-to-day operations at TGC-1 and OGK-2 (also at Mosenergo and MOEK until May 2015)<sup>8</sup>.

Acting as a sole executive body, the **General Director** leads the Management Board at TGC-1 (also at Mosenergo and MOEK until May 2015, and at OGK-2 until June 2018) and manages day-to-day operations of the company<sup>9</sup>.

The **Audit Commission** at each generating company is a collective body elected by the General Shareholders Meeting to monitor financial and business operations.

The **auditor** nomination is approved by the General Shareholders Meeting of each generating company on an annual basis to audit financial and business performance of the company in accordance with the Russian legislation, under a relevant agreement signed with the auditor.

There is a **Corporate Secretary** on the staff at Mosenergo, TGC-1, and OGK-2. At MOEK, this role is assigned to the Secretary of the Board of Directors and by Shareholder Relations.

Roles and responsibilities for day-to-day economic, environmental, and social matters may be partially delegated and re-distributed within the corporate structure of the Group's generating companies.

<sup>7</sup> TGC-1 has a Committee for Business Strategy and Investments.

<sup>8</sup> In accordance with the new Articles of Association adopted in June 2015, Mosenergo and MOEK do not have a collective executive body (Management Board).

<sup>9</sup> In May 2015, MOEK and Mosenergo delegated their executive powers to OOO Gazprom energoholding.

# 02

## SUSTAINABILITY MANAGEMENT

Ensuring stable profit growth while maintaining a high reliability of consumer energy supplies is a key strategic power generation goal from 2018 to 2027



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# SUSTAINABILITY MANAGEMENT

## Corporate Sustainability Values

Gazprom energoholding Group operates in line with Gazprom Group’s corporate responsibility principles:



Gazprom energoholding Group’s values, principles, standards, and norms of employee behaviour

are stipulated in the Code of Corporate Ethics of OOO Gazprom energoholding. The Code provides

basic guidance for all the Group’s generating companies.



### MUTUAL RESPECT

Team spirit in the workplace, as well as a confident, friendly, and collaborative approach to addressing tasks



### OPENNESS TO DIALOGUE

Open and fair exchange of information and willingness to develop the best solutions through joint efforts



### SUCCESSION

Respect for the accomplishments and experience of industry veterans, and their active communication, professional training, and mentoring with younger employees



### IMAGE

The use of techniques and strategies to help build a positive image of the Group

All employees of Gazprom energoholding Group are familiarised with the Code of Corporate Ethics. The

Corporate Ethics Commission is responsible for ensuring the Group’s compliance with OOO Gazprom

energoholding’s Code of Corporate Ethics.

## Development Strategy

Ensuring stable profit growth while maintaining a high reliability of consumer energy supplies is a key strategic power generation goal from 2018 to 2027.

Developing a long-term strategy to determine business priorities, target indicators, and expected outcomes is essential to the successful growth of a business.

In 2018, PJSC Gazprom approved the corporate Power Generation Strategy for 2018–2027.

Ensuring stable profit growth while maintaining a high reliability of consumer energy supplies is a key strategic power generation goal from 2018 to 2027. The strategy provides for projects to build new or upgrade existing generating facilities and decommission economically unviable ones, placing a special

emphasis on further enhancing operational efficiency, driving technological advances, using import-substituting equipment, and diversifying the electricity business into high-potential domestic and international markets.

## Our Values

GRI 102-16



### PROFESSIONALISM

A deep understanding of one’s specialisation, prompt and high-quality completion of tasks, and continuous development of professional knowledge and skills



### PROACTIVENESS

A proactive and self-reliant approach taken by employees in streamlining the production process



### LEAN THINKING

A responsible and lean approach when using the Group companies’ assets, one’s own work time, and that of fellow employees

## Risk Management

### Risk Management System

The Group's risk management system comprises a range of activities and processes involving risk identification, assessment, and prioritisation, as well as risk mitigation to provide reasonable assurance that strategic and operational goals

are met. Managers and employees across all management levels in the Group companies carry out risk management. Employees across the Group are provided with regular training to improve their risk management skills. The risk manage-

ment system is closely aligned with corporate internal controls. Corporate risk management system:

#### CORPORATE RISK MANAGEMENT SYSTEM:



**GRI 102-11** When making risk management decisions, including those related to environmental risks, operational planning, or business development, the Group's generating companies are guided by the internationally recognised Principle 15 of the Rio Declaration on Environment and Development (1992), "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

The Group recognises that its generating companies are exposed to external risks and in turn expose stakeholders to potential risks,

therefore a similar policy is applied when managing stakeholder risks related to the Group companies' operations.

### Risk Management System and Regulatory Framework Development

Gazprom energoholding Group is committed to the ongoing development of its risk management system and makes efforts to build a comprehensive risk management frame-

work, including the establishment of a single regulatory and guidance framework. At present, the Group companies use local regulations providing guidance on individual risk

management arrangements. The Group companies develop risk management regulations compliant with the local regulations of PJSC Gazprom, OOO Gazprom energo-

holding, international and Russian risk management standards, and the Corporate Governance Code recommended by the Bank of Russia.

OOO Gazprom energoholding's Risk Management Policy, based on PJSC Gazprom's Risk Management Policy approved on 30 October 2015, was adopted on 22 April 2016. The Group companies have also adopted the following documents based on PJSC Gazprom's local regulations:

- The Regulations on the Risk Management System and the Rules for Risk Management Interactions dated 26 July 2017
- The Rules for Credit Risk Management Interactions dated 28 September 2017
- The temporary risk classification system of OOO Gazprom energoholding and its subsidiaries dated 3 April 2018

The following documents have also been drafted and scheduled for approval in 2018:

- The Draft Guidelines on Assessing the Creditworthiness of Counterparties and Assigning an Internal Credit Rating
- The Draft Guidelines on Using Qualitative Risk Assessment to Implement Risk Management Actions

### Climate Change Risk

Climate change can impact the productivity, efficiency, and costs of electricity producers. TPPs accounted for over 60% of all electricity generated in Russia in 2017. Higher air temperatures reduce the difference between the ambient temperature and combustion temperature, driving down boiler and turbine efficiency rates. Nevertheless, the impact on the efficiency rates is relatively small, particularly in combined generation. Therefore, higher average air and water temperatures are unlikely to have a significant negative impact on the electricity generation efficiency.

In fact, higher average air temperatures in winter and summer periods will improve efficiency rates in electricity generation in most climatic zones across Russia. Currently, the peak electricity demand periods are autumn and winter. In the spring/summer period of 2017, Gazprom energoholding Group's power plants generated 65.8 billion kWh of electricity as compared to 86.8 billion kWh in the 2017/2018 autumn/winter period. Lower fuel oil generation during low-temperature periods, when the use of natural gas is capped, will also have a positive impact on emission levels.

Access to adequate amounts of cooling water and the ability to discharge it into water bodies without negative temperature-related impact on the ecosystem is likely to be a more significant risk. Fossil fuel-fired TPPs are quite sensitive to the cooling water temperature.

Where climate change leads to reduced availability of cooling water, power plants can be upgraded to reduce water intake or switch to a closed water loop. Gazprom energoholding Group believes that its exposure to such risk is also low, with most power plants operated by the Group already using a closed cooling water loop.

### Climate Change Risk Mitigation Measures

Climate change is related to the emission of GHGs (carbon dioxide CO<sub>2</sub>, methane CH<sub>4</sub>, sulphur hexafluoride SF<sub>6</sub>). Gazprom energoholding Group's companies annually calculate their GHG emissions and monitor the growth/decline trends in GHG generation levels. In 2017, GHG emissions totalled 96.2 mm tonnes of CO<sub>2</sub> equivalent, with carbon dioxide from burning fuels accounting for the bulk of that. Emission levels are directly related to the volumes of fuel burned; therefore, lower emission levels are achieved by imple-

menting energy efficiency initiatives to reduce fuel burning. For more details on these initiatives see the Fuel Use and Energy Efficiency section. The Group has no other specific climate change risk mitigation costs or initiatives to report.

## Key Climate Change-Related Threats to TPPs



### HIGHER OR LOWER PRECIPITATION

#### PHYSICAL ELEMENTS

- Fuel storage
- Turbine/generator
- Boiler room / boiler
- Cooling system

#### KEY IMPACTS

- Higher precipitation can adversely affect the quality and calorific value of coal due to higher moisture content
- Lower precipitation can reduce the availability of cooling water

#### ADAPTATION OPTIONS

- Protect fuel storage sites, including coal piles
- Reduce water intake and consumption (a once-through or a closed-loop system)
- Scale up water treatment and/or develop new water sources
- Upgrade cooling equipment (condense water in condensers and heat exchangers, reduce evaporation losses, reuse water, recycle waste water, build cooling towers)
- Reforestation



### HIGHER AIR TEMPERATURES

#### PHYSICAL ELEMENTS

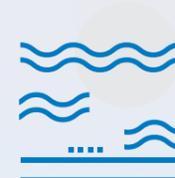
- Boiler room / boiler
- Turbine/generator

#### KEY IMPACTS

- Lower electricity generation efficiency rates
- Lower integrated coal gasification cycle efficiency rates (coal-to-gas process)
- Lower CCGT performance

#### ADAPTATION OPTIONS

- Focus investment on areas where temperatures are more likely to drop
- Leverage the benefits of distributed generation



### HIGHER WIND SPEEDS

#### PHYSICAL ELEMENTS

- Buildings, warehouses, generator sets
- Air pollution controls

#### KEY IMPACTS

- Infrastructure damage
- Wider pollutant dispersion

#### ADAPTATION OPTIONS

- Develop new and tighten existing requirements to new or overhauled buildings



### NATURAL DISASTERS

#### PHYSICAL ELEMENTS

- Buildings, warehouses, generator sets

#### KEY IMPACTS

- Hurricanes, tornadoes, blizzards, etc. can damage infrastructure and disrupt distribution
- Potential soil erosion and facility damage

#### ADAPTATION OPTIONS

- Develop a flood control system (embankments, dams, drains, tanks, ponds, flood barriers, deeper/wider channels)
- Building in safer areas or relocating structures to safer places
- Build structures at higher elevations
- Upgrade drainage systems and redirect water pipes
- Protect fuel storage sites
- Develop new and tighten existing requirements to new or renovated buildings
- Use concrete coverings instead of metal coverings in construction (more resistant to winds and erosion)

**THE GROUP RISKS AND RISK MANAGEMENT MEASURES  
AFFECTED STAKEHOLDERS**

- 1 Shareholders and investors
- 2 Lenders and rating agencies
- 3 Local communities, civil society organisations, and local authorities
- 4 Heat, electricity, and capacity consumers, including suppliers of last resort and major industrial consumers
- 5 The Government of the Russian Federation, industry regulators, ministries and agencies, and regional executive authorities
- 6 Environmental groups
- 7 Suppliers of goods and services
- 8 Employees and trade unions

Risks	1	2	3	4	5	6	7	8	Risk management measures in 2016–2017
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**1. TERRITORIAL RISKS**

1.1. Country risks: changing (falling) global natural gas and oil prices	•	•	•	•	•	•	•	•	The risk is marginally manageable. Cost reduction and efficiency improvement initiatives across all business areas
1.2. Deteriorating government relations	•	•	•	•	•	•			Exercising flexibility during negotiations with authorities, having a fact-based and informed position
1.3. Regional risks: destabilisation in one or more regions in which the Group's power plants operate	•	•	•	•	•	•	•	•	Situation monitoring in operating regions, assessing the implications of external impacts and decisions. Interaction with government and other authorities Diversifying business operations to maintain sustainability at the Group level
1.4. Geographical risks: <ul style="list-style-type: none"> <li>• natural disasters</li> <li>• disruption of transport systems</li> </ul>	•	•	•	•	•	•	•	•	Training employees in emergency response Joint exercises with the EMERCOM of Russia and other agencies Diversifying business operations to maintain sustainability at the Group level

**2. RISKS RELATED TO THE ELECTRICITY AND CAPACITY MARKET OPERATION AND HEAT SUPPLY TO CONSUMERS**

2.1. Lower electricity and heat demand	•	•	•				•	•	Inefficient asset retirement programmes. Operational efficiency improvements. Long-term electricity and heat supply contracts
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**Risks**

2.2. Changes in electricity prices in the unregulated market	•	•	•	•					Implementing cost reduction initiatives Implementing operational efficiency improvement initiatives The Market Rules and the Trading System Accession Agreement contain measures to restrict significant changes in unregulated electricity prices (including control of price manipulations by the Federal Antimonopoly Service)
2.3. Changes in prices for energy, services, materials, and equipment	•	•	•	•			•		Fuel mix optimisation. Cost reduction and fuel saving initiatives. Mid-term fixed-price contracts with suppliers. Building up stocks of backup fuels at power plants. Optimisation of repair and maintenance, and capital construction costs
2.4. Risk of higher levels of non-payment of electricity and heat bills	•	•	•	•	•				Participation in the Commission on Payments in the Wholesale Electricity and Capacity Market, preparation of proposals on improvement of payment discipline in the Wholesale Electricity and Capacity Market. Debt collection through legal proceedings Heat supply limitations for regular non-payers Cooperation with government authorities to resolve non-payment of heat bills by organisations with state and municipal participation
2.5. No demand for a portion of generating capacity	•	•	•		•				Implementation of an optimal strategy when offering generating capacity at the CCO auctions. Minimisation of risks related to the lack of demand for generating capacity by optimising the CCO capacity offerings

**3. SPECIFIC OPERATIONAL AND TECHNICAL RISKS**

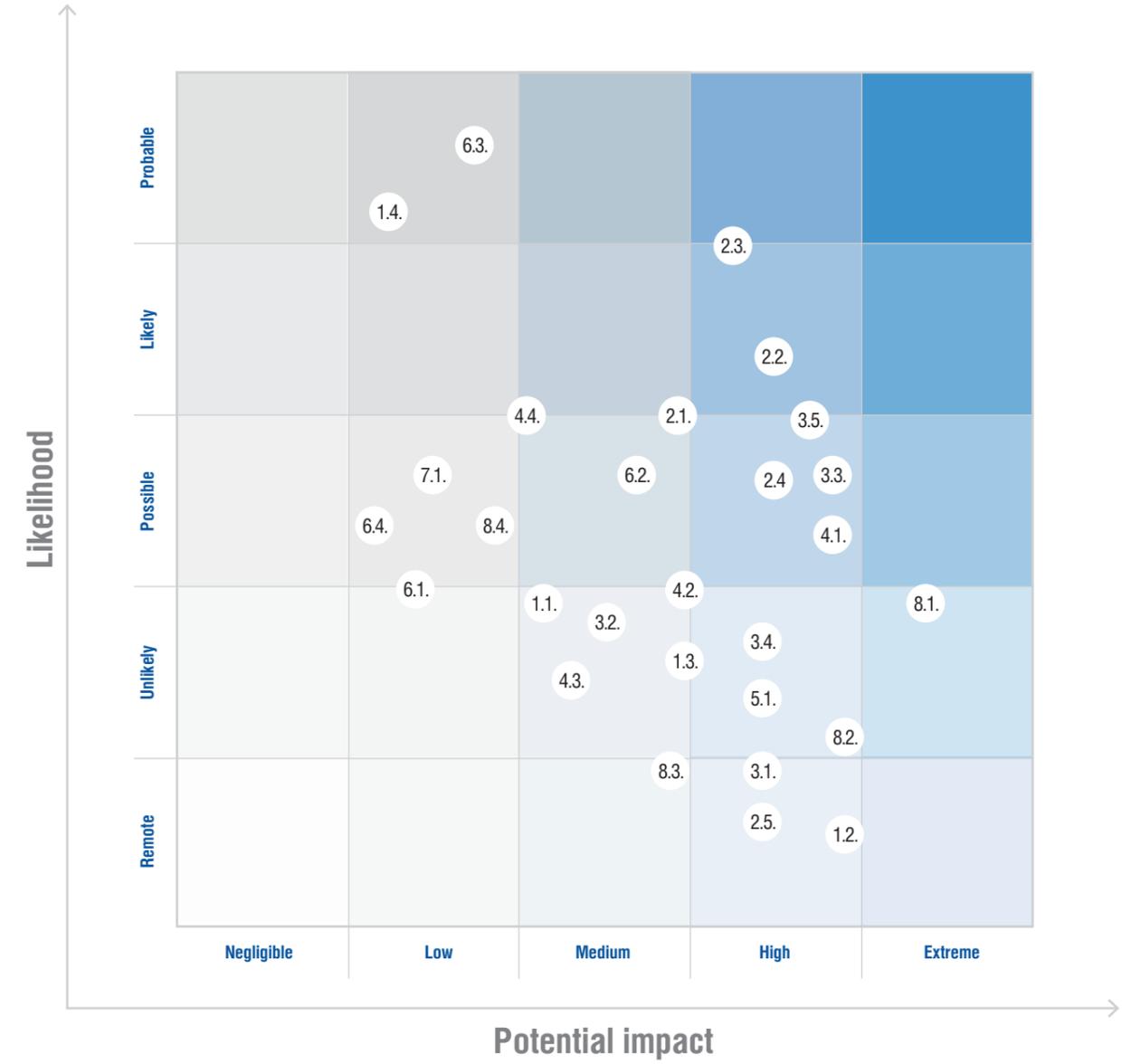
3.1. Accidents due to worn-out fixed assets	•	•	•	•	•	•		•	Repair, upgrade, renovation, and retrofit projects. Construction of new facilities. Retirement of inefficient facilities
3.2. Breach of contractual obligations by contractors or partners in terms of delivery times or the quality of raw materials or components, or provision of services		•	•	•	•			•	Enhancement of the preliminary counterparty risk analysis system Counterparty performance control
3.3. Risks of weather conditions and seasonal changes	•	•	•	•			•	•	Minimisation of the impact of weather conditions on the reliability of electricity and heat generation

Risks	1	2	3	4	5	6	7	8	Risk management measures in 2016–2017
3.4. Competitive pressure from more efficient electricity producers	•	•	•	•	•	•	•	•	Operational efficiency improvements Higher quality of repairs and optimised repair schedules Employee training and upskilling Optimisation of inefficient equipment utilisation
3.5. Increased competition in the future, as all energy companies complete their investment programmes, including the risk of distribution networks expansion	•	•	•	•	•	•	•	•	Operational efficiency improvements Upgrade, renovation, and retrofit projects Long-term electricity and heat supply contracts
<b>4. GOVERNMENT REGULATION RISKS</b>									
4.1. Decisions by the government authorities to freeze or limit electricity and heat tariff growth or approve tariffs below the level of costs incurred by Gazprom energoholding Group's generating companies	•	•	•	•	•	•			Active interaction with the Federal Antimonopoly Service of Russia, regional energy commissions, and fuel and energy committees in the operating regions to secure approval of economically sound tariffs
4.2. Changes in regulations governing activities of subsidiaries and related to energy production and sales	•	•	•	•	•				Participation in the drafting of regulations and regulatory impact assessment of draft regulations; development of a consolidated position of the Group companies on proposed amendments to the Wholesale Electricity and Capacity Market Rules, and communicating this position to the authors of relevant draft regulations
4.3. Risks of changes in the licensing requirements for core activities of the Group's generating companies	•	•	•	•	•	•	•	•	Taking all reasonable steps to renew expiring or obtain new licences on time Taking actions to ensure compliance of operations with the latest licensing requirements
4.4. Risks of changes in Russian legislation, specifically in tax and civil laws	•	•	•	•	•	•	•	•	Timely review of changes in legislation, including tax and civil laws, and relevant adjustments to internal procedures and processes of the Group companies

Risks	1	2	3	4	5	6	7	8	Risk management measures in 2016–2017
<b>5. RISKS ASSOCIATED WITH INVESTMENT PROJECTS</b>									
5.1. Risks of financial and reputational losses associated with investment projects	•	•	•	•	•	•	•	•	Completion of projects under capacity supply agreements (CSA) in all Gazprom energoholding Group's generating companies. Identification and analysis of financing sources for investment programmes. Improvement of the procedures to manage and monitor activities of all parties involved in investment project implementation. Establishing tough penalties for a failure to meet critical investment project milestones in contracts with suppliers and contractors. Detailed design of technical solutions to be used. Maintaining a black list of designers, suppliers, and contractors. Insuring against property and financial risks associated with investment projects. Increasing investment appeal of the Group  Developing the corporate project management system to collate data on existing and planned facilities Localising production
<b>6. FINANCIAL RISKS</b>									
6.1. Interest rate risk and risk of limited access to the debt market	•	•					•		Raising funds mainly through intragroup borrowings, and securing external financing mostly on terms preventing unilateral adjustment of interest rates
6.2. Inflation risks	•	•			•		•	•	Providing services at economically sound tariffs Internal cost-cutting initiatives
6.3. Foreign exchange risk		•					•		Maintaining an open currency position as minimised as possible. Revision of plans for purchasing imported goods priced in foreign currencies
6.4. Risk of outflow of foreign speculative capital in case of an unstable political and economic situation, market downturns or economic slowdown	•	•							Electricity and heat generated by the Group are sold in the domestic market at fixed prices in Russian roubles. The Group's financial position, liquidity, and sources of financing have limited exposure to the foreign exchange risk. Therefore, the Group itself has little exposure to the foreign exchange risk

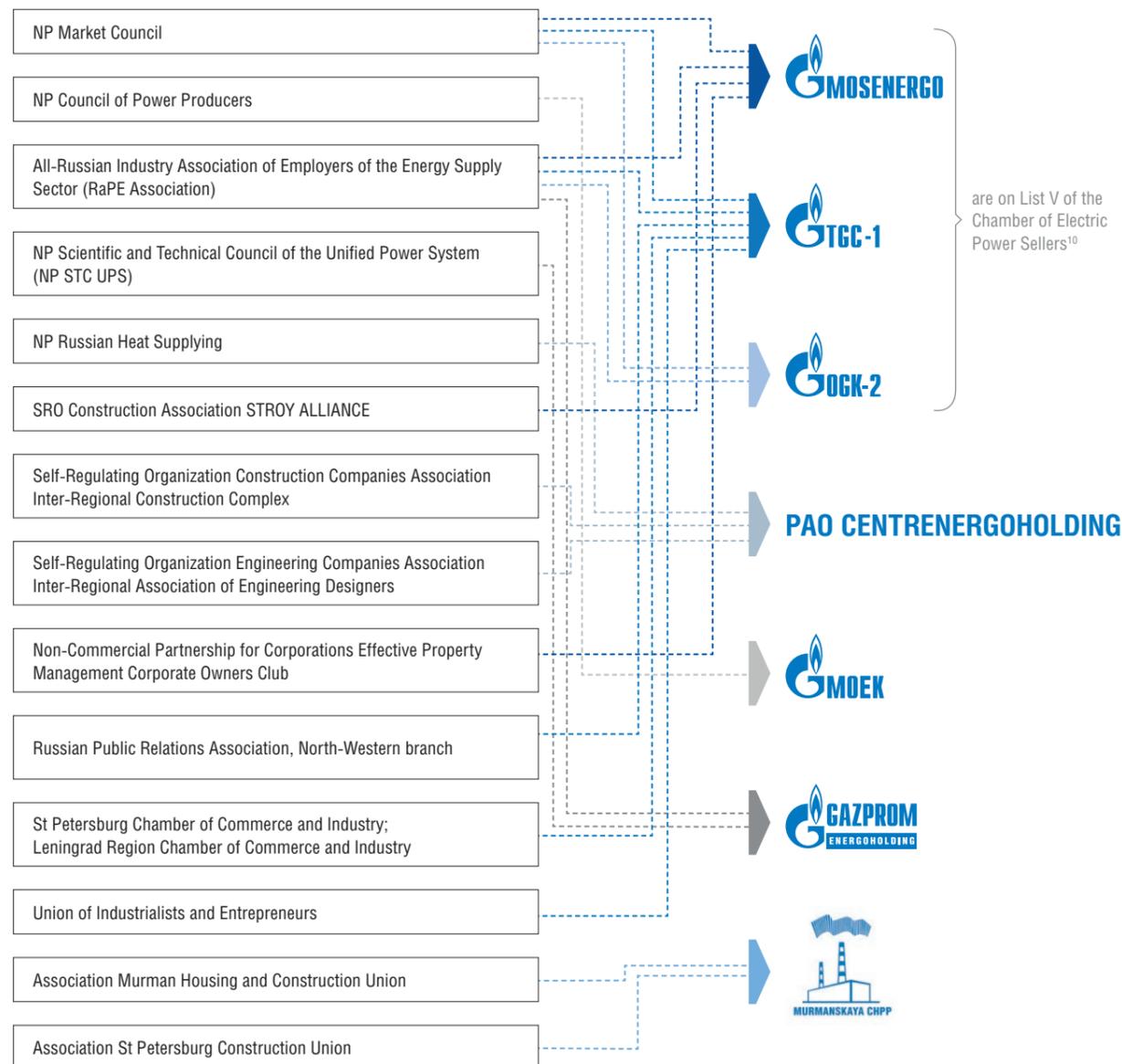
Risks	1	2	3	4	5	6	7	8	Risk management measures in 2016–2017
<b>7. ENVIRONMENTAL RISKS</b>									
7.1. Risks of environmental damage or pollution	•	•	•	•	•	•			Monitoring of activities to ensure compliance with Russian and international environmental standards Training employees in emergency response Facility renovation and upgrade projects. Environmental liability insurance
<b>8. OTHER RISKS</b>									
8.1. Risk of terrorist attacks against the Group companies' generating facilities	•	•	•	•	•	•	•	•	Implementing anti-terrorist measures in accordance with Russian laws Property and employee insurance
8.2. Risks of technical failures and accidents resulting from human errors on the part of employees	•	•	•	•	•	•	•	•	Commercial insurance of property, civil liability of owners of hazardous production and hydraulic facilities, vehicles, etc. Hiring qualified personnel. Employee briefing, professional training, and upskilling Control of compliance with safety standards
8.3. Risks of corruption and conflicts of interest							•	•	Internal control to ensure there is no conflict of interest in procurement, contracting, and recruitment. Adoption of codes of corporate ethics and establishing corporate ethics commissions
8.4. Litigation risks	•	•	•	•	•	•	•	•	Securing contract terms to best suit the interests of the Group. Reliance on out-of-court dispute resolution procedures. Minimising the negative impact of any litigation or enforcement of judicial decisions on the Group.

Risk heat map: an assessment of risk likelihood and potential impact on the Group's generating companies' operations and their stakeholders as at the end of 2017



GRI 102-13

## Memberships of Associations and Organisations



GRI 102-10

## Significant Changes at the Group Companies During the Reporting Period and in 2018 Before the Publication Date of the Report

The following significant changes occurred at Gazprom energoholding Group's generating companies during the reporting period:

### Changes in the Location or Name of Businesses

Gazprom energoholding and the headquarters of OGK-2 relocated to St Petersburg. Since 1 January 2016, Gazprom energoholding's principal place of business is 16 Dobrolyubova Ave., Bld. 2, St Petersburg, Russia. Since mid-

2017, OGK-2's principal place of business is 66 Peterburgskoye Highway, Bld. 1-A, St Petersburg, Russia. The decision to relocate was made to optimise administrative expenses as well as to improve communication and corporate

governance processes across PJSC Gazprom and Gazprom energoholding Group. As required by law, on 1 August 2016 OAO TGC-1 changed its corporate name to PAO TGC-1.

## Business Structure Optimisation

As part of an asset optimisation programme, MOEK implemented activities to divest non-core assets and determine options for commercial use of inefficient and

unutilised properties. MOEK's non-core asset portfolio comprises quality properties for rent, high redevelopment potential properties, and office spaces in uptown

Moscow. The proceeds of non-core asset sales totalled RUB 1.6 billion in 2016.

## Capacity Start-ups by Gazprom Energoholding Group's Companies

Gazprom energoholding Group is at the end of its ambitious investment programme to build new generating capacity under the CSA (capacity supply agreements) programme. The launch of the

Groznenskaya TPP in 2019 will mark the completion of OOO Gazprom energoholding's obligations under the CSA programme. The CSA programme implemented by the Group companies is expected to add

8.9 GW of new capacity in Russia between 2007 and 2019 (8.6 GW of new capacity was online by the end of 2017).

## Changes in Corporate Governance and Organisational Structure

In 2016–2017, Gazprom energoholding Group's companies made significant efforts to bring their corporate governance practices in line with the Corporate Governance Code recommended by the Bank of Russia. In 2016, all generating companies except MOEK appointed independent directors to their boards of directors: Mosenergo – four independent

directors; TGC-1 – three independent directors; OGK-2 appointed one independent director to the Board of Directors in 2016 bringing the total count to two independent directors. TGC-1 and OGK-2 have approved the regulations on the corporate secretary and elected their corporate secretaries. In 2017, Mosenergo, TGC-1, and OGK-2 adopted new dividend policies. As at 31 December

2017, MOEK had no dividend policy in place but had the draft policy pending approval. On 10 November 2016, MOEK made a decision to restructure its executive office and introduce a managing director position following the elimination of the general director position and assignment of the relevant functions to the management company – OOO Gazprom energoholding.

## Changes in the Supply Chain Structure, Locations of Major Suppliers, and Duration of Supply Contracts

OOO Production and Process Equipment Company (OOO PPTK, Moscow), an external organiser and part of Gazprom energoholding Group, was appointed a Procurement Authority to run certain tenders on behalf of the Group's generating companies.

Following the integration of MOEK into Gazprom energoholding Group, the programme to shift heat generation from MOEK's boilers to combined generation CHP plants operated by Mosenergo has gained an additional momentum. Shifting heat production to more efficient generating facilities enables us

to optimise loads on existing heat sources, achieve fuel savings, and capture significant economic benefits. The average annual fuel savings we have achieved through heat generation shifts, including annual shifts during the non-heating season, are c. 259 mmcm of gas, or c. RUB 1.5 billion since 2014.

<sup>10</sup> Pursuant to clause 1 of Article 35 of the Federal Law On Electric Energy.

<sup>11</sup> An independent director was appointed to chair the Audit Committee.

# 03

## ECONOMIC SUSTAINABILITY

EBITDA growth by **31.1%**  
year-on-year in 2017

**RUB 9.8 bn**  
Economic benefit from  
improved operational  
efficiency and cost  
optimisation in 2016-2017

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# ECONOMIC SUSTAINABILITY

GRI 103-1

## Our Responsibility

Since the Group’s generating companies are the principal heat and electricity suppliers to both households and industrial consumers in the operating regions, their economic sustainability affects not only their shareholders and investors, but also lenders, suppliers, and employees. Therefore, the economic sustainability of the Group companies has an important social effect on all heat and electricity consumers.

GRI 103-2

## Economic Governance Bodies

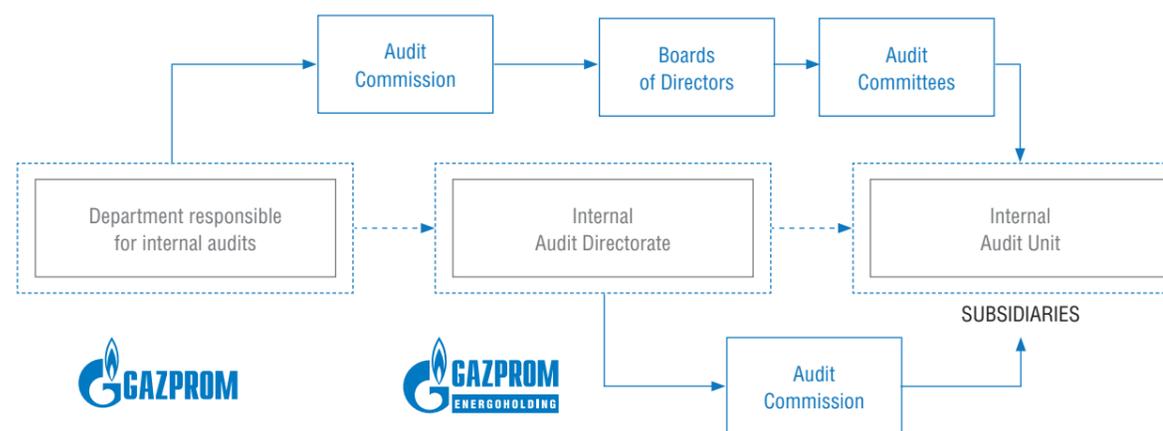
<b>GAZPROM ENERGOHOLDING</b> <ul style="list-style-type: none"> <li>• Production Directorate</li> <li>• WECM Forecasting and Methodology Directorate</li> <li>• Economic Directorate</li> <li>• Internal Audit Directorate</li> <li>• Treasury Directorate</li> </ul>	
<b>MOSENERGO</b> <ul style="list-style-type: none"> <li>• Efficiency and Control section</li> <li>• Marketing section</li> <li>• Production section</li> <li>• Development section</li> </ul>	
<b>TGC-1</b> <ul style="list-style-type: none"> <li>• Chief Engineer section</li> <li>• Marketing and Sales section</li> <li>• Economics and Finance section</li> <li>• Karelsky Branch Economics and Finance Director section</li> <li>• Kolsky Branch Economics and Finance Director section</li> <li>• Development section</li> </ul>	
<b>OGK-2</b> <ul style="list-style-type: none"> <li>• Production Directorate</li> <li>• Energy Distribution Directorate</li> <li>• Economics Directorate</li> <li>• QMS and Business Solution Assessment Project Centre, Business Project Centre</li> </ul>	

### MOEK

- Economics and Finance section
- Strategy section
- Marketing section
- Chief Engineer section

In addition to external audits, financial results of our generating companies are also subject to internal controls of PJSC Gazprom. Internal controls are an essential safeguard to protect the interests of shareholders and investors.

### INTERNAL CONTROLS FOR FINANCIAL PERFORMANCE OF GAZPROM ENERGOHOLDING GROUP’S GENERATING COMPANIES



Internal audit functions were set up and audit commissions are elected annually by the general shareholders meetings at Gazprom energoholding Group’s generating companies and their subsidiaries to oversee preparation of accurate financial and accounting statements.

In 2016, the Boards of Directors at Mosenergo, TGC-1, and OGK-2 approved the regulations on the internal audit function, internal audit policy, and regulations on the internal control system. The Internal Audit Unit was established in MOEK in 2017. The Boards of Directors

at TGC-1 and OGK-2 approved risk management policies in 2017.

GRI 103-2

## Our Objectives

Gazprom energoholding Group's key goal is to ensure stable profit growth while maintaining a high reliability of consumer energy supplies to consumers.

### The Group's key objectives in the medium term are to:

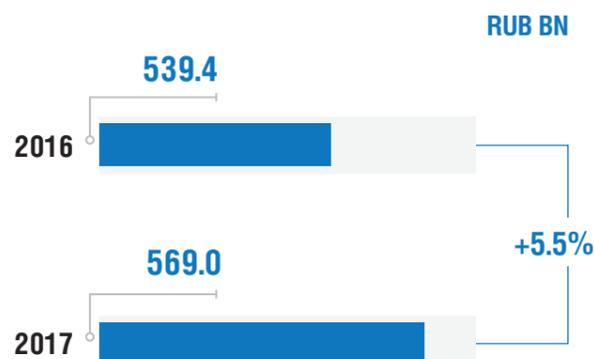
- ensure uninterrupted energy and heat supply
- reduce leverage
- maintain adequate cash flow, improve economic efficiency
- maintain stable dividend payouts
- participate in high-potential investment projects

GRI 103-3

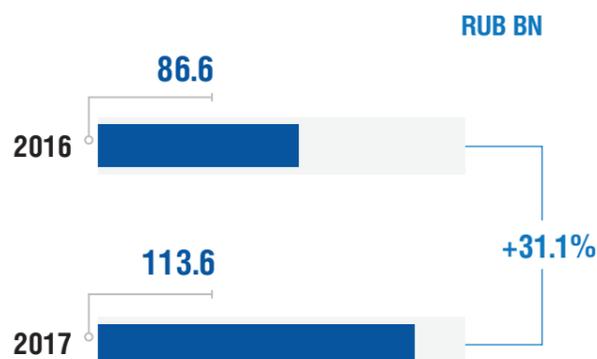
## Our Performance

### Financial Performance<sup>12</sup>

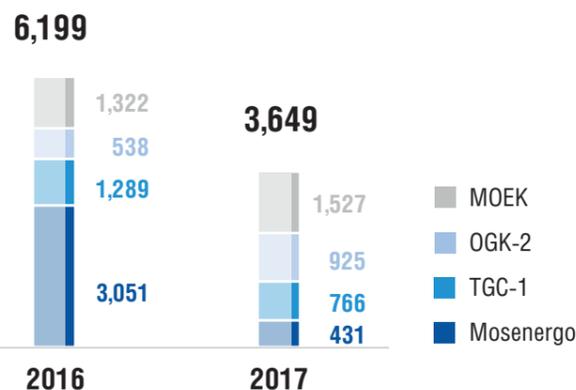
IFRS REVENUE INCREASED BY 5.5% YEAR-ON-YEAR IN 2017



IFRS EBITDA INCREASED BY 31.1% YEAR-ON-YEAR IN 2017



### Economic benefit from cost optimisation, RUB mm



Our generating companies will continue to implement operational efficiency programmes in 2018.

## Capital Investment

With 8.6 GWh of new capacity added, the main CSA investment programme is mostly completed. In 2017, capacity of generating units at PP-1 of TGC-1's Tsentralnaya

CHPP (two new gas turbine units with a combined capacity of 100 MW) was made available at the Wholesale Electricity and Capacity Market (WECM). The implementation

of the final project under the CSA programme, construction of the 360 MWh Groznenskaya TPP, was continued.

## Key Developments

- Key financial metrics improved significantly despite weaker operating performance
- Leverage was reduced by RUB 25.9 billion in 2017, from RUB 158.4 billion to RUB 132.5 billion
- Cost optimisation programmes generated a positive impact of RUB 3.6 billion in 2017, with 90 MWh of inefficient old equipment decommissioned
- Capitalisation of the generating companies increased substantially
- Gazprom energoholding Group continued addressing one of the most acute problems in heat supply, which is non-payments by consumers, particularly in the household sector. Gazprom energoholding Group achieved a reduction of 3.4%, or RUB 1.4 billion, in the total amount of debt owed by consumers with heat arrears

This positive development was due to the consistent efforts and implementation of joint comprehensive

programmes with Moscow and St Petersburg regional authorities to ensure debt repayment, primarily by management companies

Gazprom energoholding Group's companies are taking steps to ensure better, faster, and more convenient customer service through upgrades to customer service centres, launching an e-invoicing platform for consumers, offering a customer account service, and establishing a contact centre.

## Performance Against Objectives

By 2018, Gazprom Group had achieved the key objectives set out upon entering into the electricity sector and outlined in its Power Generation Strategy approved on 25 April 2007:

- Target assets in electricity generation were acquired
- The new acquisitions demonstrated strong financial performance, with the average annual growth

rate of revenue at 15% in 2007–2017

- Investment obligations were successfully met: 8.6 GWh of new capacity was commissioned under the CSA (capacity supply agreements) programme, with 3.7 GWh of inefficient generating facilities decommissioned
- Gazprom energoholding Group's companies are financially stable,

both individually and as part of the Group, with the Debt/EBITDA ratio at 1.1 as at the end of 2017

- Synergies with PJSC Gazprom's core business were captured, enabling re-allocation of natural gas flows during peak load periods

<sup>12</sup> Combined performance of Gazprom energoholding Group's generating companies, including intragroup transactions.

## GRI 201-1 ECONOMIC VALUE GENERATED AND DISTRIBUTED, RUB MM

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
Revenue <sup>13</sup>	190,656	196,056	79,345	87,641	134,398	141,308	135,503	144,270
Income from financial investments	3,077	3,694	203	161	656	445	738	476
Income from sale of assets	1,185	471	249	226	192	198	879	531
Direct economic value generated	194,918	200,221	79,797	88,028	135,246	141,951	137,120	145,277
Operating costs	140,824	137,582	48,046	53,789	104,770	103,161	101,179	108,132
Employee wages and benefits	10,471	10,623	7,274	7,620	8,461	8,135	14,388	16,266
Payments to providers of capital	3,989	4,139	3,325	3,117	5,508	6,380	2,115	2,131
Payments to government	8,962	6,660	2,532	4,370	1,814	4,884	1,462	1,736
Community investments	10	11	28	16	9	10	1	18
Economic value distributed	164,256	159,015	61,205	68,912	120,562	122,570	119,145	128,283
Economic value retained	30,662	41,206	18,592	19,116	14,684	19,381	17,975	16,994

## GRI 201-4 Financial Assistance Received from Government

The government holds a direct stake in the share capital of each company of Gazprom energoholding Group (including via federal and municipal entities).

## GOVERNMENT'S DIRECT INTEREST IN THE COMPANY'S SHARE CAPITAL, %

	2016	2017
Mosenergo	26.45%	26.45%
TGC-1	0.000001855%	0.000002037%
OGK-2	0.000018%	0.000018%
MOEK	0.0002%	0.0002%

## TOTAL AMOUNT OF FINANCIAL ASSISTANCE RECEIVED FROM GOVERNMENT IN 2016-2017, RUB MM

	2016	2017
Mosenergo <sup>14</sup>	77	9
TGC-1 (subsidies to Murmanskaya CHPP and TGC-1's Kolsky branch)	269.3	71.3
OGK-2	-	-
MOEK	2,238	948

<sup>13</sup> Gross sales minus returns, discounts and allowances.

<sup>14</sup> Including revised amounts from previous years.

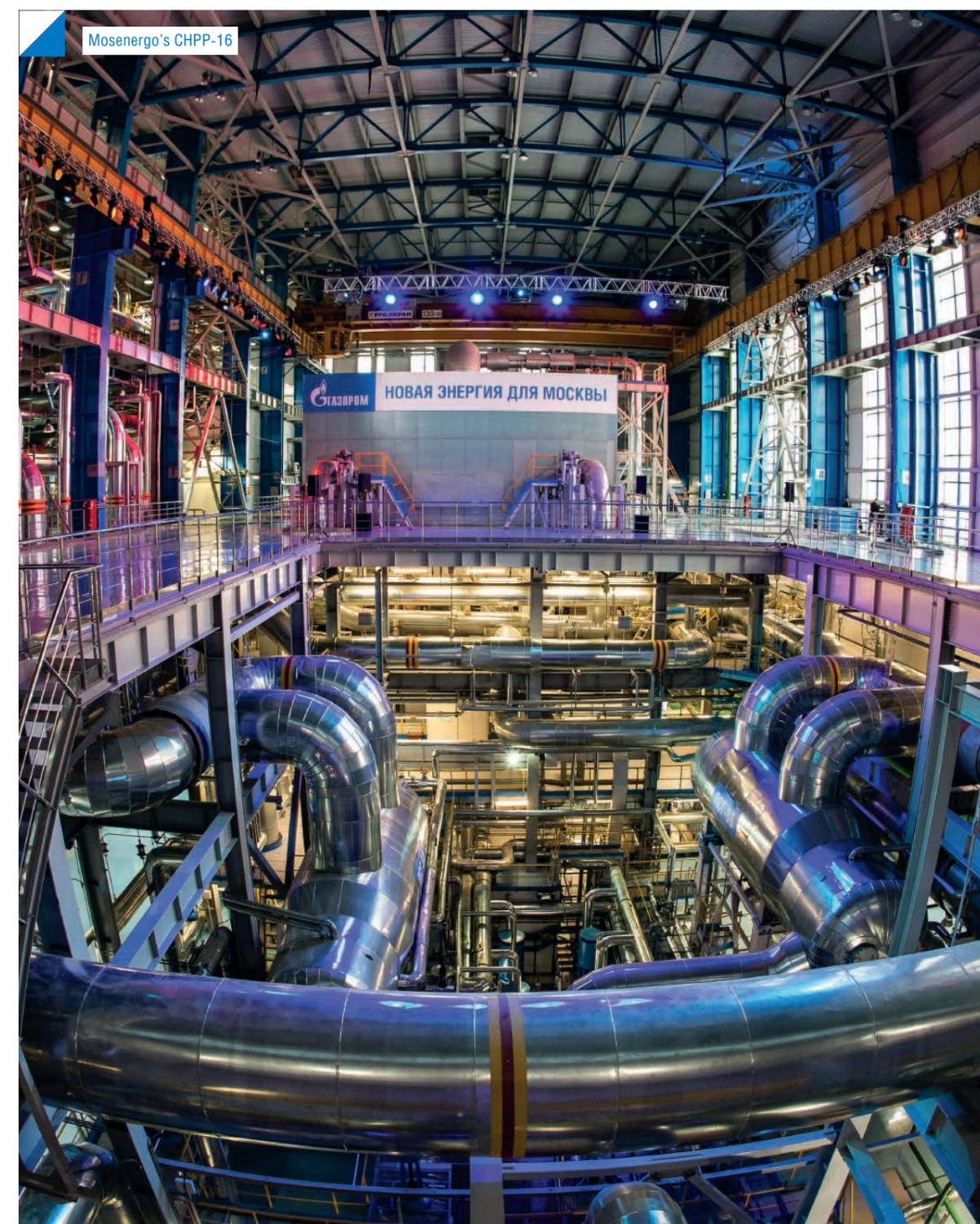
For Mosenergo and MOEK financial assistance from government mostly takes the form of subsidies. The Government of Moscow pays Mosenergo to cover the difference between the tariff rate set for heat consumption by the city's residents and the company's rates. Therefore,

this subsidy is actually a form of redistributed financial assistance from government to Moscow residents rather than to Mosenergo and MOEK.

Murmanskaya CHPP and TGC-1's Kolsky branch are subsidised under

the Murmansk Region's programme to compensate the revenue shortfall to companies supplying heat to households at tariffs that do not cover costs.

OGK-2 received no subsidies in 2016-2017.



## Optimisation of Business Structure

### Construction of New Capacity

Investment projects for the construction of generating facilities under CSAs are implemented by Gazprom Group's generating companies pursuant to Instruction of the Russian Government No. 1334-r On Approval of the List of Generating Facilities that Will Be Used to Supply Capacity under Capacity Supply

Agreements dated 11 August 2010. The responsibility for implementing these projects is assigned to Gazprom Group's generating companies: Mosenergo, TGC-1, OGK-2. The investment programme of the generating companies is one of the largest in the Russian electricity sector. The total volume of com-

mitments undertaken by Mosenergo, TGC-1 and OGK-2 to commission capacity is 8,932.5 MW<sup>15</sup>. As at 31 December 2017, the Group companies had already commissioned 8,587.9 MW<sup>16</sup> of installed capacity, or 96% of their total volume of commitments under CSAs.

The total cost of all CSA projects in the portfolios of Gazprom energoholding Group's generating companies is RUB 434.3 billion including VAT (less capitalised interest), or RUB 449.9 billion (capitalised interest included).

As at 31 December 2017, RUB 421.2 billion including VAT (94%) were allocated and RUB 359.5 billion net of VAT (93%) were spent from the total budget of the investment programme.

The total volume of our generating companies' commitments to commission capacity in subsequent years is 360 MW (Groznskaya TPP).

### GRI 203-1 INSTALLED CAPACITY INCREASED DUE TO NEW CAPACITY ADDITIONS AND UPGRADE-DRIVEN CHANGES IN CAPACITY OF THE EXISTING EQUIPMENT

Power plant	Equipment	Commissioned / Certified		Scheduled for commissioning 2018-2019
		2016	2017	
<b>TGC-1</b>				
Tsentralnaya CHPP	Siemens SGT-800 gas turbine unit, 2 items KUV-64/170 waste heat water boiler, 2 items KV-GM-140-150 backup hot-water boiler, 1 item TD-80000/110-U1 80 MVA unit transformers, 2 items	100 MW commissioned		
<b>OGK-2</b>				
Troitskaya GRES	HG-2100/25.4-YM HBC boiler CLN-660-24.2/566/566 HTC steam turbine QFSN-660-2 generator	660 MW		
Novocherkasskaya GRES	CFB boiler	324 MW		
	K-330-23.5 KhTZ steam turbine TGV330-2MUZ generator			
	K-270(300)-240-2 steam turbine, Nos. 3-5		18 MW (recertification)	
	K-290(310)-24.5-3 steam turbine, No. 6		5 MW (recertification)	
Stavropolskaya GRES	K-304-240-2 steam turbine, No. 6	4 MW (upgrade)		
	K-304-240-2 steam turbine, No. 5		4 MW (recertification)	
Krasnoyarskaya GRES-2	K-164-130-2 steam turbine, No. 7	4 MW (upgrade)		
	K-164-130-2PR2 steam turbine, No. 8	4 MW (upgrade)		
Adlerskaya TPP	Combined-cycle gas turbine, No. 2		4 MW (recertification)	
Groznskaya TPP	Units Nos. 6, 7 (2x GTU-180). Construction of a gas turbine power plant based on two Siemens SGT5-2000E, open cycle, no heat generation			173.4 MW (No. 1) 173.4 MW (No. 2)

<sup>15</sup> Excluding Generating Unit 10 (420 MW) at Serovskaya GRES: pursuant to Resolution of the Russian Government No. 132r dated 2 February 2016, this commitment was replaced with a commitment to commission Generating Unit 12 (420 MW) at Verkhnetagilskaya GRES.

<sup>16</sup> Data including unit recertifications. 8,516.9 MW excluding unit recertifications.

### ALLOCATIONS FOR CSA INVESTMENT PROGRAMME (RUB MM INCLUDING VAT)

	Estimated project cost	Allocated			To be allocated
		before 31 December 2015	2016	2017	
<b>MOSENERGO</b>	124,612.5	123,104.5	1,247.4	36.5	220.5
<b>TGC-1</b>	68,672.1	68,672.1	0.0	0.0	0.0
Plus SPV projects, less interest	13,144.9	8,693.7	2,939.0	1,199.2	226.8
<b>OGK-2</b>	157,013.2	133,169.0	12,887.2	4,661.6	5,899.7
Plus SPV projects, less interest	70,859.0	44,877.4	251.5	4,617.1	20,626.2
Group total	350,297.8	324,945.5	14,134.5	4,698.1	6,120.2
Plus SPV projects, less interest	84,003.9	53,571.2	3,190.5	5,816.3	20,853.0
capitalised interest	15,591.3	12,263.4	2,152.6	441.1	516.2
<b>Group total, including SPV projects and capitalised interest</b>	<b>449,893.0</b>	<b>390,780.1</b>	<b>19,477.6</b>	<b>10,955.4</b>	<b>27,489.4</b>

Most generating facilities have been built using Combined Cycle Gas Turbine (CCGT) technology solutions. Benefits of CCGT units:

- lower specific operating costs through higher efficiency ratio (58% on average) as compared to gas turbine units (c. 35% on average)
- reduced emissions due to a higher efficiency ratio and the use of natural gas as fuel, which results in fewer emissions than fuel oil or coal. CCGT is one of the greenest technologies to date

### Existing Capacity Upgrades

Pursuant to the General Scheme for the Development of the Energy Industry until 2035 approved by the Russian Government in 2017, close to 130 GW of the existing heat generating capacity is to be upgraded or replaced. The fleet life of these assets will expire by 2035, and the scope of the programme reflects the limited additions in the 1990s and 2000s.

In November 2017, the Russian President approved a large-scale

long-term programme to modernise Russia's energy industry and issued an instruction to develop a legal framework for its implementation. Approximately 40 GW of installed capacity is expected to be replaced before 2030. The key condition for the programme is to keep the growth rate of electricity tariffs for residential consumers at or below inflation.

In March 2018, JSC SO UPS accepted bids for mock selection of

TPP retrofit projects (re-equipment, upgrade) for 2021-2030. The mock selection procedure capped the aggregate volume of the installed TPP capacity to be upgraded at 4 GW per year. In addition, the lower limit was set for capacity shutdowns for upgrades within regional energy systems. These restrictions are aimed at maintaining the reliability of supply within the energy system.

Gazprom energoholding Group plans to participate in the capacity upgrade programme to refresh its generation fleet as such projects are a good alternative to greenfield projects both in terms of costs and results. On average, capacity upgrade

projects, including projects where power plants switch from surface condensers to CCGT units, lead to an increase in capacity comparable to that offered by greenfield construction, while offering 30% to 80% lower costs and 1.5 to 2 times

shorter timelines, depending on the upgrade level. Their large-scale implementation, however, requires incentives from the government, e.g. introduction of a mechanism similar to the CSA scheme.

### Re-equipment and Retrofitting

In addition to construction projects and upgrades to our facilities, we pay much attention to maintaining the technologies we use at our facilities at an advanced level. The Group's generating companies carry out repair, re-equipment, and

retrofit projects for their facilities on a regular basis.

When assessing the condition of equipment or making decisions to launch or prioritise certain activities, the Group is guided by such principles as safety, reliability, and

achievability of optimal technical and economic performance targets. The Group seeks to redistribute the funds towards the projects that offer the greatest benefits in terms of efficiency and technology at the lowest cost.

### INVESTMENT INTO RE-EQUIPMENT AND RETROFIT PROJECTS, RUB MM

	2016		2017	
	Spend (net of VAT)	Funding (incl. VAT)	Spend (net of VAT)	Funding (incl. VAT)
Mosenergo	10,540.7	10,595.4	8,163.4	14,082.5
TGC-1	8,351.6	10,433.4	7,033.1	8,616.5
OGK-2	5,498.6	4,684.7	5,888.6	5,504.1
MOEK	13,962.2	20,356.0	13,793.3	15,658.2
<b>Total</b>	<b>38,353.1</b>	<b>46,069.5</b>	<b>34,878.4</b>	<b>43,861.3</b>

Repairs are carried out at the Group's power plants in line with the Equipment Repair Schedule which is subject to sign-off by the System Operator and annual approvals.

### Retirement of Inefficient Capacity

The Group's generating companies phased out 1,347.6 MW of inefficient generating assets in 2016–2017. Forward-looking plans for 2018–

2019 are to decommission another 578 MW. For more details on the heat and

electricity generation facilities retired from service during 2016–2017 and decommissioning plans for 2018–2019 see APPENDIX 3.

### Cooperation with Public Authorities and Stakeholders on Industry Development

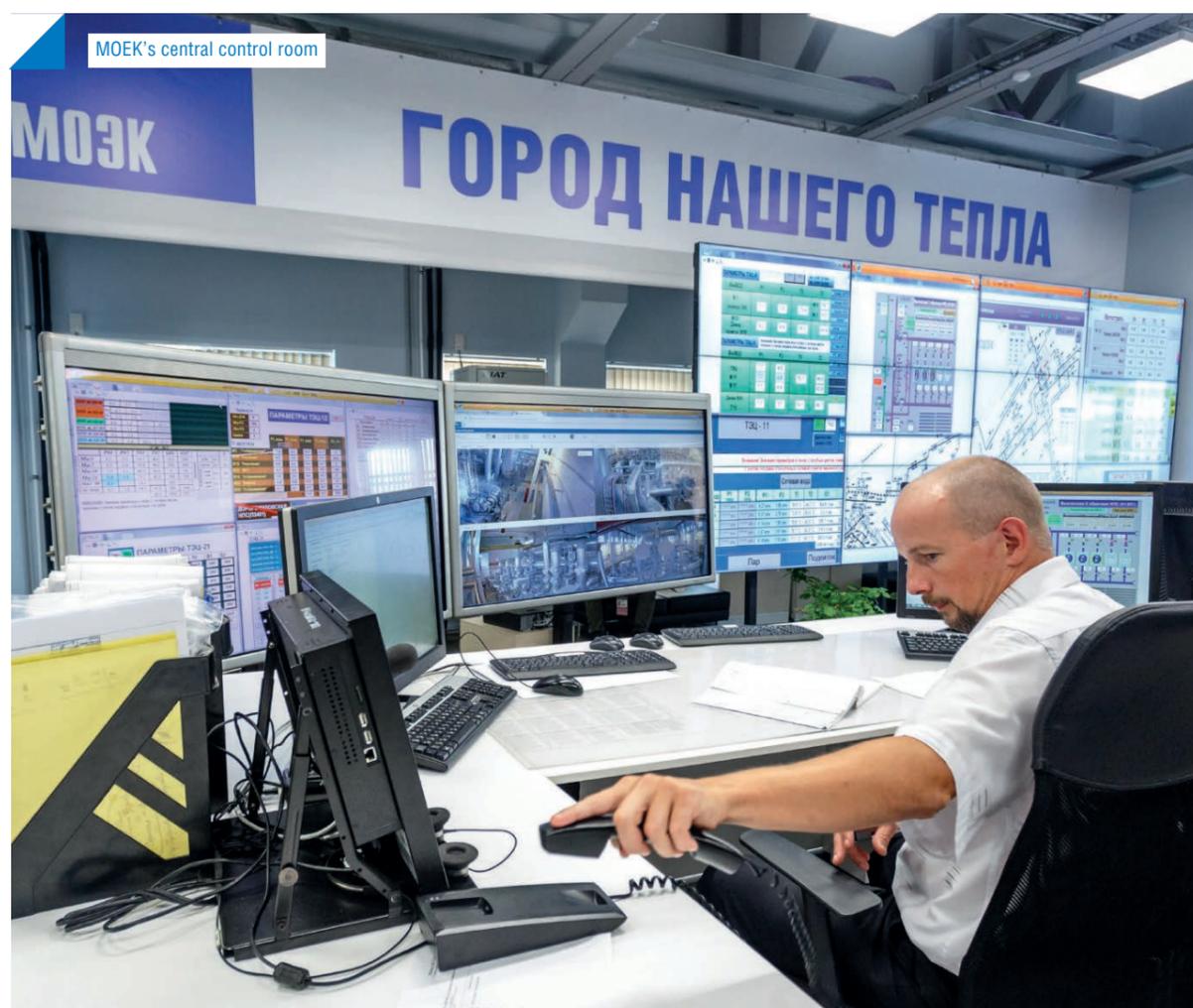
Gazprom energoholding Group is always open to discussion of proposed legislation affecting the Group companies' business. To this end, experts with the Group companies are actively involved in discussions held on various platforms to ensure the Group's interests are taken into account.

In 2016–2017, Gazprom energoholding Group's representatives upheld the Group's corporate interests during the discussion of proposed amendments to legislation related to:

- the establishment of a common electricity market of the Eurasian Economic Union
- development of the General Scheme of Generation Deployment until 2035
- adoption of a new heat market model in Russia
- updates to heat supply plans in Moscow, St Petersburg, and other cities in which the Group companies operate
- energy saving and energy efficiency enhancement programmes
- strengthening financial discipline in the energy sector
- implementation of the state information system of the fuel and energy complex
- commercial energy accounting
- connections to power grids and switchgears
- assignment of the right to develop long-term strategic outlooks and other documents related to the electricity industry to the Russian Ministry of Energy



OGK-2's Adlerskaya TPP



In 2016–2017, Gazprom energoholding experts together with other stakeholders were involved in communicating to the legislative and regulatory authorities the Group's position on the importance of maintaining fair business environment, developing the industry in general, and observing the interests of the Group companies in the context of the following initiatives:

- an initiative to limit the generating companies' rights to transfer their non-core grid assets to third parties
- PJSC ROSSETI's initiative to raise its status in the electricity industry to that of the former OAO RAO UES of Russia in terms of collecting recurring fees from generating companies for operating switchgears
- an initiative by the Ministry of Economic Development of the Russian Federation to create a Reliability Council, another burdensome platform on the electricity market (the initiative also envisaged the global transfer of reliability assurance functions from government to not-for-profit organisations without ensuring accountability of the latter)
- an initiative to charge the full costs of electricity transmission to generating companies (currently a generating company can partly cover the transmission costs for volumes above its standard consumption for own needs)

Our participation in the State Duma Energy Committee's working group tasked with finalising the draft law introducing a new heat supply model allowed us to introduce the following important provisions:

- unconditional agreement by single heat supply companies to operate under the new model
- wording that provides for potential assessment of pilot results
- option for budget funding of grids with no owners within the areas in which single heat supply companies operate
- connection charge has been included in the list of tariffs which

continue to be regulated after the transfer to the new model

Gazprom energoholding Group actively upholds its own and the industry's interests in the heat supply market in the State Duma Energy Committee's expert panels. In particular, a proposal was made in 2017 for harmonisation of the housing and the industry legislation regarding the procedure for settlement for the supplied resources to avoid non-reimbursable losses incurred by utilities.

The Group actively cooperates with federal executive authorities by participating in consensus meetings and working groups dealing with heat supply regulations. In recent years, the more important efforts to safeguard the Group's interests included:

- discussion of a proposal by the Russian Ministry of Economic Development to introduce a tariff rate calculation method based on cost benchmarking

- participation in the Russian Ministry of Economic Development's working group for discussion of a legislative initiative by FAS Russia to introduce a unified federal law on tariff regulation
- discussion with the Ministry of Construction, Housing and Utilities and FAS Russia of initiatives related to tariff regulation methodology, including connection charges

- involvement in amending the draft rules of technical operation of heat generating facilities and heat consuming installations prepared by the Russian Ministry of Energy and its harmonisation with the draft rules on operation of power stations

## Research & Development

Gazprom energoholding Group's innovation policy is aligned with the Russian national policy on innovations, which aims to accelerate the transition of the country's economy towards innovation-driven development.

The Concept of Technical Policy and Development of Generating Companies, published on 24 May 2011, serves as key guidance for the development and implementation of R&D and technical policies of the Group companies. The key objective of the Group's technical policy is set out in

the Concept, which is to increase the competitiveness of the Group's generating companies in the energy sector by optimising the operating and technological capabilities of its power plants. To achieve this goal, the Group's R&D efforts are focused on the following areas:

- Minimising specific fuel consumption for heat and electricity generation by implementing cutting-edge technology and advanced high performance equipment

- Streamlining plant repair and maintenance of property, plant and equipment at power plants
- Complying with environmental requirements in line with international commitments and national standards
- Increasing automation in heat and electricity generation to reduce process management costs and production costs

Gazprom energoholding also closely cooperates on innovative technology in the electricity sector and production of advanced energy equipment

with the National Research University – Moscow Power Engineering Institute, Bauman Moscow State Technical University, Moscow State

University, the All-Russia Thermal Engineering Institute (VTI), and Akademgorodok (Academic City) in Novosibirsk.

R&D contracts with higher education institutions totalled about RUB 43.8 million net of VAT in 2017.

As part of cooperation with RUSNANO, membrane modules for reverse osmosis units in power plant water treatment systems were tested from 2015 to 2016. Substituting imported products with Russian-made membranes continued throughout 2017.

In developing R&D plans and implementing R&D programmes, the Group closely cooperates with PJSC Gazprom. In 2017, OOO Gazprom energoholding took part in developing PJSC Gazprom's Innovative Development Programme to 2025 for its electricity business.

#### INVESTMENTS IN R&D BY GAZPROM ENERGOHOLDING GROUP'S GENERATING COMPANIES

	2016	2017
R&D investment, RUB mm	78.3	146.5
Economic benefit from the use of R&D results*, RUB mm (across all business segments)	13.9	22.7

\* Including R&D results from previous years.

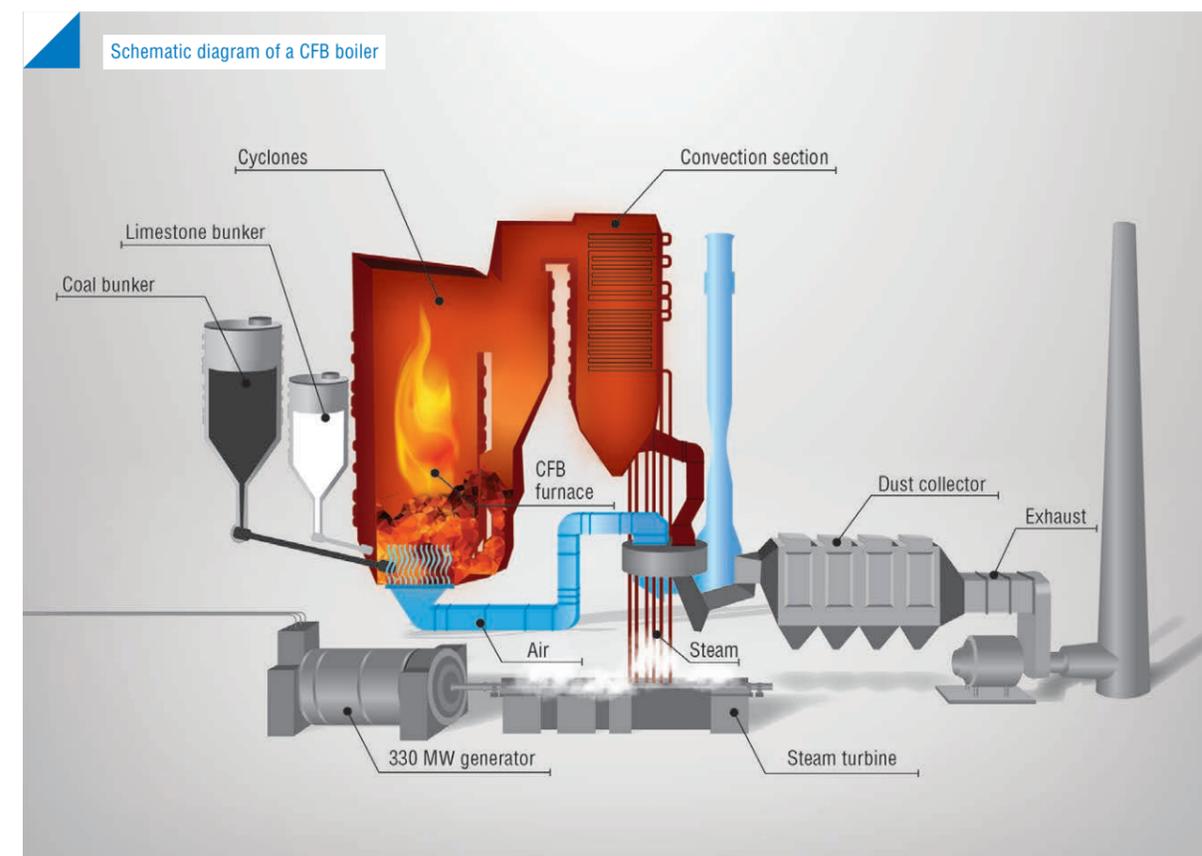


#### Key Innovative Projects

An example of an innovative solution successfully implemented at the Group's power plants is the **construction of Russia's first 330 MW coal-fired generating unit using circulating fluidisedbed (CFB)**

**technology at Novocherkasskaya GRES.** Commissioned on 30 June 2016, the project at Novocherkasskaya GRES is the most powerful generating unit in Russia using this technology. The total effect of

replacing the outdated equipment with a generating unit using CFB technology at Novocherkasskaya GRES is estimated at over RUB 270 million per year.



**Construction of an STU-660 power unit at Troitskaya GRES.** A unique 660 MW unit was commissioned at Troitskaya GRES in June 2016. It is the first coal dust-fired generating unit with such capacity in Russia. The STU-660 turbine unit for supercritical steam parameters achieves a minimum 42% generation efficiency.

The new unit at Troitskaya GRES, with a gas treatment system with a minimum 99.8% efficiency ratio, has proved to be one of the greenest coal-fired generating units in Russia. The commissioning of the new generating unit ensures a reduction in carbon dioxide emissions of

270 thousand tonnes per year and has drastically enhanced the technical and economic performance of Troitskaya GRES, increased the efficiency ratio, reduced fuel consumption, and boosted environmental performance. Reduced consumption of the high-ash Ekibastuz coal will lessen the urgency of the Kazakh ash dump filling issue. The total economic benefit from commissioning the new unit is estimated at RUB 7.1 billion per year.

**The upgrade of Tsentralnaya CHPP in St Petersburg.** Included in the Group's innovations is the project for an electric grid equipment

upgrade and construction of new gas-turbine units with a combined capacity of 100 MW at Tsentralnaya CHPP in St Petersburg. This project is unique, as it entailed Russia's oldest power plant, which is critical to uninterrupted energy supply to central districts of St Petersburg, being upgraded without interruption to its operation. The implementation of the project was further complicated not only by Tsentralnaya CHPP being surrounded by historical buildings, but also by the fact that 2017 marked the plant's 120th anniversary, and, accordingly, its restoration was also part of the upgrade project.



The upgraded facility at Tsentralnaya CHPP's PP-1 in St Petersburg

**Retrofitting a CHPP-22 power unit in Moscow.** In January 2017, AO Ural Turbine Works (part of AO ROTEC) launched the first next-generation combined-cycle turbine to implement a pilot for retrofitting Power Unit 9 at CHPP-22 operated by Mosenergo. As part of the project in 2018, the generating unit's core and auxiliary equipment will be replaced, including the replacement of its T-250/300-240 turbine, which has been in operation for approximately 280,000 hours since

1972, with a new T-295/335-23.5 model.

With a maximum capacity of 335 MW, the T-295/335-23.5 turbine is the largest in the world. The newest methods of digital modelling and analysis allowed the Group's engineers to raise the efficiency ratio of certain stages of the new turbine unit up to 92% and the entire unit up to 40% (in condensing mode). Cutting-edge materials were used to manufacture the turbine, helping

to achieve the unit's unprecedented reliability, safety, and efficiency. The turbine will become the flagship of a new model range and its widespread use is expected in the grids of cities with more than one million inhabitants.

The T-250 combined-cycle steam turbine slated for replacement is the first of the 19 turbines in this product family, manufactured by Ural Turbine Works from the 1970s to the 1980s specifically for Mosenergo's power plants. T-250 turbines are central to Moscow's heat supply system, with their combined capacity accounting for 40% of the total installed generation capacity operated by Mosenergo. The first three T-250 turbines were commissioned during the 1970s, precisely at CHPP-22. In the coming years, some of the T-250 turbines currently in operation will reach the end of their service life.



A T-295/335-23.5 steam turbine

Mosenergo and ROTEC industrial holding are piloting predictive analytics at generating facilities of the Moscow energy system. ROTEC's PRANA system was deployed at Generating Unit 3, CCGT-450, at Mosenergo-operated CHPP-27 in November 2017. The pilot enables early detection of the first signs of potential defects in equipment, two to three months ahead of a possible breakdown.

The system analyses data on the condition of the generating unit's core equipment, which includes two GTE-160 gas turbine units, a steam turbine, generators, two waste heat boilers, and a booster compressor station. The CHPP-27 personnel will receive analytics reports with data on the generating unit's condition, equipment startup and shutdown performance, and recommendations for further operation.

Early defect detection not only prevents accidents but also reduces repair costs by at least 20% through optimising procurement, logistics, and the duration of repairs, which can now be performed during scheduled equipment maintenance. Through these benefits, reliability is boosted and unscheduled downtime is minimised.

At the International Contest of Scientific, Technical Research, and Innovative Solutions Aimed at Developing the Fuel and Energy and Extraction Industries, two of Gazprom energoholding Group's projects won First Prize, another two projects were awarded Second Prize, and three received Third Prize. Gazprom energoholding, OGK-2, TGC-1, and Mosenergo were awarded winning certificates. The Contest was held with support from the Russian Ministry of Energy.

### Automation

Since 2013, to ensure monitoring of investment activities, Gazprom Group companies have had Enterprise Information Management Systems for Generating Companies (EIMS GC) and SAP-based Corporate Data Bank (CDB) for PJSC Gazprom, enabling online retrieval of information and report generation on the investment projects carried

out by the Group's generating companies in line with their approved investment programmes.

The EIMS GC also enables implementation management and tracking for new build capacity construction, technical re-equipment, retrofit, and repair projects.

In the medium term, the EIMS GC will be scaled up to cover the as yet non-automated business processes.

GRI 102-9

## Supply Chain

Fuel is the key resource in generating heat and electricity. Fuel costs also dominate the variable cost structure of each of the Group's generating companies, excluding MOEK.

	2016			2017		
	Fuel costs, RUB mm	Variable costs, RUB mm	Share of fuel costs in variable costs, %	Fuel costs, RUB mm	Variable costs, RUB mm	Share of fuel costs in variable costs, %
Mosenergo	110,222	124,630	88.4%	107,746	120,426	89.5%
TGC-1 (including Murmanskaya CHPP)	29,485	47,664	61.9%	31,884	51,940	61.4%
OGK-2	68,894	82,467	83.5%	66,292	81,492	81.3%
MOEK (including subsidiaries)	6,754	86,284	8.0%	7,076	91,372	7.7%

The structure of the Group's fixed costs is dominated by personnel, maintenance and repair, and tax costs.

Gazprom energoholding Group's fuel procurement strategy is aimed at optimising the fuel mix to minimise costs.

Diversifying supplies to our generating companies depends on their fuel mix and the distances between

generating facilities. For example, low supply diversification levels at Mosenergo and TGC-1 are due to the high regional concentration of their generation fleets as well as the use of gas as a primary fuel by the majority of power plants operated by the companies.

OGK-2's generation fleet is spread across 12 regions of Russia (including Groznenskaya TPP), therefore OGK-2 is focused on

partnerships with regional coal suppliers to optimise fuel costs by sourcing gas and various types of coal as feedstock for its power plants. Different OGK-2 branches source coal from the Kansko-Achinsky and Podmoskovny coal basins, the Borodinsky, Pereyaslovsky, and Ekibastuz open-pit coal mines, and from Eastern Donbass under long-term supply contracts.

## SUPPLY CHAIN\*



### GAS PROCUREMENT

#### Mosenergo

**Gas – 98.0% of fuel procurement:**  
2 suppliers.

Share of Gazprom Group companies – 62%.  
Share of third-party suppliers – 38%.

#### TGC-1\*\*

**Gas – 85.2% of fuel procurement:**  
2 suppliers

(including agreements following trading on the Saint Petersburg International Mercantile Exchange).  
Share of Gazprom Group companies – 100%.

#### OGK-2

**Gas – 76.0% of fuel procurement:**  
4 suppliers.

Share of Gazprom Group companies – 74%.  
Share of third-party suppliers – 26%.

#### MOEK\*\*\*

**Gas – 99.7% of fuel procurement:**  
1 supplier.

Share of Gazprom Group companies – 100%.



### COAL PROCUREMENT

#### Mosenergo

**Coal – 1.4% of fuel procurement:**  
1 supplier.

Share of third-party suppliers – 100%.

#### TGC-1\*\*

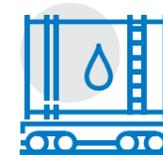
**Coal – 3.7% of fuel procurement:**  
1 supplier.

Share of third-party suppliers – 100%.

#### OGK-2

**Coal – 23.6% of fuel procurement:**  
6 suppliers.

Share of Gazprom Group companies – 3%.  
Share of third-party suppliers – 97%.



### FUEL OIL AND DIESEL PROCUREMENT

#### Mosenergo

**Fuel oil and diesel – 0.6% of fuel procurement:**  
2 suppliers.

Share of third-party suppliers – 100%.

#### TGC-1\*\*

**Fuel oil and diesel – 11.1% of fuel procurement:**  
2 suppliers.

Share of Gazprom Group companies – 16%.  
Share of third-party suppliers – 84%.

#### OGK-2

**Fuel oil and diesel – 0.4% of fuel procurement:**  
6 suppliers.

Share of third-party suppliers – 100%.

#### MOEK\*\*\*

**Fuel oil and diesel – 0.3% of fuel procurement:**

Share of third-party suppliers – 100%.

\* The supply chain diagram above shows major suppliers and their shares in the Group's purchasing costs for key fuels (natural gas and coal) used for power generation in 2017. The Group used a materiality threshold to identify major suppliers: the diagram shows suppliers whose share in the Company's costs for any given fuel exceeds 5%.

\*\* Including Murmanskaya CHPP.

\*\*\* Including subsidiaries.

All supplier relations are based on a responsible partnership approach, regardless of their share in the supply chain structure. The Group is committed to maintaining long-term, stable, and mutually beneficial relations with its suppliers. To this end, all its companies continuously work to ensure more stable supplies and more transparent pricing. When selecting suppliers and contractors, Gazprom energoholding Group mostly relies on competitive

tendering while its representatives ensure that counterparties have an impeccable business reputation and comply with laws and corporate and business ethics.

The procurement practices are governed by the Procurement Regulations of Mosenergo, TGC-1, OGK-2, and MOEK. All procurement procedures comply with the Constitution of the Russian Federation, the Civil Code of the

Russian Federation, Federal Law No. 223-FZ On Procurement of Goods, Work and Services by Certain Types of Legal Entities dated 18 July 2011, other federal laws and regulations of the Russian Federation, as well as the generally accepted principles of global procurement practices and other mandatory regulations, including local regulations.

#### GRI 204-1 Supplier Selection

In 2015, the Regulations on the Procurement of Goods, Work and Services by PJSC Gazprom and Gazprom Group Companies were amended to provide small and medium businesses (SMEs) with exclusive access to certain procurement opportunities and to introduce procurement tenders that require bidders to ensure engagement of SMEs as sub-suppliers (subcontractors or co-contractors).

The competitive procurement process prioritises proposals where a bidder is a Russian SME or involves Russian SMEs as subcontractors or co-contractors delivering tendered services.

In the context of these measures, the Group companies' annual value of SME procurement was 26% of total procurement in 2017, with Resolution of the Russian Government No. 1352 dated

11 December 2014 setting the combined annual value of SME procurement at no less than 18% of total procurement.

In 2017, the Group companies complied with Resolution of the Russian Government No. 1352 dated 11 December 2014 in terms of the annual value of procurement contracts awarded to SMEs through a tendering process open exclusively to SME bidders.

The value of contracts awarded through such tendering process by Mosenergo, TGC-1, OGK-2, and MOEK in 2017 totalled 16%, 23%, 29%, and 52%, respectively, of the combined annual procurement through all tenders, with the standard value set at 10%.

## Anti-Corruption

Gazprom energoholding Group's generating companies have embedded and foster a culture of zero tolerance for corruption. Employees of the Group's generating companies, both in Russia and abroad, abide by established requirements and restrictions of anti-corruption laws.

The Group's generating companies have a zero tolerance for any forms of illegal influence on the decisions of government agencies, including bribes, unacceptable gifts, employing family members of public officials, and charitable support and sponsorship upon the request of public officials employed at the government agencies which make decisions affecting the Group's generating companies.

A confirmed corrupt practice involving an employee of Gazprom energoholding Group was identified during the 2016 to 2017 reporting period.

It was established that an employee of one of the business units of MOEK Branch No. 3 identified non-contractual hot water consumption while performing an inspection. For the purpose of unjust enrichment, the person demanded a bribe from the Company for not reporting the offence and was later arrested by police officers upon accepting the bribe.

Following the criminal case hearing, the person was found guilty and sentenced to a three-year suspended sentence with a four-year probation period, a fine at 25 times the bribe amount, and barring from

management activities for one year. The sentence has come into force.

MOEK has taken measures to prevent similar incidents. The procedure for issuing operational readiness certificates for the autumn/winter period to heat consumers was reviewed, and a branch head control system has been established for these procedures. An electronic inspection status and result monitoring system was introduced in 2017 to prevent tampering with inspection parameters and related malpractice during the equipment inspection programme ahead of the autumn/winter period.

The Group takes active measures to prevent corrupt practices involving employees of Gazprom energoholding Group.

Anti-corruption activities in Gazprom energoholding Group's generating companies are implemented in strict compliance with Russian laws. Employees of the Group's generating companies are guided by Federal Law No. 273-FZ On Countering Corruption dated 25 December 2008, Decree of the Russian President No. 309 On Measures to Implement Certain Provisions of the Federal Law On Countering Corruption dated 2 April 2013, Instruction of the Russian Prime Minister No. VP-P13-9308 dated 28 December 2011, and both industry-specific and local regulations.

GRI 205-3

PJSC Gazprom's Corporate Security Service and corporate security departments of the Company's subsidiaries prevent and uncover corrupt practices within Gazprom Group as prescribed by Russian laws and Gazprom's regulations. These efforts rely on an ongoing cooperation with departments responsible for internal audit, corporate cost management, property management and corporate relations, and the law enforcement agencies of the Russian Federation.

Since 2014, PJSC Gazprom has operated a whistleblowing hotline to report incidents of perceived fraud, corruption, and embezzlement within Gazprom Group. Reports received through the hotline are thoroughly investigated and analysed.

The anti-corruption framework at Gazprom energoholding Group is based on OOO Gazprom energoholding's Code of Corporate Ethics, which sets out the Group's corporate values and covers issues such as conflict of interest,

nepotism, gifts, competitor and counterparty relations, anti-corruption, and other critical business conduct standards. The Code of Corporate Ethics is fundamental for all companies within Gazprom energoholding

Group. The Group companies have own Corporate Ethics Commissions supervising compliance with the Code's provisions and requirements. The relevant Commission can be contacted via email or through a hotline.

#### THE ANTI-CORRUPTION POLICY IN PLACE AT THE GROUP'S GENERATING COMPANIES IS GOVERNED BY THE FOLLOWING DOCUMENTS:

Documents	Adopted/amended on
<b>MOSENERGO</b>	
Regulations on the Procurement Committee	20 December 2011
Regulations on the Internal Control System	30 September 2016
Regulations on the Internal Audit Directorate	30 September 2016
Internal Audit Policy	30 September 2016
Risk Management Policy	28 December 2016
Regulations on the Procurement of Goods, Work and Services	13 November 2017
Business Ethics Code	18 June 2018

Documents	Adopted/amended on
<b>TGC-1</b>	
Regulations on the Procurement Committee	9 November 2011
Regulations on the Internal Audit Service	30 September 2016
Internal Audit Policy	30 September 2016
Regulations on the Internal Control System	30 September 2016
Risk Management Policy	30 June 2017
Rules for Counterparty Interactions in obtaining information on the chain of ownership, including beneficiaries (and ultimate beneficiaries), and/or the membership of the executive bodies of counterparties	1 November 2017
Regulations on the Procurement of Goods, Work and Services	14 December 2017
<b>OGK-2</b>	
Corporate Governance Code	26 September 2006
Regulations on the Procurement Committee	28 August 2014
Code of Corporate Ethics	2 October 2014
Regulations on the Internal Audit Directorate	30 September 2016
Internal Audit Policy	30 September 2016
Regulations on the Internal Control System	30 September 2016
Risk Management Policy	28 April 2017
Regulations on the Procurement of Goods, Work and Services	30 October 2017
<b>MOEK</b>	
Code of Corporate Behaviour	28 October 2009
Code of Corporate Ethics	25 December 2013
Regulations on the Procurement Committee	28 June 2016
Regulations on the Procurement of Goods, Work and Services	29 December 2017
Regulations on the Risk Management System	8 February 2018

# 4

## ENVIRONMENTAL SUSTAINABILITY

A **7.1%** year-on-year  
decrease in pollutant  
missions in 2017

A **11.7%** year-on-year  
decrease in waste generation  
in 2017

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# ENVIRONMENTAL SUSTAINABILITY

GRI 103-1

## Our Responsibility

Companies within Gazprom energoholding Group, the largest heat generation holding company in Russia, fully understand their environmental responsibility towards current and future generations and view both environmental sustainability and minimising the environmental impacts of power plants as a top priority.

The main impacts of the Group's generating facilities that can affect the environment and the health of employees and local residents living in the immediate vicinity include:

- emissions of greenhouse gases (GHG) and other pollutants
- wastewater discharge into water bodies
- industrial waste disposal, including bottom ash waste
- use of natural resources (fuel, water, and land resources)
- noise, vibration, and electromagnetic radiation

Key changes in internal regulations defining the environmental policy of Gazprom energoholding Group companies from 2016 to 2017:

### Gazprom energoholding

In December 2016, regulations on conducting technical cross-audits were introduced at the Group's generating companies.

- Company Context. The assessment of internal and external factors which influence the environmental management system in achieving set targets

In March 2017, OOO Gazprom energoholding's Research and Development Council approved the environmental policy and determined environmental performance targets for 2017 to 2019.

- List of Stakeholders and Their Expectations
- Register of Environmental Risks

### Mosenergo

In 2017, the company transitioned to the new ISO 14001:2015 standard, which specifies new additional requirements for an environmental management system. In transitioning to the new standard, Mosenergo developed new documents:

A number of existing internal regulations were also updated as part of the company's transition to the new ISO 14001:2015 standard.

In addition, the company developed: Regulations on the Risk Management System, Risk Management Policy, and Rules for Risk Management Interactions at Mosenergo.

### TGC-1

TGC-1's Environmental Policy was approved by resolution of the Board of Directors on 17 March 2017.

### OGK-2

OGK-2's Environmental Policy was approved on 14 May 2012. Its key objectives are reducing the company's environmental footprint and increasing its level of social responsibility.

### MOEK

The company's Environmental Policy was developed and enacted on 10 October 2016.

## Governance Bodies in Environmental Management

GRI 103-2

### GAZPROM ENERGOHOLDING

- Director for Production section
- Coordinating Committee for Environmental Protection

### MOSENERGO

- Head of the Occupational Health, Safety and Environment Directorate
- Environmental Service (a business unit within the General Directorate, part of the Occupational Health, Safety and Environment Directorate)
- Officers responsible for environmental protection across the company's branches
- Environmental Team responsible for on-site day-to-day environmental protection activities across branches (as part of the Branch Standards Service)

### TGC-1

- Deputy General Director – Chief Engineer – Director of Nevsky Branch
- Environmental Service (administratively reporting to the Director of Yuzhnaya CHPP, Nevsky Branch; functionally reporting to the Head of the Power Plant Operation Department)
- Environmental functions of Karelsky and Kolsky Branches (reporting to the Chief Engineers of relevant branches)
- Environmental officers in business units (typically, Chief Engineers)

### OGK-2

- Within the executive office, the Operation and Production Control Office is responsible for ecology and environmental protection
- Branches have environmental protection offices

### MOEK

- The production section, represented by the Ecology and Environmental Protection Office (within the Production Directorate of the Administrative Office, directly reporting to the First Deputy General Director – Chief Engineer)



While developing and improving measures to protect the environment against the negative impacts from its operations, the Group proactively cooperates with various stakeholders:

- Environmental regulators
- Research and educational institutions focused on environmental safety
- Specialised NGOs and local communities in the regions where the power plants are located

The Environmental Management System (EMS) compliant with ISO 14001:2015 (as certificated by specialised independent auditor firms) is the key mechanism used by the Group's generating companies to manage environmental risks and has been consistently rolled out to all business units of the Group companies since 2007. By the end of 2013, the ISO 14001:2004

Environmental Management System covered all business units of Mosenergo and TGC-1, and five branches of OGK-2: Stavropolskaya GRES, Serovskaya GRES, Pskovskaya GRES, Surgutskaya GRES, and Troitskaya GRES.

In 2016, a pre-certification EMS audit was conducted at MOEK. Following a review (clarification) of environmental targets and their level of significance, a revision of the EMS in 2018 was decided.

In 2017, Mosenergo's environmental management system was audited for its compliance with ISO 14001:2015<sup>17</sup>.

The audit confirmed Mosenergo's transition to the new standard and the effectiveness of its environmental management system. No non-compliance was identified during the audit. The auditors noted that the branches were well prepared for the audit, and responsible units demonstrated high performance in maintaining the environmental management system. Special praise was given to the overall high level of employee skills, the understanding of Mosenergo's environmental policy by operational staff, and their understanding of the role they play in preventing negative impacts on the environment.

## Our Performance

Gazprom energoholding Group companies prioritise projects that simultaneously address several issues. For example, a new 660 MW coal dust Generating Unit 10 (STU-660) was commissioned in June 2016 at Troitskaya GRES, a branch of OGK-2. Unlike other generating units, it uses the higher quality Kuzbass coal as process fuel instead of coal from the Ekibastuz coal basin in the Republic of Kazakhstan. This cuts the branch's emissions

and specific water consumption while reducing the amount of bottom ash waste intended for disposal. The unit allows for dry ash (fly ash) screening, which transfers some ash intended for waste into a fuel product category, thereby enabling further reductions of disposed waste. Sulphur emissions can also be considerably reduced, as the unit has the potential for emission desulphurisation facilities to be installed.

A responsible approach to environmental safety means that the Group should be as open as possible and actively engage all stakeholders. To this end, the Group frequently covers all matters related to its environmental impacts and initiatives on its corporate websites.

On an ongoing basis, the Group addresses:

- financing the environmental policy
- preventing emergency situations with environmental implications
- training employees and enhancing their environmental skills and awareness
- interacting with authorities, regulating and non-governmental organisations, and other stake-

holders regarding environmental protection

- communicating the Group's environmental requirements and standards to suppliers and contractors and monitoring their compliance

## Our Objectives

The mid-term environmental targets set for Gazprom energoholding Group for 2019 (with the 2014 levels as the baseline):

- Reduction of specific NOx emissions by 0.02 tonnes/million kWh
- 2.11% reduction of landfill share
- 8.38% reduction of the above-limit negative environmental impact charges

### GAZPROM ENERGOHOLDING GROUP'S ENVIRONMENTAL TARGETS

Environmental performance indicator	2014 baseline	2017 target	2017 actual	Progress against target	2019 target
Specific NOx emissions, tonnes/million kWh	0.41	0.40	0.39	Target achieved	0.39
Landfill share	95.4%	90.2%	88.3%	Target achieved	93.29%
Above-limit negative environmental impact charges	23.6%	23.1%	22.2%	Target achieved	15.22%

## Environmental Safety Training

Employees of generating companies responsible for environmental activities are trained under the following programmes: Ensuring

Environmental Safety of Hazardous Waste Treatment, Ensuring Environmental Safety by Managers and Experts of General Management

Systems, Professional Training to Qualify for the Tasks of Handling Hazard Class 1 to 4 Wastes.

### EMPLOYEES WHO HAVE COMPLETED

	2016	2017
Mosenergo	90	90
TGC-1	40	65
OGK-2	65	76
MOEK	254	43

### EMS TRAINING

	2016	2017
Mosenergo	0	21
TGC-1	0	0
OGK-2	0	0
MOEK	37	0

Each of the Group's generating companies drafts and implements

an annual Environmental Plan to reduce adverse environmental

impacts and ensure the sustainable use of natural resources.

<sup>17</sup> The audit was conducted by the Russian Register Certification Association and covered the Environmental Service within the General Directorate and Mosenergo's CHPP-8, CHPP-9, and CHPP-26 branches.

## ENVIRONMENTAL PROTECTION EVENTS



OGK-2's Adlerskaya TPP

### YEAR OF THE ENVIRONMENT

#### Gazprom energoholding

The first vocational skills competition among environmental experts was held. The winners were representatives of Mosenergo and OGK-2.

#### Mosenergo

In 2017, Mosenergo participated in 32 events dedicated to the Year of the Environment. These events were aimed at ensuring environmental safety and addressing important aspects relating to the use of natural resources. They were organised to enhance employees' environmental awareness and implement land improvement initiatives at branches. Social events

#### TGC-1

As part of the Year of the Environment, TGC-1 held multiple events, the largest of which were covered in the media. Energy workers of the Tuloma and Serebryansky

#### OGK-2

Publications on environmental topics were arranged for local media (newspapers and TV). Tours for schoolchildren and higher-education students with discussions of environmental topics and issues were held in 2017 at Serovskaya GRES, Troitskaya GRES, Ryazanskaya GRES, and Cherepovetskaya GRES.

As part of the Year of the Environment, the Let's Preserve Our Nature event for children – a game with elements

The Environmental Sprint competition was held at the 1st Open Contest for Operating Personnel of Cross-Connection Thermal Power Plants as part of the Reliable Energy Industry award.

were held, including introductory tours of branches for students and specialists from the Department of Economic Policy and Development of Moscow and the Federal Antimonopoly Service. Publications covering Mosenergo's environmental activities and efforts aimed at reducing the company's environmental footprint also appeared in the media.

HPP Cascade took part in shore cleanups as part of the Green Russia, the All-Russian Environmental Cleanup Day.

of research activities – was held at Pskovskaya GRES, a branch of OGK-2. The environmental initiatives at Kirishskaya GRES included the Eco Life Hacks from Kirishskaya GRES video contest as well as the Eco Postcards campaign inviting participants to send a postcard to their loved ones to say hi and remind them about natural resource conservation.



Tree planting in Petrozavodsk, Republic of Karelia

### PARTICIPATION IN ENVIRONMENTAL CAMPAIGNS, CONTESTS, WORKSHOPS, AND CONFERENCES; ENGAGEMENT WITH ENVIRONMENTAL COMMUNITIES

#### TGC-1

The company participated in the all-Russian annual event Long Live the Forest! and implemented a number of tree planting initiatives in the town of Kandalaksha and the city of Petrozavodsk. As part of the 2017 Green Spring all-Russian environmental campaign, cedar saplings were planted at the premises of Petrozavodskaya CHPP and at three cascades of Karelsky Branch.

Environmentally themed drawing, poster, and photo contests were held among schoolchildren and plant employees.

#### MOEK

The company engages with environmental and local communities via official letters in response to its hotline's inbound requests and enquiries. Stakeholders are kept informed in writing both as part of the company's statistical reporting and its responses to requests.

The company was actively involved in discussions, conferences, and round tables within programmes devoted to Ensuring the Environmental Safety of Production Facilities / Environmental Safety at leading higher education institutions in St Petersburg.

Tours were arranged for schoolchildren, students, employees, and foreign colleagues.



Spray pond at Mosenergo's CHPP-17

## SUSTAINABLE USE OF NATURAL RESOURCES AND CARE FOR THE ENVIRONMENT

### OGK-2

Employees engage in land improvement, cleanups, and greenery planting at branch premises on an annual basis, whereby trees and flowers are planted and over 500 tonnes of waste is removed. From 2018 to 2019, OGK-2

will continue its close cooperation with local communities and other stakeholders on the state of the environment and the results of its environmental protection initiatives. The public will also be informed through the media.

### MOEK

In April 2017, MOEK's employees held traditional spring cleanup days. Events devoted to cleanups and land

improvements at operating facilities were held at all branches, involving over 1,500 employees.

GRI 301-1

## Fuel Use and Energy Efficiency

### Fuel Consumption

All feedstocks and materials used by the Group fully meet the existing national standards and do not contain polychlorinated biphenyls (PCB) or similar substances.

Energy consumption and energy efficiency management at Gazprom energoholding Group's generating companies are in line with the requirements of Federal Law No. 261-FZ On Energy Saving and

Enhanced Energy Efficiency as well as Amendments to Certain Legislative Acts of the Russian Federation dated 23 November 2009. All the Group companies comply with legal requirements.

They have conducted energy audits of their facilities and received energy performance certificates based on the results:

	Issued by	Certificate No.	Issue date
Mosenergo	000 MEKOM	2017-E-038-079-17	November 2017
TGC-1	000 A-1 Energo	No. 019-012-1172/400	October 2016
Murmanskaya CHPP	000 A-1 Energo	No. 019-012-13427	April 2013
OGK-2	000 Technology Centre	428-GPE/16	November 2016
MOEK	000 Closed Analytical Association Yurenergo	E-015/006-17	May 2017

Mosenergo's power plants use gas as the primary fuel. CHPP-22 is Mosenergo's only power plant using coal as a primary fuel source along with gas. Most power plants of Mosenergo use fuel oil as their emergency and backup fuel.

All CHP plants of TGC-1 located in St Petersburg and the Leningrad Region, as well as Petrozavodskaya CHPP in Karelia, use gas as a primary fuel source and fuel oil as backup fuel. Pervomaiskaya CHPP uses diesel fuel as emergency fuel along with fuel oil. Apatitskaya

CHPP uses coal as the primary fuel and fuel oil as backup fuel. PAO Murmanskaya CHPP, a subsidiary of TGC-1, is oil-fired. TGC-1 stands apart from Mosenergo and OGK-2, as its output has a significant share of hydro generation:

GRI 302-1

	2016			2017		
	HPP output, '000 MWh	Total output, '000 MWh	HPP share in total output	HPP output, '000 MWh	Total output, '000 MWh	HPP share in total output
TGC-1	12,863.1	27,672.3	46.5%	13,685.9	29,509.3	46.4%

Gas dominates the fuel mix of OGK-2. Although, some power plants use coal as a primary fuel source.

MOEK's TPPs and boiler houses use natural gas as the primary fuel for their heat and electricity generation. MOEK also operates diesel-fired

boiler houses, although the share of diesel fuel in the company's overall fuel mix is insignificant.

### FUEL CONSUMPTION

GRI 302-1

	2016	2017
<b>MOSENERGO</b>		
Gas, mmcm	21,693	21,063
Fuel oil and diesel fuel, '000 tonnes	4	16
Coal, '000 tonnes	700	441
<b>TGC-1 (INCLUDING MURMANSKAYA CHPP)</b>		
Gas, mmcm	5,367.5	5,555.7
Fuel oil and diesel fuel, '000 tonnes	261.4	271.9
Coal, '000 tonnes	465.2	492.4
Wood, solid cubic metres	39.5	13.9
<b>OGK-2</b>		
Gas, mmcm	13,512.2	12,924.0
Fuel oil and diesel fuel, '000 tonnes	29.6	35.9
Coal, '000 tonnes	11,410.1	10,568.1
<b>MOEK (INCLUDING SUBSIDIARIES)</b>		
Gas, mmcm	1,294	1,330
Fuel oil and diesel fuel, '000 tonnes	0.2	0.4
Coal, '000 tonnes	0	0

The Group views secure fuel supplies to its plants as crucial to their operation. For this reason,

the Company enters into long-term supply agreements for its required volumes of primary fuels and builds

up sufficient stocks of backup fuels as requested by the Russian Ministry of Energy.

## Energy Efficiency Assessment

The Company uses specific reference fuel consumption (SRFC) as the key energy efficiency metric for its generating facilities.

### GRI 302-2 SPECIFIC REFERENCE FUEL CONSUMPTION<sup>18</sup>

	2016		2017	
	SRFC for electricity output, g. o. e./kWh	SRFC for heat output, kg/Gcal	SRFC for electricity output, g. o. e./kWh	SRFC for heat output, kg/Gcal
<b>MOSENERGO</b>				
dual fuel (gas + coal)	232.3	164.0	226.3	163.6
<b>TGC-1</b>				
gas	209.9	168.9	209.2	168.2
coal	173.9	176.7	189.9	178.6
fuel oil (Murmanskaya CHPP)	–	174.2	–	174.1
<b>OGK-2</b>				
gas	318.3	142.3	323.6	143.4
coal	409.3	170.3	412.3	170.3
dual fuel (gas + coal)	345.4	192.4	347.9	233.9
<b>MOEK<sup>19</sup></b>				
gas	0	157.3	0	157.7

Each of the Group's generating companies, excluding MOEK, cover their operational heat and electricity needs using mostly their own output.

### GRI 302-1 HEAT AND ELECTRICITY CONSUMPTION FOR OPERATIONAL NEEDS

	2016		2017	
	Electricity, billion kWh	Heat, mm Gcal	Electricity, billion kWh	Heat, mm Gcal
Mosenergo	4.85	0.395	4.86	0.381
TGC-1 (including Murmanskaya CHPP)	1.573	1.047	1.634	1.087
OGK-2	3.823	3.287	3.768	2.969
MOEK	0.143	0.162	0.239	0.155

<sup>18</sup> SRFC calculations are based on the total volumes of fuel burned for generation, including fuel oil and diesel fuel.

<sup>19</sup> SRFC for heat generation from own sources (non-combined generation) at MOEK.

Energy losses during heat and electricity transmission are another important measure of the companies' energy efficiency performance.

### HEAT LOSSES IN GRIDS ON THE BALANCE SHEET OF THE GROUP'S GENERATING COMPANIES AND THEIR SUBSIDIARIES<sup>20</sup>, '000 Gcal

	2016	2017
Heating grids of MOEK	5,846.85	5,482.72
Heating grids of Mosenergo leased to MOEK	453.82	421.88
Heating grids of OOO TSK Mosenergo (owners: MOEK – 77.49% and Mosenergo – 22.51%)	306.32	520.38
Heating grids of OOO TSK Novaya Moskva (subsidiary of OOO TSK Mosenergo)	69.33	68.41
AO St Petersburg Heating Grid (subsidiary of TGC-1, 74.99% share)	1,914.1	1,870.2
Heating grids of PAO Murmanskaya CHPP (subsidiary of TGC-1, 98.68% share)	85.5	91.7
Heating grids of OGK-2	129.25	125.78

## Energy Efficiency Enhancement

Gazprom energoholding Group companies consistently improve the efficiency of their energy resource use, including through extensively applying advanced technology

and equipment, which enables them to cut costs and reduce their environmental footprint.

From 2016 to 2017, Gazprom

energoholding Group's generating companies achieved the following savings through their energy saving programmes<sup>21</sup>:

	Savings							
	2016				2017			
Energy saving and energy efficiency enhancement programmes	'000 t. o. e.	mm kWh	'000 Gcal	RUB mm	'000 t. o. e.	mm kWh	'000 Gcal	RUB mm
Mosenergo	956.8	392.8	46.0	4,438.5	900.9	565.3	87.6	4,482.2
TGC-1	16.8	0.3	0.2	70.0	11.2	0.6	0.1	48.3
including								
TGC-1	16.8	0.2	–	69.5	11.1	0.3	–	46.7
Murmanskaya CHPP	0.0	0.1	0.2	0.5	0.1	0.3	0.1	1.6
OGK-2	76.0	105.7	47.7	329.5	23.0	22.1	7.4	133.9
MOEK	–	–	92.1	164.3	0.2	–	79.5	130.7
including								
MOEK	–	–	92.1	159.0	–	–	66.2	118.1
OOO TSK Mosenergo	–	–	–	3.2	0.2	–	9.2	10.1
OOO TSK Novaya Moskva	–	–	–	2.1	–	–	4.1	2.5
<b>Total Gazprom energoholding Group</b>	<b>1,049.6</b>	<b>498.8</b>	<b>186.0</b>	<b>5,002.3</b>	<b>935.3</b>	<b>588.0</b>	<b>174.6</b>	<b>4,795.1</b>

<sup>20</sup> Heat transmission and distribution losses as a percentage of total heat supplied to the grid (including purchased heat and heat transmission services).

<sup>21</sup> For more details see APPENDIX 3.

## Key Energy Saving Initiatives

### MOSENERGO

Key energy saving initiatives include replacing and expanding plant capacity through commissioning of combined cycle equipment, as well as initiatives aimed at increasing the share of cogeneration at Mosenergo's CHP plants. Along with CCGT units, recently installed fluid couplings contributed to reduced electricity consumption for operational needs of CHP plants.

**The overall economic benefit for 2017 is estimated at RUB 4,482 million.**

### OGK-2

Key energy saving and energy efficiency enhancement initiatives:

- Surgutskaya GRES-1. Turbines of Generating Units 2 and 7 optimised; heaters of Generating Units 1, 6, and 9 retrofitted; boiler of Generating Unit 9 re-equipped; condensing unit of Generating Units 2 and 13 re-equipped
- Ryazanskaya GRES. The share of gas in the fuel mix of coal-fired generating units reduced; steam and condensate losses at 1st stage generating units reduced; steam turbine of Generating Unit 7 repaired to eliminate capacity loss; gas ducts sealed between economisers of Generating Unit 7; in-leaks in boiler tubular air heater of Generating Units 1 and 3 eliminated; incandescent and fluorescent light bulbs replaced with LEDs
- Novocherkasskaya GRES. Circulation pump (CP) 3B overhauled; CP 5 retrofitted; CPs of Generating Units 1, 41A, 4A, 4B repaired; condenser of Generating Units 2 and 5 cleaned; CPs of Generating Units 1 and 4 repaired
- Kirishskaya GRES. Gas analysers installed; heat exchange elements in regenerative air heaters of boilers 3 and 5 replaced; compensators in gas and air ducts of boiler 1 replaced
- Stavropolskaya GRES. Electric heaters installed to dry the condenser pipe system; software suite to control technical and economic performance deployed; water consumption for operational needs reduced by tying in a return pipe to the high-pressure circulating water pipeline
- Serovskaya GRES. Equipment operation modes optimised, efficiency of electricity and capacity sales increased; coal costs cut
- Pskovskaya GRES. Boilers operate at low loads with one exhaust; fuel oil facilities put in cold reserve at outside temperatures above zero; heating grid make-up pump replaced with a low capacity one; operating time of common plant and Group equipment changed from capacity measurement hours to night time; temperature of industrial superheated steam lowered to reduce heat loss through exhaust gases; electric boilers for hot water supply installed for the non-heating season

**The overall economic benefit for 2017 is estimated at RUB 133.9 million.**

### TGC-1

Key initiatives within energy saving and energy efficiency enhancement programmes:

- Turbine unit condenser at Vyborgskaya CHPP shifted to water supplied by a municipal utility
- Turbine unit ejector at Petrozavodskaya CHPP retrofitted, with the tube bundle and diffuser nozzles replaced
- Building heating systems retrofitted at the Suna HPP Cascade, with wooden door and window units replaced with PVC
- Variable-frequency drives deployed in the heating grids of Murmanskaya CHPP
- Pipes in heating grid pipelines replaced with pre-insulated pipes
- Energy saving lighting systems introduced

**The overall economic benefit for 2017 is estimated at RUB 48.3 million.**

In addition, measures are taken on an annual basis within the repair programme to reduce in-leaks to the gas and air duct of boiler units, as well as cut the costs of draught and blast, and temperature drop in turbine condensers and heat exchangers.

In 2017, fuel efficiency was improved mainly through technical maintenance and repair of existing generating equipment with partial replacement of auxiliary equipment.

### MOEK

The following key initiatives within energy saving programmes were implemented:

- 117.75 km of heating grids retrofitted using latest technology (XLPE pipelines, pipelines insulated with PU foam)
- 32 sliding expansion joints replaced
- 20 thermal substations retrofitted and 82 automated
- 854 heat metering units replaced

**The overall economic benefit for 2017 is estimated at RUB 130.7 million.**

In addition, pursuant to Federal Law No. 261-FZ On Energy Saving and Enhanced Energy Efficiency as Well as Amendments to Certain Legislative Acts of the Russian Federation dated 23 November 2009, a mandatory heat audit of facilities operated by the company was conducted at MOEK, and based upon its results, energy performance certificate No. E-015/006-17 dated May 2017 was issued and registered by the Russian Ministry of Energy.

GRI 305-5

## Emissions

Pollutant and GHG emissions are one of the most significant environmental aspects in the operation of fuel-burning units.

Accredited chemical laboratories perform industrial environmental control of pollutant emissions at all power plants in accordance with schedules approved by supervisory authorities. Based on the data obtained, compliance with

combustion modes is monitored, and charges for negative impacts on the ambient air are calculated.

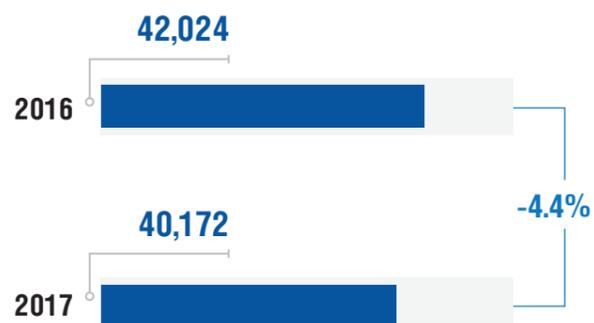
In addition, Mosenergo and MOEK have in place automated systems to monitor the quality and amount of pollutant emissions. The data captured by the system are used for internal control and informed management decision making, and are also submitted to specialised

supervisory and regulatory authorities responsible for management of natural resources and environmental protection.

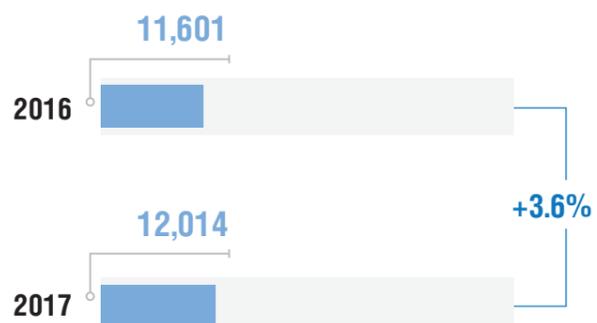
In 2017, gross atmospheric emissions reduced by 25.9 thousand tonnes (–7.1%) year-on-year. Gross emissions totalled 336.3 million tonnes.

### GHG EMISSIONS, CO<sub>2</sub> EQUIVALENT, '000 TONNES

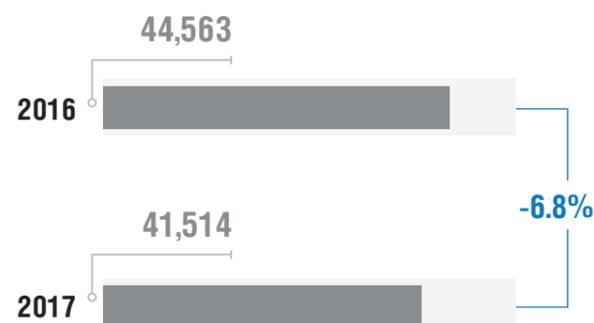
#### MOSENERGO



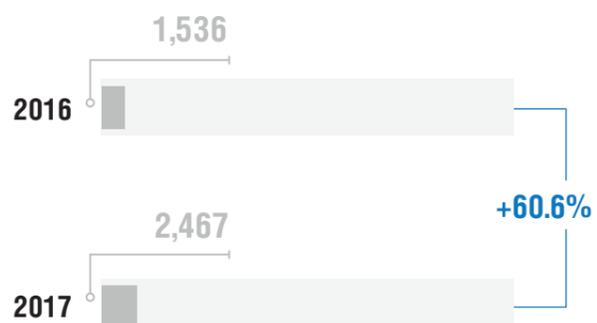
#### TGC-1



#### OGK-2



#### MOEK



For more details on emissions see APPENDIX 4.

Gazprom energoholding Group's generating companies do not produce significant indirect GHG emissions except as described below.

GRI 305-2  
GRI 305-3



**Gazprom energoholding Group does not emit ozone-depleting substances.**

GRI 305-6

### MEASURES TO REDUCE THE VOLUME AND INTENSITY OF POLLUTANT EMISSIONS

GRI 305-5

Initiatives	Costs of measures to reduce the volume and intensity of pollutant emissions (RUB '000)	
	2016	2017
<b>MOSENERGO</b> <ul style="list-style-type: none"> <li>PVK-6 peak water boiler re-equipped at CHPP-8</li> <li>Flue gas recirculation at electric boiler house EK-11, CHPP-12</li> <li>Gas burners replaced at PVK-5, CHPP-16 (FEED)</li> <li>Gas burners replaced at PVK-6, CHPP-16 (FEED)</li> <li>Burners replaced at PTVM-100 3, CHPP-12</li> <li>Burners replaced at PTVM-100 PVK of Generating Unit 2, CHPP-22</li> <li>GDS-100 gas burners replaced at PVK-1, CHPP-26</li> <li>GDS-100 gas burners replaced at PVK-4, CHPP-26</li> <li>Burners replaced at PTVM-100 3, CHPP-17</li> </ul>	67,298.5	4,583.0
<b>TGC-1</b> <ul style="list-style-type: none"> <li>Stack repair at Pravoberezhnaya CHPP</li> <li>Services related to the provision of special hydrometeorological information</li> <li>Boilers overhauled at Generating Units 7 and 8, Kolsky Branch</li> <li>Water treatment facilities retrofitted at Pravoberezhnaya CHPP boiler shop</li> <li>Other initiatives</li> </ul>	5,940.8	16,887.0
<b>OGK-2</b> <ul style="list-style-type: none"> <li>Novocherkasskaya GRES: plants in the buffer zone of the Branch attended to; land improvement and tree planting carried out in the buffer zone of the Branch; instruments for the sanitary and industrial laboratory of the chemical facility purchased and calibrated</li> <li>Pskovskaya GRES, Cherepovetskaya GRES: hydrometeorological information obtained</li> <li>Serovskaya GRES: boiler unit fly ash collectors and dust extractors repaired. Warnings received about predicted high levels of air pollution</li> <li>Surgutskaya GRES-1: flue gas analysis system with optical sensors (O<sub>2</sub>, CO) installed downstream from the exhaustor at Generating Unit 14; gas analysers at the equipment testing and adjustment shop calibrated; gas analysers (for NO<sub>x</sub>) at the thermal automatic systems and measurement shop calibrated; gas analysers at the Environmental Protection Office calibrated; hydrometeorological services delivered</li> <li>Troitskaya GRES: scheduled compulsory repair of the gas treatment unit (overhaul); maintenance of the gas treatment unit; development of industrial environmental controls (air); construction of desulphurisation facilities and electric filters; information gathered about adverse meteorological conditions; dust suppression at section 3 ash storage areas carried out by planting grasses</li> </ul>	68,568.3	248,481.5
<b>MOEK</b> <ul style="list-style-type: none"> <li>Ambient air protection and climate change prevention</li> </ul>	-	-

Gazprom energoholding Group carries out research projects and deploys new technological solutions to make the ambient air cleaner. The Group's generating companies reduce GHG emissions through

operation of more environmentally efficient equipment, advanced innovative combined cycle gas turbine (CCGT) units, to generate electricity at power plants. The long-term programme to close

MOEK's minor boiler houses, along with rational load distribution between Mosenergo and MOEK enabled a significant reduction of emissions in the Moscow Metropolitan Area.

Mosenergo presented its achievements in reducing GHG emissions in Moscow at the Climate Forum of Russian Cities on 21–22 August 2017. The Forum was held within the business agenda of the Year of the Environment in Russia. The Forum's sessions and round-table discussions focused on climate change, urbanisation, alternative energy, territory development, and adaptation of local residents.

Mosenergo's project Integrated Implementation of Combined Cycle Technologies at Mosenergo's CHP Plants won the Climate Development Leader competition for best practices and solutions within climate and environmental initiatives, established by the Department of Natural Resources and Environmental Protection of Moscow and first held in August 2017. The company was also awarded the diploma for contribution to the development of an urban system in the Eco-Corporation of the Year of the Environment category with its project Mosenergo's Environmental Policy Requirements Implementation.

GRI 301-1

## Water Management

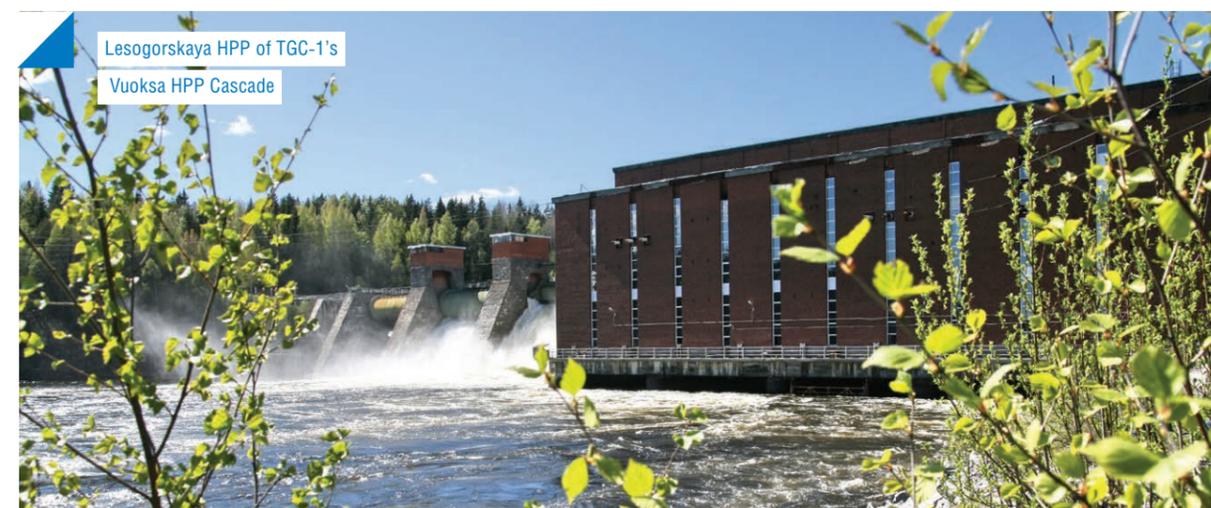
Gazprom energoholding Group is actively working to reduce water withdrawal and discharge. In addition, generating companies strive to minimise effluent in wastewater. To this end, all power plants install or retrofit special wastewater treatment and neutralisation equipment and

facilities. Special emphasis is put on monitoring the content of oil products in wastewater.

Most combined heat and power plants draw service water from surface water bodies, while some power plants use water from industrial water pipelines. Water

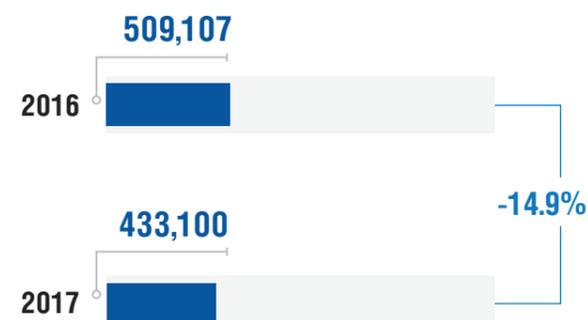
from municipal water pipelines is used for sanitary purposes.

Water withdrawal in 2017 reduced insignificantly year-on-year, by 4,833 thousand cubic metres, or – 0.1%.

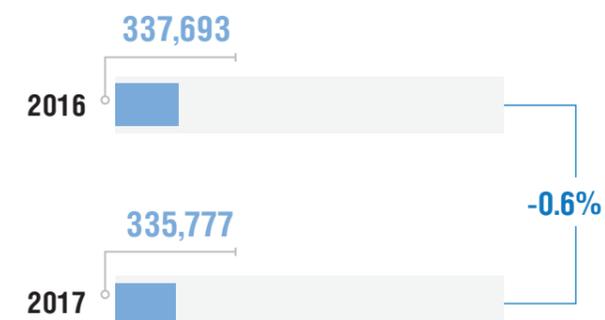


## WATER WITHDRAWAL, '000 CUBIC METRES

### MOSENERGO



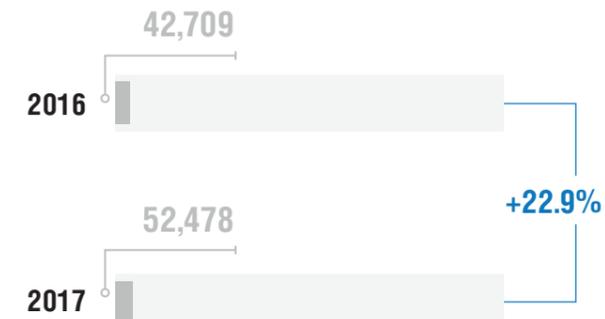
### TGC-1



### OGK-2



### MOEK

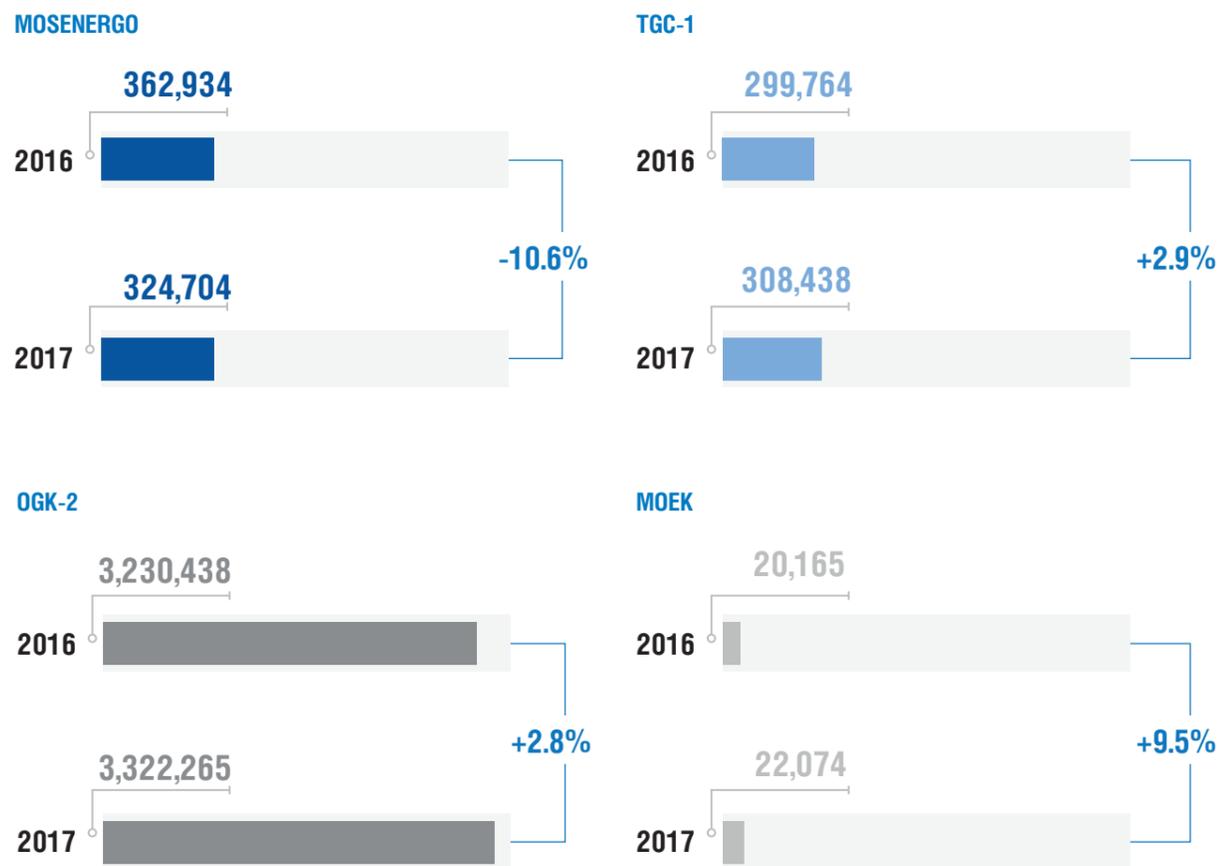


For more details on the volume and sources of water withdrawal, as well as water reuse at Gazprom

energoholding Group's generating companies see APPENDIX 4.



**GRI 306-1 WASTEWATER, '000 CUBIC METRES**



In 2017, wastewater discharge was up 64,181 thousand cubic metres, or 1.6%, year-on-year.

Wastewater is discharged via special water outlets into surface water bodies and sewerage networks. Chemical laboratories of power plants check the quality of wastewater on a regular basis. For details on the volume of disposed wastewater and its purification levels see APPENDIX 4.

The wastewater discharged by the Group's generating companies

does not contain polychlorinated biphenyls (PCB) or similar substances, and is not transferred to other organisations for reuse.

Water bodies used for withdrawal by generating companies are not located within specially protected natural areas. The Company takes steps to conserve the biodiversity of water bodies.

Fish-protection systems are installed at all CHP plants of Gazprom Energoholding Group withdrawing water from water bodies.

TGC-1's Nizhne-Tulomskaya HPP consistently maintains the efficient operation of a unique hydrotechnical facility – a fish ladder designed to facilitate seasonal salmon migration to spawn. Its structure copies the bed of a mountain river. The fish ladder allows salmon to swim to the upper reaches of the Tuloma river to spawn and return to the sea with the new generation of fish at the end of summer. The average of 6 to 7 thousand fish pass through the fish ladder.

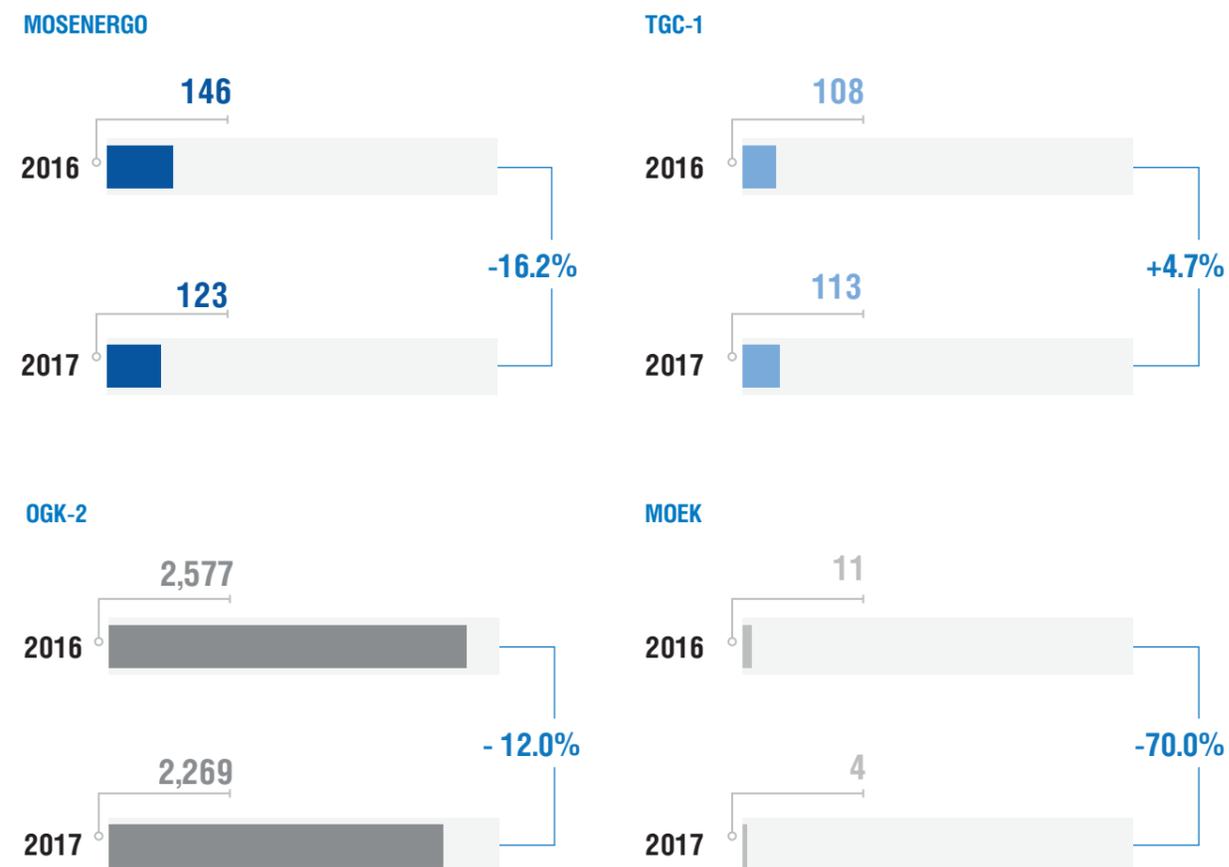
**Waste Disposal**

Operations of the Group companies generate industrial and consumer waste. The level of adverse environmental impacts of the Group companies' operations, primarily

the intensity of emissions, and the amount of waste generated are closely linked to a number of factors:

- Electricity generation rate
- Configuration and condition of process equipment at the power plants
- Fuel mix used

**WASTE GENERATION, TONNES**



**We generated less waste in 2017 than in 2016: by**

**338.8**

**thousand tonnes, or 11.7% year-on-year**

Most waste from our operations is represented by Hazard Classes 4 and 5 wastes. Bottom ash from coal burning are Hazard Class 5. Bottom ash is placed at our own specially licensed ash dumps.

Out of all the waste we generate only used-up fluorescent lamps are of Hazard Class 1. They are carefully collected and delivered to specialist entities for disposal (neutralisation).

**GRI 306-5**  
**GRI 306-4**  
**GRI 306-3**  
A considerable portion of OGK-2's generation fleet is coal-fired, which makes the issue of bottom ash disposal particularly important for the company. To reduce its amount and maintain the useful capacity of existing ash dumps, measures are taken to dispose of bottom ash waste from ash dumps and remove

dry ash directly from under electric filters. E.g. bottom ash from OGK-2's Troitskaya GRES is taken to an ash dump at the salt lake of Shubarkol. Since it is located in the Kostanay Region of Kazakhstan, all relevant environmental measures are taken in accordance with the Environmental Code of the Republic of Kazakhstan.

In the reporting period, OGK-2 exported bottom ash waste (Hazard Class 5) to the Republic of Kazakhstan (Lake Shubarkol): 504.3 thousand tonnes in 2016, and 419.4 thousand tonnes in 2017.

There were no significant spills of pollutants in 2016 and 2017.

By setting up an ash dump at Lake Shubarkol, we noticeably changed the local environment. Some of these changes are negative, but some are positive for the local biosphere. E.g. meltwater from the eastern water intake area of the dump was obstructed by a dam, which resulted in a new water reservoir, Vostochny. It lies in the path of seasonal bird migrations. Currently, the new lake hosts ducks, nettas, herons, cranes, coots, and swans, with many of the species featured in the Red Data Book. An increase in the fowl population led to higher numbers of birds of prey (kites, golden eagles, falcons, and snowy owls) and carnivorous animals (foxes, corsacs, and weasels). Desalination of the surface waters in the ash dump vicinities created favourable living and spawning conditions for carps. Gudgeons, which also appeared in the lake, are a sign that the water is relatively clean. Moreover, grain crops on the land around the dump have increased, while the area of saline soils has shrunk, creating more agricultural lands.

## Environmental Compliance

**GRI 307-1** FINES AND NON-FINANCIAL PENALTIES FOR ENVIRONMENTAL NON-COMPLIANCE

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
Number of non-financial penalties imposed	16	4	-	-	-	-	1	-
Total amount of fines imposed, RUB thousand	716	69	520	270	2,597	424	2,380	2,200
including in the Russian Federation	716	69	520	270	520	215	2,380	2,200
including in the Republic of Kazakhstan	-	-	-	-	2,077	209	-	-

The largest fines imposed on OGK-2 in 2016 and 2017 were related to the company's operation of the ash dump of Troitskaya GRES in the Republic of Kazakhstan. All identified violations were remedied, and the fines paid.



OGK-2's Novocherkasskaya GRES

# 05

## SOCIAL

## SUSTAINABILITY



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In 2016-2017, employee turnover  
did not exceed **5%**

Collective bargaining agreements  
cover over **99%** of employees\*

\* Excluding employees of administrative offices  
to whom other internal regulations apply

# SOCIAL SUSTAINABILITY

GRI 103-1

## Our Responsibility

At Gazprom energoholding Group, we are aware that while labour law compliance and competitive remuneration are necessary for retaining highly skilled professionals and recruiting new talent, they are not wholly sufficient conditions on their own. We strongly focus on creating safe and comfortable working conditions while providing our employees with opportunities for career enhancement and professional development. We also hold skills

contests and sporting, recreational, and other events and programmes for our employees. The Group also cares for the social security of its employees. All this combined provides employees an incentive for a long and efficient experience with the Group companies and helps them understand both their value to the company and the importance of their contribution to its overall success.



## Social Sustainability Bodies<sup>22</sup>

### GAZPROM ENERGOHOLDING

- Human Resources Directorate
- Staff Training and Organisational Development Directorate

### MOSENERGO

- Benefits and Compensations Office
- Personnel Development Office
- Public Relations and Government Relations section
- Training Centre

### TGC-1

- Remuneration and Employment Office: social benefits and guarantees
- Social and Labour Relations Office: voluntary medical insurance (VMI), accident insurance, and private pension plans; employee health and recreation programmes, including for families; the Veterans Council; and the housing policy
- Joint permanent commission for developing and monitoring the Collective Bargaining Agreement
- Public Relations Department: charitable and sponsorship activities
- Committee for Charitable and Sponsorship Support
- Training Centre

### OGK-2

- The Human Resources Directorate of the Executive Office: social benefits, guarantees and compensations, voluntary medical insurance, accident insurance, and private pension plans
- Commission on the Regulation of Social and Labour Relations: focuses on maintaining the company's social partnership in labour relations and aligning the interests of parties to labour relations
- Commission for Charitable Sponsorship Support: considers charitable support requests sent to the company and approves the programme of charitable and sponsorship support activities

### MOEK

- Human Resources Directorate
- Training Centre

<sup>22</sup> Depending on the company's structure, some functions can be performed by relevant units of branches, while certain social sustainability matters can be delegated to units within other functional sections.

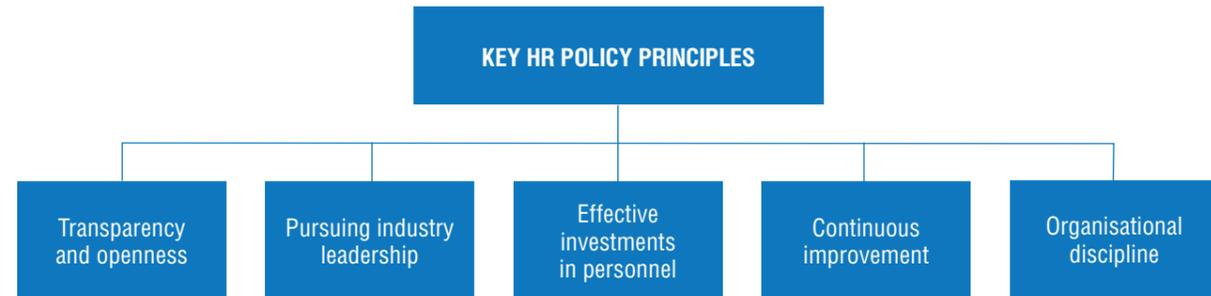
GRI 103-2

## Our Objectives

The HR policy and personnel management system of Gazprom energoholding Group's generating companies are aligned with the strategic goal of PJSC Gazprom: to become a leader among global

energy companies. They are aimed at building a team of professionals capable of delivering their objectives efficiently. The Group's HR policy primarily focuses on achieving and sustainably

maintaining the status of a preferred employer that attracts committed and highly efficient people.



GRI 103-3

## Our Performance

The Human Resources Management Policy of PJSC Gazprom, Its Subsidiaries and Entities (approved by Resolution No. 49 of PJSC Gazprom's Management Committee dated

7 November 2006) is the underlying document for HR management across Gazprom energoholding Group's generating companies. The Group companies' corporate documents were drafted in strict

compliance with the aforementioned Human Resources Management Policy and the requirements of the Russian laws.

We are working towards building a common governance and management framework across our generating companies, which will result in unifying our articles of association, organisational structures, core business processes, and corporate statistical and analytical reports.

HR management issues are assigned to the Group companies' dedicated functional sections and business units, while a particular functional section of OOO Gazprom energoholding provides methodological support for HR activities at the Group's generating companies, as well as organises and controls them. Gazprom energoholding representatives sit on the governing and advisory bodies of its subsidiaries, which are authorised

to make decisions approving the companies' organisational structures and staffing, management compensation plans, key performance indicators (the list of KPIs, evaluation methods, target values, and progress reports), and collective bargaining agreements. This enables the Company to pursue a uniform policy in terms of organisational development, goal-setting, and compensation paid to top managers.

Key HR management documents effective across Gazprom energoholding Group include:

- HR Management Policy
- Code of Corporate Ethics
- Regulations on Managing the Talent Pool to Fill Management Positions at OOO Gazprom energoholding, Its Subsidiaries and Entities

- Rules for Personnel Relations at Companies of the Russian Electricity Industry
- Guidelines on Implementing Professional Standards across PJSC Gazprom
- Integrated Roadmap for Implementing Professional Standards across PJSC Gazprom, and Its Subsidiaries, Entities, and Branches

Occupational health and safety is a key industrial safety priority and is governed by applicable regulations.

From 2016 to 2017, the Group continued integrating professional standards. These consistent efforts are guided by annual plans of PJSC Gazprom and Gazprom energoholding. In total, Gazprom

energoholding Group uses over 70 professional standards. Together with the All-Russian Industry Association of Employers of the Energy Supply Sector, Gazprom energoholding has initiated and developed a new professional standard: Electric Equipment Repairer at Thermal Power Plants.

The Group companies have in place a specialised Occupational Safety Management System (OSMS) driven by:

- a process-based approach
- compliance with the statutory occupational safety regulations and standards
- systematic training of operating personnel in safe work methods

and techniques, supported with regular refresher trainings

- regular monitoring and appraisal of occupational safety performance
- employees' commitment to safe working conditions
- full logistical support for occupational safety events
- the responsibility of each employee for safety at the workplace

A corporate-wide leadership, and personal business competency model was built in 2016 as part of developing a competency-based approach to HR management. In 2017, we designed guidelines for interviews on competencies.

## HR MANAGEMENT SYSTEM AT GAZPROM ENERGOHOLDING GROUP'S GENERATING COMPANIES



## Human Resources

GRI 401-1

GRI 102-8

### Information on Employees and Other Workers

As at 31 December 2017, the headcount of Gazprom energoholding Group's generating companies was 38,192 employees (in-

cluding those employed under independent contractor agreements and part-time employees). In 2017 (from 31 December 2016

to 31 December 2017), the headcount reduced by 0.9%, or by 337 employees.

### TOTAL NUMBER OF EMPLOYEES BY EMPLOYMENT CONTRACT AND GENDER

	Permanent employees				Temporary employees							
	Employment contract with a permanent employee		Employment contract with a part-time employee		Independent contractor agreement							
	2016		2017		2016		2017					
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Mosenergo	2,590	5,544	2,505	5,403	7	4	9	7	8	28	17	34
TGC-1 <sup>23</sup>	2,161	5,016	2,187	4,947	3	16	4	15	18	22	13	12
OGK-2	2,906	5,744	2,860	5,672	2	31	2	28	3	2	3	7
MOEK	4,907	9,432	4,836	9,567	22	39	18	26	14	10	12	8

The headcount reduction was mainly due to optimising organisational structures at the Group companies, which included centralising business processes,

outsourcing support functions, changing the organisational structure of operating branches, disposal of non-core assets, and sales optimisation. Growth was

driven by commissioning new facilities and insourcing certain functions. For more details on human resources see APPENDIX 5.

GRI 404-3

### Performance Reviews

The performance of all the Group's employees is reviewed against reward targets/KPIs and individual goals and objectives. We also review the performance

of employees from the talent pool and/or engaged in other development programmes. From 2016 to 2017, about 1,500 people were reviewed through aptitude

tests at the Review and Development Centre and then trained individual plans.

### Employee Satisfaction Survey

From 2016 to 2017, the Group companies ran an employee satisfaction and engagement survey covering about ten thousand employees across all personnel

categories. Action plans were prepared to improve employee satisfaction and address issues identified by the survey.

These efforts will be continued in 2018.

## Employee Turnover

From 2016 to 2017, the average employee turnover (the ratio of employees who have resigned or have been dismissed due to

absenteeism or consistent breaches of labour discipline to the average headcount over the reporting period) at Gazprom energoholding

Group's generating companies did not exceed 5%.

The key reason for the rise in employee turnover at individual companies and lack of personnel during the reporting period is temporary, as the employer changed its headquarters location to St Petersburg, with the lack of personnel offset through local hires.

Some of the Group companies plan to take additional measures to retain employees and reduce employee turnover.

Our methods for sourcing and retaining personnel include providing decent pay and social security in our operating regions, as well as non-financial incentives such as:

- corporate health insurance programmes and pension plans
- personnel training and development programmes
- engaging third-party credit

organisations to provide services to employees, such as special loan terms and both property and life insurance

- corporate entertainment events (including sporting contests)
- health and recreation for employees and their family members

In sourcing employees and selecting candidates for management positions, the Company focuses exclusively on individual professional skills, without regard for social status or maintaining statistics on their

socio-demographics. The majority of the Group's personnel live in regions where the respective power plants are located, with the exception of a small number of employees engaged for the construction or operation of new generating facilities.

All new employees undergo an induction and onboarding programme. Employees on probation are given a job assignment for the probation period and are assessed based on their performance.

## Benefits Provided to Employees

GRI 401-2

Employee remuneration at Gazprom energoholding Group's generating companies is based on the employee's qualifications, job complexity, and individual performance, as well as the performance of their business unit and the Group company in general. The forecasted consumer price index growth is also considered when planning payroll costs for future periods.

The remuneration system at Gazprom energoholding Group's generating companies comprises a fixed part and a variable part. The nominal ratio of fixed to variable remuneration varies from 80:20 for core personnel such as operators and specialists

to 40:60 for managers. Fixed remuneration payable to employees includes compensation payments depending on working conditions and the nature of the specific job. Variable remuneration comprises increments and incentive payments, including bonuses accrued at the end of the reporting period (for the month, quarter, or year) subject to performance measured against individual and corporate KPIs. KPIs typically include financial and economic targets, operational efficiency, safety and reliability metrics, as well as performance against investment programmes and individual priority investment projects. The KPIs are continuously

refined to accommodate for the current and strategic objectives of each of the Group's generating companies and serve as a tool to appraise employee performance and motivation.

Mosenergo's remuneration system includes a system of job grades that reflect the differences among employees depending on their scope of duties, level of responsibility, and other factors that are used to calculate fixed remuneration. TGC-1, OGK-2, and MOEK calculate fixed remuneration using a wage rate system (or a wage rate scale), which reflects the differences among employees depending on the complexity of their job duties and individual

23 Including Murmanskaya CHPP

performance against work targets. Under Russian law, the regions where our generating companies operate employ the unified minimum wage rate (MWR), which remains the same for all workers

regardless of gender. The wage rate for entry-level positions with the Group companies is above the MWR in each region and is not affected by an employee's gender or age. The average wage rate at

our generating companies is also maintained at a level above the regional average.

**GRI 202-1 ENTRY-LEVEL WAGE RATIOS (INCLUDING COMPENSATION AND INCENTIVE PAYMENTS) COMPARED TO LOCAL MINIMUM WAGE RATES**

	2016	2017		2016	2017
<b>MOSENERGO</b>			Stavropol Territory	2.73	2.36
Moscow	1.92	1.89	Leningrad Region	3.59	2.35
<b>TGC-1</b>			Chelyabinsk Region	2.31	2.15
St Petersburg	1.28	1.03	Rostov Region	1.65	1.72
Leningrad Region	1.53	1.29	Krasnoyarsk Territory	2.31	2.62
Republic of Karelia	1.67	1.67	Vologda Region	3.15	2.95
Murmansk Region	1.86	1.91	Sverdlovsk Region	1.63	1.62
Murmansk (Murmanskaya CHPP)	1.60	1.58	Pskov Region	2.49	1.56
<b>OGK-2</b>			Krasnodar Territory	2.26	2.54
Tyumen Region	2.09	1.97	<b>MOEK</b>		
Ryazan Region	2.70	2.36	Moscow	1.09	1.19

The eligibility criteria and agreements signed by the Group's

generating companies with suppliers and contractors do not

provide minimum wage rates for personnel.

**Career Path**

Career paths at our companies are best illustrated by the professional growth of operating personnel at our power plants (core personnel of generating companies). We practice employee rotation aimed at horizontal development, alternating with regular promotions to higher positions for mastering related operating processes while building a broader picture of how to lead in different settings and functions. While enabling growth, this model also helps build a wide

range of technical and leadership skills. Transitional growth from an operator/inspector to a Deputy Chief Engineer takes at least eight to nine years.

The training includes development courses for young talents at entry-level positions, additional skills training, workspace learning, and project activities, among others. The training plan is based on annual appraisals of personnel skills. We also offer additional skills training

and higher education training programmes on industry-relevant majors.

The Chief Engineers School has been developing technical managers and training in-house talents for C-level positions at branches since 2016. The best talents from production sections undergo two years of module-based training.

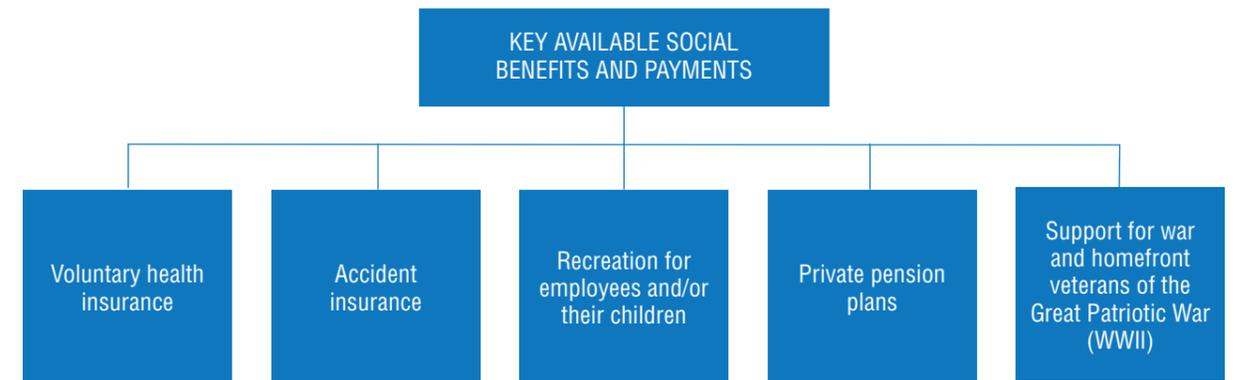
**Protection of Interests and Rights**

**Respect for Employee Interests, Rights, and Social Security**

The social security of employees is a key priority of Gazprom energoholding Group's HR policy.

The concept of social partnership that underpins the policy provides for various social payments,

personal insurance, healthcare benefits, and private pension plans offered to employees.



**Trade Union Relations and Collective Bargaining Agreements**

Relations with trade unions are crucial to protecting the interests of employees and maintaining a social partnership between management and personnel. The primary trade union organisations at the TGC-1 and OGK-2 branches are part of the All-Russian Electric Trade Union, while the primary trade union organisations at Mosenergo branches are part of the Moscow City Trade Union Organisation Elektroprofsoyuz and MOEK's trade unions are part of the NGO Moscow Municipal Workers Trade Union.

Although the main objective of trade unions is protecting the professional, labour, and social

and economic rights of employees against violations by the employer, the Group believes that their benefit to employers should not be underestimated.

Special committees regulating social and labour relations are in place at the Group, which closely collaborates with trade unions to implement its social security policy and host cultural, sporting, and recreational events for employees.

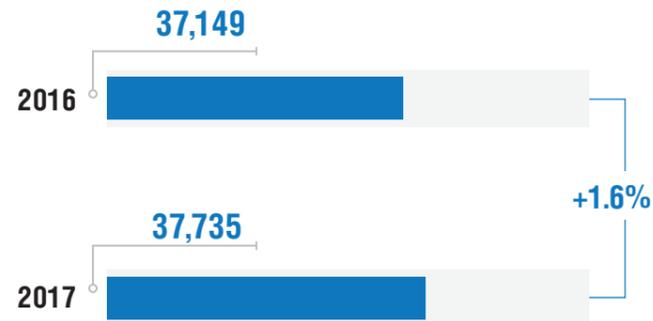
The Group's generating companies have active collective bargaining agreements and are committed to the mutual obligations contained in them. Collective bargaining

agreements have been extended through 2018. When developing contractual relations between social partnership stakeholders, the Group aims to secure the social and economic rights and guarantees of employees, increase labour efficiency and productivity, improve the quality of work, and comply with established labour and process procedures as well as occupational health, safety, and hygiene standards.

**GRI 102-41** Collective bargaining agreements cover 99% of employees, while other internal regulations apply for executive office employees.

**EMPLOYEES COVERED BY COLLECTIVE BARGAINING AGREEMENTS**

**Gazprom energoholding**



**GRI 402-1** All stakeholders are involved when the Group monitors compliance with collective bargaining agreements via periodical (quarterly, biannual, or annual) reports and conferences. The companies' collective bodies discuss matters related to collective bargaining agreements and include representatives of employers, employees (through trade unions), and representatives of Gazprom energoholding in some cases. Collective bargaining agreements with the Group's employees include the following key elements:

- Standard work and rest hours: working hours per week, statutory leave and extra leave
  - Minimum monthly wage rates for Grade 1 blue-collar workers are determined by taking account of the consumer price index for past periods and the company's balance sheet capabilities
  - Occupational safety: employer's commitments on safety, medical examinations, supply of working clothes/footwear, accident insurance, etc.
  - Benefits, guarantees, and compensations
- The Group's generating companies also comply with the Russian Labour Code in providing employees a minimum two months' notice on material changes. Additionally, the Group's collective bargaining agreements state that trade unions are to be informed on any forthcoming reorganisation within 20 days following the General Shareholders Meeting at which the relevant decision was made.

**GRI 201-3 Pension Liabilities**

**GAZPROM ENERGOHOLDING GROUP'S TOTAL PENSION LIABILITIES, RUB MM**

Name	2016	2017
Gazprom energoholding Group	3,740.6	3,559.8

**SOCIAL SPENDING BY GAZPROM ENERGOHOLDING GROUP, RUB THOUSAND**

Name	2016	2017
Direct social benefits	623,000.0	589,873.1
Housing programme	36,818.9	35,453.0
Healthcare	648,683.0	691,168.2
Private pension plans	140,228.0	100,218.6

**Occupational Health and Safety**

Industrial safety management at Gazprom energoholding Group's generating companies is regulated by Russian laws and statutory regulations on industrial safety:

- Occupational safety issues are addressed in line with Russian laws, the principle document being the Labour Code (No. 197-FZ dated 30 December 2001), and both industry and local regulations
- The policy and key focus areas, as well as the legal, economic, and social framework for ensuring the safe operation of hazardous operating facilities are defined by Federal Law On Industrial Safety of Hazardous Operating Facilities (HOF) (No. 116-FZ dated 21 June 1997)
- The procedure for establishing and exercising in-process control over compliance with industrial

safety requirements is in line with the Rules for In-Process Control over Compliance with Industrial Safety Requirements at Hazardous Operating Facilities approved by Resolution of the Russian Government (No. 263 dated 10 March 1999)



**Occupational and industrial safety requirements are applicable to all employees of Gazprom energoholding Group companies.**



GRI 403-4

Although the Group's industrial safety and occupational health and safety measures are fully compliant with Russian law, these commitments are additionally set out in the collective bargaining agreements of its generating

companies. In particular, the Occupational Safety section of collective bargaining agreements contains occupational safety provisions aimed at protecting the lives and health of employees at work.

Gazprom energoholding Group makes consistent efforts to ensure the protection of employee lives and health while reducing occupational injuries, focusing on the following areas:

**Administrative and financial support**

- Supporting specialised services responsible for occupational health and fire safety
- Financing occupational safety measures for compliance with applicable laws

**Monitoring employee health**

- Mandatory preliminary, periodical, pre-shift, and pre-trip medical examinations and inspections for certain categories of employees at the expense of the employer
- Preventing the involvement in any work for employees who have failed to pass the mandatory medical examination on time
- Preventing the involvement of employees, including with their consent, in any work that is contraindicated for them for health reasons
- Recording and analysing occupational diseases of employees; developing and implementing relevant preventive measures

**Healthy and safe working environment**

- Creating a healthy and safe working environment at every workplace, which are assessed based on measured metrics
- Provision of certified protective clothing, footwear, and other personal protective equipment; detergents, disinfectants (soaps and creams) and milk and other dairy products to employees operating in harmful or hazardous working conditions, extreme temperatures or climatic conditions, or in a polluted environment, in line with the existing standards

**Employee training and briefing**

- Organising occupational safety training, briefings, and knowledge tests for employees in line with the established procedure

**Occupational and industrial safety control and audit**

- Organising and exercising in-process control in line with statutory procedures
- Running a supplementary cross-audit of occupational and industrial safety at operating facilities

**Accident investigation, registration, and prevention**

- Ensuring unbiased accident investigations and registration, analysing the causes and preparing targeted measures to prevent similar accidents in the future

Mosenergo, TGC-1, OGK-2, and MOEK manage occupational safety matters in line with the Occupational Safety Management System (OSMS) regulations, which governs each generating company's policy on occupational safety, operational reliability, and employee health protection. The OSMS also establishes the occupational safety roles of officers and business units within the governance framework of each generating company. The

OSMS formalises (in regulations, job descriptions, employment contracts, etc.) the areas of responsibility, authorities, rights, and cooperation of the personnel in charge of organising, implementing, and monitoring activities affecting occupational safety.

An Industrial Safety Management System (ISMS) with an integrated system of in-process control over compliance with industrial safety requirements is also part of the

corporate governance system. The ISMS provides information and both technical and organisational support for the safe operation of equipment and ensures compliance with the requirements for safe operation in specific work conditions. ISMS activities include forecasting and preventing accidents as well as identifying, assessing, and controlling operational risks to minimise possible hazards to people.

**Industrial Safety Risk Identification**

Across all governance and management levels, the Group's generating companies execute a continuous hazard identification and risk assessment process to define control measures required to reduce the risk of accident, incident, and injury. The main objective of the risk assessment process is to recognise and understand the hazards related to the Group generating companies' operations and ensure that risks related to these hazards are

assessed, prioritised, and managed in the particular manner required to keep them at the maximum acceptable level permitted by applicable industrial safety requirements. Once the risk control measures have been defined, they are prioritised for implementation, a follow-up review is then carried out, and actions are taken to improve them and further raise the overall level of industrial safety.

In 2017, in-process control over compliance with industrial safety requirements involved over 1,000 inspections that helped identify over 10,000 risks, of which 92% was mitigated.

Company	Control and preventive inspections completed by in-process control services	Violations of industrial safety requirements identified by in-process control services	Eliminated violations	% of violations eliminated
Mosenergo	180	2,371	2,294	96.8
OGK-2	758	6,234	5,391	86.5
TGC-1	81	531	530	99.8
MOEK	224	3,251	3,191	98.2
<b>TOTAL</b>	<b>1,243</b>	<b>12,387</b>	<b>11,406</b>	<b>92.1</b>

## OCCUPATIONAL AND INDUSTRIAL SAFETY SPENDING, RUB THOUSAND

Company	Focus	2016	2017
MOSENERGO	Occupational safety	699,900	657,720
	Industrial safety	37,888	94,561
TGC-1	Occupational safety	213,537	146,417
	Industrial safety	33,608	37,907
OGK-2	Occupational safety	265,292	310,547
	Industrial safety	65,255	56,585
MOEK	Occupational safety	249,634	352,151
	Industrial safety	385,368	459,983
Total	Occupational safety	1,438,363	1,466,835
	Industrial safety	522,119	649,036

From 2016 to 2017, the following was implemented at the Group companies as part of the existing OSMS and ISMS:

- Mandatory preliminary, periodical, and unscheduled medical checks (examinations)
- Special health and safety assessments
- Provision of personal protective equipment (PPE), protective clothing, and footwear to employees
- Training in safe occupational practices; briefings (introductory, primary, refresher, unscheduled)

## OCCUPATIONAL SAFETY TRAINING, PEOPLE

	Mandatory		Additional	
	2016	2017	2017	2017
Mosenergo	2,714	4,680	1,630	1,047
TGC-1	1,217	2,357	62	48
OGK-2	3,382	2,068	20	36
MOEK	1,729	2,969	26	32
<b>Total</b>	<b>9,042</b>	<b>12,074</b>	<b>1,738</b>	<b>1,163</b>

## Work-related injuries at the Group's generating companies in 2016-2017

## INJURY RATE

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
Fatal Injury Frequency Rate (FIFR) <sup>24</sup>	0	0	0.09	0	0	0	0	0.04
Lost Time Injury Frequency Rate (LTIFR) <sup>25</sup>	0.21	0.21	0.47	0.46	0.27	0.34	0.29	0.12
Occupational Disease Rate (ODR) <sup>26</sup>	0.07	0	0	0	0	0	0	0
Lost Days Rate (LDR) <sup>27</sup>	14.16	10.73	20.78	27.35	5.54	23.92	34.78	10.29
Total hours worked by all personnel, '000 hours	14,122.53	13,983.11	10,729.60	10,857.34	14,977.08	14,505.11	24,239.001	24,391.59

Accidents resulting in work-related injuries are investigated in line with the requirements of Articles 227 to 231 of the Russian Labour Code and Resolution of the Russian Ministry of Labour No. 73 On the Approval of Forms of Documents Required for Investigation and Registration of Workplace Accidents and the Regulations on Specific Requirements to Investigation of Workplace Accidents in Certain Sectors and Organisations dated 24 October 2002.

Most work-related injuries are sustained by male employees aged over 60 years with less than three, or more than 15 years of industry experience. In 2017, most injuries were due to falls from height, including same-level falls.

For a breakdown and classification of accidents see APPENDIX 5.

All follow-ups after the investigations were conducted in full and on time. In order to prevent accidents, Gazprom energoholding

Group pursues activities across several areas: compliance with federal laws, the establishment of a unified occupational and fire safety risk management system, and major initiatives to improve the safety culture at the Group and its contractors.

<sup>24</sup> Fatal Injury Frequency Rate (FIFR) = the number of work-related fatalities/total hours worked by all personnel \* 1,000,000.

<sup>25</sup> Lost Time Injury Frequency Rate (LTIFR) = the number of injuries/total hours worked by all personnel \* 1,000,000.

<sup>26</sup> Occupational Disease Rate (ODR) = the frequency of new occupational diseases/total hours worked by all personnel \* 1,000,000.

<sup>27</sup> Lost Days Rate (LDR) = the total lost days/total hours worked by all personnel \* 1,000,000.

**GRI 403-2 Contractor Occupational Health and Safety**

Certain types of activities related to the construction and operation of generating facilities of the Group's generating companies are performed by contractors' employees. Contract agreements signed with them include a mandatory appendix stipulating the contractor's responsibility for violation of occupational safety, fire safety, and environmental requirements, based on which fines may be imposed, and serious offences may have a contractor's pass to the power plants' premises revoked. Requirements are also in place for the availability and presentation of occupational and industrial safety documents authorising contractors'

employees to work at the Group's power plants.

Regular supervision of contractors' employees includes:

- checking the availability of employees' certificates in occupational, fire, and industrial safety during operations at generating facilities, as well as authorisations to conduct special operations with core and auxiliary equipment
- introductory (primary, targeted) briefings
- joint Occupational and Fire Safety Days
- unscheduled workplace inspections (including at night time)

by in-house occupational safety experts

- workplace inspections as part of internal and external technical audits
- joint meetings between the Group's occupational safety services and contractors to address occupational and industrial safety issues
- joint field visits and in-process inspections at HOFs

In 2017, nine workers at the Group companies' facilities who are not the Group's employees sustained injuries, two of which resulted in fatality.

**Compliance with Occupational Safety Standards**

Despite a relatively low employee injury rate, Gazprom energoholding Group's generating companies take proactive steps to improve the

existing OSMS, which complies with the national occupational safety standard GOST R 12.0.007-2009 Occupational Safety Management

Systems in Organisations. General Requirements on Development, Implementation, Audit and Improvement.

**GRI 404-2 Development and Education**

The Company offers its employees extensive opportunities to unlock their personal potential and achieve career growth. Key focus areas:

- Onboarding programme for new hires and a mentoring scheme
- Implementing unified approaches and methods in personnel training and appraisal
- Maintaining a talent pool (consisting of about 1,000 employees as at the end of 2017) and relying on transparent principles of talent promotion
- Corporate skills and innovative project competitions

• Corporate continuous education and training system

Continuous education is essential to achieving the Group companies' goals and objectives and ensuring their future development. The Regulations on the Corporate Continuous Education and Training System governs the relations between Gazprom energoholding and its generating companies in personnel education and development across the Group companies. The Educational and Methodological Council (EMC) determines key development areas

for continuous corporate education and training and comprises five sections:

- Mandatory industrial and technical training
- Operating personnel development
- Educational methodology
- Capability building
- Innovative training

Our companies have specialised programmes for their management, talent pools, and high-potential employees, providing training in

developing effective management tools, improving personal efficiency and business communication skills, and motivating own employees to improve their professional level. The programmes include:

- targeted and regular competency-based training programmes for management and the talent pool
- accelerated development programmes for high-potential employees and the talent pool
- joint programmes with higher education institutions

We would like to make a special mention of the Management Academy, the Chief Engineer School, and the Corporate Safety School.

Distance education is actively developing through the Corporate Education Portal (over 15,000 employees trained or self-taught from 2016 to 2017). Distance education comprises both mandatory (managers and specialists) and project training.

Additionally, approximately 25,000 workers are trained annually under a total 150 programmes by corporate

training centres (Mosenergo Training Centre, MOEK Training Centre, TGC-1 Training Centre, the private Electrical Staff Training Centre institution of continued professional education) located in the immediate vicinity of power plants and equipped with modern material and technical resources as well as all the necessary simulators, laboratories, and highly qualified educators. The Training Centres are licensed by the Russian Ministry of Education to conduct educational activities in the relevant professions.

The Group cooperates with the leading Russian higher education institutions including National Research University Moscow Power Engineering Institute, Moscow State University, St Petersburg Polytechnic University, St Petersburg State Technological Institute, Moscow State University of Railway Engineering, St Petersburg State University of Economics, State University of Management, and Kutafin Moscow State Law University. The Company also maintains relations with regional educational institutions in the areas

where its generating companies operate. Training is provided in the form of career enhancement, vocational retraining, short-term workshops, and trainings.

More than 90% of personnel training costs are covered by Gazprom energoholding Group, which signs student agreements with employees for these purposes. During the reporting period, financing of personnel training and development totalled over RUB 300 million. This amount includes RUB 263 million invested in trainings for managers, specialists, and other employees of the Group's generating companies. In line with Russian laws, long-term training programmes provide job-protected study leaves. In making decisions on enrolling managers and specialists on training courses, the Company takes account of the training's scheduled duration, current and future development plans in respective companies, and the annual consolidated personnel development plan in Gazprom energoholding Group's generating companies.

**AVERAGE HOURS OF TRAINING PER YEAR PER EMPLOYEE BY EMPLOYEE CATEGORY**

Company	Managers		White collar		Blue collar	
	2016	2017	2016	2017	2016	2017
Mosenergo	69	61.55	69	61.55	31	32.4
TGC-1	53	55	53	55	66	63
OGK-2	22	23	16	11	39	41
MOEK	30	39	26	35	40	22

GRI 404-1

Gazprom energoholding Group holds skills contests for our operating personnel on an annual basis. The key objectives of the contests are to improve the operating personnel's professional skills in ensuring the energy system's reliability, sharing best corporate practices in organising and running day-to-day management of thermal power

plant equipment, and improving the forms and methods of ensuring high quality, reliable equipment maintenance.

Mosenergo's CHPP-26 team took the first place in the All-Russian Open Contest for Operating Personnel of Thermal Power Plants in 2016.

In 2017, OGC-2, Mosenergo, and TGC-1 teams took all medal places (first to third) in the 1st Open Contest for Operating Personnel of Cross-Connection Thermal Power Plants held by the Council of Power Producers. OGC-2's Krasnoyarskaya GRES-2 team took first place.

## Young Talent Acquisition and Management

The Company's HR policy aims at maintaining an optimal age mix and ensuring the succession of employee generations as a strategic objective. The Group's key methods for attracting young talent to its generating companies:

- Regular contact with educational institutions to attract and recruit

high-potential graduates

- Traineeships and internships for students of relevant higher and specialised institutions, diploma project contests among students of higher education institutions
- Company Days and round tables with the Group's leading specialists

- Participation in Career Fairs and posting information about career opportunities for graduates on information boards at higher education institutions, on social networks, and in the mass media
- Targeted onboarding and development programmes for young talent

Below are the results from the young specialists recruitment effort during the reporting period:

- Young specialists made up 24% of the total personnel hired by TGC-1
- A draft programme was developed for social support of employees affected by the employee headcount optimisations at OGC-2's power plants
- Councils of Young Specialists were established at Mosenergo and MOEK, organising over 50 events

In 2017 alone, internship and pre-graduation practice opportunities were provided to over 700 students. Approximately 450 students were employed, and educational tours to the museums and generating facilities of the Group companies were organised for over 1,000 students.



Onboarding programmes at the Group companies focus on corporate values, the Group's corporate ethics and etiquette, and energy industry basics. Onboarding (induction) courses and mentoring

programmes are also provided to young specialists and new employees. Tours to the Group's museums and generating facilities are organised for all new hires.

Mosenergo and OGC-2 modules of the Digital Onboarding Programme were updated in 2016, and both TGC-1 and MOEK modules were updated in 2017.

Gazprom energoholding Group's young specialist team took part in Biryusa Innovative Youth Territory Forum's Energy federal session. Our awards: One gold medal, Business Case Solutions Cup, four silver medals, third place in the Global Management Challenge programme, two bronze medals, Biryusa Information Service bronze medal, runner-up in the Mister and Miss Biryusa contest, and the Public Recognition Cup.

The Sixth Contest of Young Talent and Innovators was also organised and held, in which approximately 300 young specialists participated. The best entries participated in the International Contest of Scientific, Technical Research, and Innovative Solutions Aimed at Developing the Fuel and Energy and Extraction Industries. All seven entries received first, second, and third prizes.

## Philanthropy, Sports, and Recreation

The Group companies participate in charitable projects on a constant basis, helping organisations and individuals in the following areas:

- Targeted medical benefits (purchasing medicines and medical equipment)
- Supporting children with disabilities as well as orphans and children from low-income families
- Supporting environmental and recreational projects
- Supporting non-governmental organisations, ex-service personnel, and veterans
- Cultural projects
- Supporting initiatives for children and youth
- Supporting science and education

- Supporting sports

- Supporting religious organisations

The funds directed to philanthropy exceeded RUB 35 million in 2017.

Winter and summer athletic competitions (Spartakiads) are a long-standing corporate tradition of the Group's generating companies. Sport not only benefits health but also fosters qualities such as aiming for victory, team spirit, solidarity, and mutual support, all of which help enhance the job performance of employees.

Gazprom energoholding Group pays much attention to the development of sports and promotion of healthy lifestyles.

Corporate Spartakiads help identify the country's strongest energy workers who are able to adequately represent Gazprom energoholding Group at the corporate tournament held by Gazprom Group and the Russian Ministry of Energy.

At the 12th Summer Spartakiad of Gazprom in Sochi, Gazprom energoholding Group was represented by over 70 athletes. The united team comprised employees of Gazprom energoholding and athletes from the Group's generating companies.

Each year, the Gazprom energoholding team participates in the city-wide and industry-wide futsal, basketball, volleyball, ice hockey, and cross-country skiing competitions.

## Reliable Energy Supply and Consumer Safety

Reliable energy supply is an essential aspect of social sustainability in the regions in

which the Group's power plants operate. Therefore, the generating companies conduct repairs and

preventive maintenance on a regular basis.

Public holidays, including the lengthy New Year and Victory Day holidays (in January and in May, respectively), are particularly demanding on the Group's power plants. Time off work and vacations are not planned for these days, on which a procedure is in place for calling backup operating personnel: 24-hour duty watches by repair personnel who are available at all times and are on call.

G4-DMA  
(previously  
EU21)

## Emergency Planning and Response

During the reporting period, measures to protect the employees and generating assets of Gazprom energoholding Group companies from natural and industrial emergencies were planned and implemented, taking into account the requirements, instructions, and recommendations by the EMERCOM of Russia, the Russian Ministry of Energy, and PJSC Gazprom.

OOO Gazprom energoholding's effort was focused on improving the Group's civil protection system during the reporting period. Regulations and instructions specifying measures to protect the employees and generating facilities from the impacts of potential emergencies were developed, approved, and implemented.

Coordination of emergency response and prevention measures at the Group's facilities is done by commissions for the prevention and emergency response and fire safety.

Courses have been developed at Gazprom energoholding Group companies to educate employees in civil protection and emergency response, while new employees undergo civil protection briefings. Gazprom energoholding Group companies focus on practising emergency scenarios and procedures to further enhance the employees' ability to properly and adequately respond to hazards and emergencies that may arise in the areas in which the power facilities are located.

Exercises and drills are also run to improve employees' practical emergency response skills, involving Gazprom energoholding Group's employees, volunteer emergency response teams, emergency service representatives, and the teams and equipment of EMERCOM's local units. During the course of the exercises and drills, Gazprom energoholding's emergency response management teams proved their ability to promptly make reasonable decisions while employees - acted in an organised way and demonstrated well-developed practical skills.

### EMERGENCY RESPONSE AND PREVENTION EXERCISES AND DRILLS

	2016	2017
Mosenergo	33	65
TGC-1	139	136
OGK-2	31	34
MOEK	45	56

## Disconnections for Non-payment

Levels of consumer debt are one of the bigger concerns around the financial sustainability of Gazprom energoholding Group's generating companies. Payments are also an important factor of reliable energy supply as they contribute to timely comprehensive repairs, diagnostics, upgrades, and retrofitting of equipment.

According to the current legislation, electricity supply may be limited for persistent non-payers in the retail market only, although the Group companies cannot impose supply limits in such cases, as they operate on the wholesale market. Heat supply limitation can be implemented after a number of notices has been sent and only

for facilities that are not socially significant. No heat limitations were imposed during 2016–2017.

## Fines and Non-monetary Sanctions

### SIGNIFICANT FINES AND THE TOTAL NUMBER OF NON-MONETARY SANCTIONS FOR NON-COMPLIANCE WITH LAWS AND REGULATIONS

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
Non-monetary sanctions imposed	10	7	-	-	-	-	4	29
Total amount of fines imposed, RUB thousand	9,942.2	6,955.0	2,400	948.3	882.0	1,546.3	10,560,000	13,350,000
Total number of cases brought against the company for non-compliance with laws and regulations	17	23	38	58	-	-	-	2

EU27

GRI 419-1



# APPENDICES

## Appendix 1. Report Profile and Materiality of Disclosed Topics

### Report Profile

This is the third sustainability report of Gazprom energoholding Group for the calendar years 2016 and 2017.

In this report, PAO Mosenergo, PAO TGC-1, PAO OGK-2, and PAO MOEK are referred to as Mosenergo, TGC-1, OGK-2, and MOEK, respectively.

### REPORT CONTENT AND TOPIC BOUNDARIES

A biennial reporting cycle has been chosen for the report. This report focuses mostly on the data for 2016–2017; however, it also discloses information about the more significant corporate events of 2018.

data collection frameworks need further refinement. Going forward, the Group plans to gradually extend non-financial reporting to include all subsidiaries and affiliates of Mosenergo, TGC-1, OGK-2, and MOEK<sup>30</sup>.

### RECEIPT OF INFORMATION

The most recent management reports and audited IFRS financial statements are the key sources of information on performance. The data not covered by management reports or IFRS financial statements were obtained through interaction with the Group's designated business units.

The report presents the Group's mid-term and long-term plans. Their implementation is subject to inherent risks and uncertainties including factors beyond the control of Gazprom energoholding Group companies.

This report details the performance of Gazprom energoholding Group's three electricity generating companies, Mosenergo, TGC-1<sup>28</sup>, and OGK-2 [these companies are listed on the Moscow Exchange], and a heat supply company, MOEK [a non-listed company]<sup>29</sup>.

All data on subsidiaries and affiliates of Mosenergo, TGC-1, OGK-2, and MOEK, except financials, are provided excluding subsidiaries and affiliates. All financials are given as per IFRS consolidated financial statements. Non-financial information on the Group's subsidiaries and affiliates is not included as its internal corporate

### REPORT PREPARATION

This report has been prepared in accordance with the GRI Standards: Core option. There were no significant changes from previous reporting periods in the report's boundaries, restatements, or changes in comparable data.

For a full list of aspects covered by this report and the relevant page number in the report, please see the GRI Content Index section.

This report has been reviewed by GRI's Materiality Disclosures Service. In preparing this report, stakeholder surveys to identify material topics took place for the first time.

### Materiality Matrix

The report's content has been determined in accordance with the GRI Guidelines and Russian and international best practice. Following the surveys, topics that are considered material for both the management and key stakeholders were selected from the full list of proposed topics.

The choice of material topics disclosed in the report, as well as the degree of detail of their

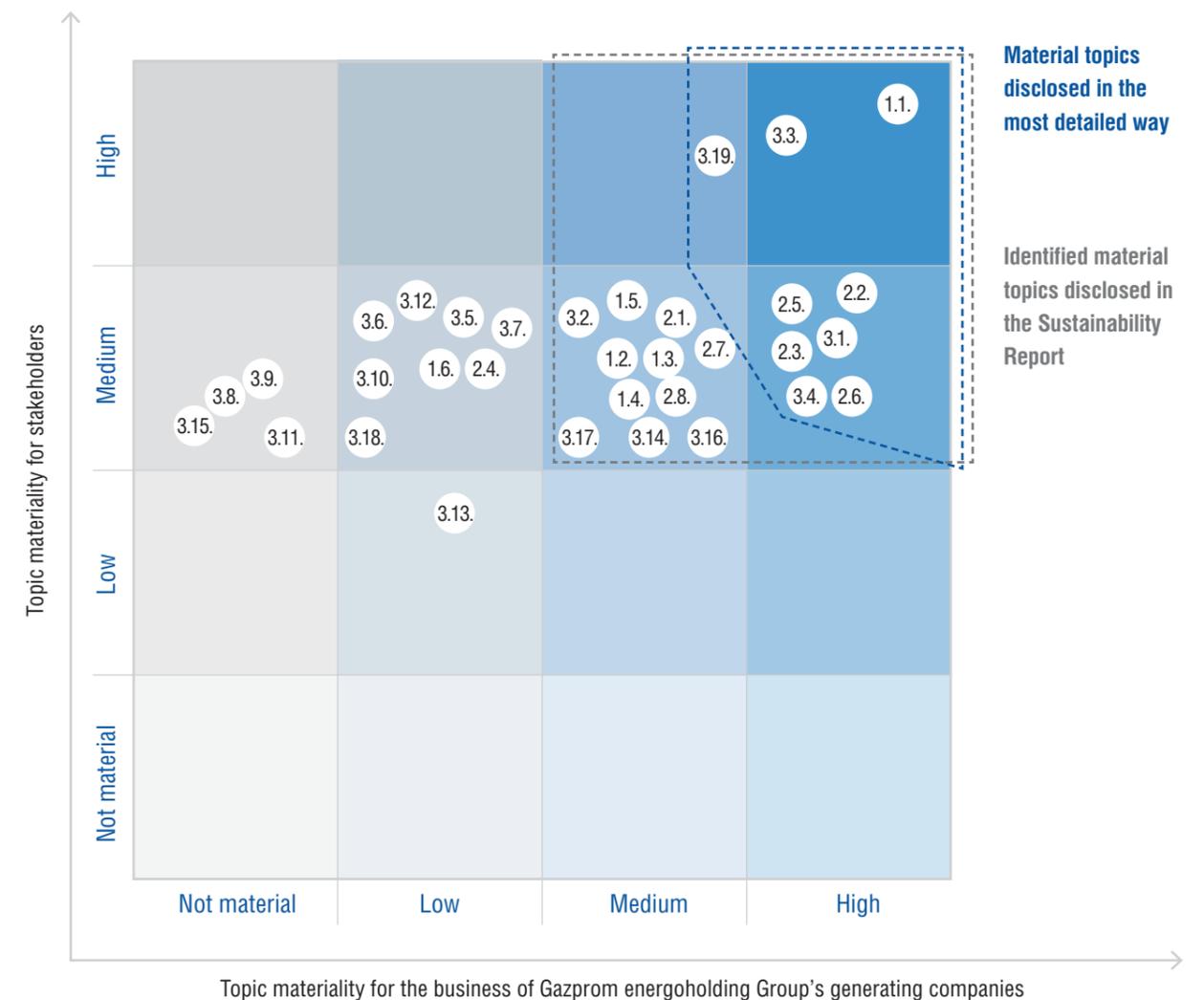
disclosure were determined based on the results of surveys for the management and stakeholders of Gazprom energoholding Group companies.

To assess materiality, a full list of topics had been proposed in accordance with the GRI Guidelines. The management representatives assessed each of the topics from the point of view of its materiality for the Group's business, while

stakeholder representatives – from the point of view of its materiality for themselves.

Following the surveys, a materiality matrix was created to visualise the final choice of topics disclosed in the report and the degree of detail of their disclosure. A total of 20 topics had been identified to be disclosed in the report, with nine highlighted for the most detailed disclosure.

### MATERIALITY MATRIX



<sup>28</sup> Including PJSC Murmanskaya CHPP.

<sup>29</sup> For the names, corporate forms, and addresses of the companies covered in this report see APPENDIX 2.

<sup>30</sup> For a full list of subsidiaries included in consolidated financial statements of Mosenergo, TGC-1, OGK-2, and MOEK see APPENDIX 2.

GRI 102-47

Identified material disclosures and brief description of the disclosed information in line with the GRI Guidelines	Materiality	
	for the business of Gazprom energoholding Group's generating companies	for stakeholders of the Group's generating companies
<b>1. Category: Economic</b>		
1.1. Economic Performance Economic value generated and distributed (under IFRS). Risks related to climate change. Defined pension plan obligations. Financial assistance received from government.	High	High
1.2. Market Presence Ratio of employee wage compared to local minimum wage. Proportion of senior management hired from the local community.	Medium	Medium
1.3. Indirect Economic Impacts Infrastructure investments and pro bono services supported and other indirect impacts.	Medium	Medium
1.4. Procurement Practices Proportion of spending on local suppliers in the regions of operation.	Medium	Medium
1.5. Anti-Corruption Confirmed incidents of corruption, and actions taken.	Medium	Medium
1.6. Anti-Competitive Behaviour Confirmed incidents of anti-competitive behaviour, and actions taken.	Low	Medium
<b>2. Category: Environmental</b>		
2.1. Materials Materials used and the proportion of recycled (reused) waste.	Medium	Medium
2.2. Energy Energy consumption, energy efficiency, renewable fuels.	High	Medium
2.3. Water Water withdrawal, water sources, water recycled and reused.	High	Medium
2.4. Biodiversity Assessment of the Group companies' impacts on local biodiversity.	Low	Medium
2.5. Emissions GHG emissions, emissions of ozone-depleting substances, NOX, SOX, and other substances; measures to reduce emissions.	High	Medium
2.6. Effluents and Waste Effluents and WasteWaste by type and disposal method.	High	Medium

Identified material disclosures and brief description of the disclosed information in line with the GRI Guidelines	Materiality	
	for the business of Gazprom energoholding Group's generating companies	for stakeholders of the Group's generating companies
2.7. Environmental Compliance Fines for non-compliance with environmental laws and regulations.	Medium	Medium
2.8. Supplier Environmental Assessment Procedure and criteria for supplier selection related to the Group companies' environmental standards.	Medium	Medium
<b>3. Category: Social</b>		
3.1. Employment New employee hires, employee turnover, benefits provided to employees.	High	Medium
3.2. Labour/Management Relations Minimum notice period regarding operational changes, its specification in the collective agreement.	Medium	Medium
3.3. Occupational Health and Safety Health and safety topics: committees, injury rate, occupational diseases, agreements with trade unions.	High	High
3.4. Training and Education Employee training, programmes for upgrading employee skills; performance and career development reviews.	High	Medium
3.5. Diversity and Equal Opportunity The organisation's governance bodies and employees by gender, age, and other indicators of diversity, as well as the ratio of basic salary of women to men.	Low	Medium
3.6. Non-discrimination Incidents of discrimination and corrective actions taken.	Low	Medium
3.7. Freedom of Association and Collective Bargaining Identification of operations and suppliers in which workers' rights to exercise freedom of association or collective bargaining may be at risk, and actions taken.	Low	Medium
3.8. Child Labour Identification of operations and suppliers at significant risk for incidents of child labour, and actions taken.	Not material	Medium
3.9. Forced or Compulsory Labour Identification of operations and suppliers at risk for incidents of forced or compulsory labour, and actions taken.	Not material	Medium
3.10. Security Service Security personnel trained in human rights policies or procedures.	Low	Medium
3.11. Rights of Indigenous Peoples Incidents of violations involving rights of indigenous peoples, and actions taken.	Not material	Medium

Identified material disclosures and brief description of the disclosed information in line with the GRI Guidelines	Materiality	
	for the business of Gazprom energoholding Group's generating companies	for stakeholders of the Group's generating companies
3.12. Respect of Human Rights Violation of human rights, and actions taken.	Low	Medium
3.13. Local Communities Local community engagement	Low	Low
3.14. Supplier Social Assessment Selection and screening of new suppliers to identify negative social impacts on the local community .	Medium	Medium
3.15. Public Policy Political contributions by country and beneficiary.	Not material	Medium
3.16. Customer Health and Safety Health and safety impacts of products and services. Compliance with regulations.	Medium	Medium
3.17. Marketing and Labelling Compliance with the requirements for product information and labelling. Survey of consumer satisfaction.	Medium	Medium
3.18. Customer Privacy Complaints concerning breaches of customer privacy and losses of customer data.	Low	Medium
3.19. Socioeconomic Compliance Fines and non-monetary sanctions imposed on the Group companies for non-compliance with laws and regulations.	Medium	High

## Appendix 2. Group Overview

### NAMES, LEGAL FORMS, AND ADDRESSES

Name, legal form	Registered address	Actual address
PAO Mosenergo	101/3 Vernadskogo Ave., Moscow, 119526, Russian Federation	101/3 Vernadskogo Ave., Moscow, 119526, Russian Federation
PAO TGC-1	6-B Bronevaya St., St Petersburg, 198188, Russian Federation	16/2-A Dobrolyubova Ave., Arena Hall Business Centre, St Petersburg, 197198, Russian Federation
PAO OGK-2	Solnechnodolsk, Izobilnensky District, Stavropol Territory, 356128, Russian Federation	66 Peterburgskoye Highway, Bld. 1-A, St Petersburg, 196140, Russian Federation
PAO MOEK	10 Efremova St., Moscow, 119048, Russian Federation	101/3 Vernadskogo Ave., Moscow, 119526, Russian Federation

GRI 102-1  
GRI 102-3  
GRI 102-5

### LIST OF SUBSIDIARIES INCLUDED IN CONSOLIDATED FINANCIAL STATEMENTS OF MOSENERGO, TGC-1, OGK-2, AND MOEK

GRI 102-45

Subsidiary	Interest	
	31 December 2016	31 December 2017
<b>MOSENERGO</b>		
000 Tsentralny Remontno-Mekhanichesky zavod	100.00%	100.00%
000 MosEnergoProekt	-	100.00%
000 Remontproekt	-	99.00%
000 CHPP-17 Stupino	100.00%	100.00%
000 GRES-3 Electrogorsk	100.00%	-
000 TEC-29 Electrostal	100.00%	-
<b>TGC-1</b>		
PAO Murmanskaya CHPP	98.68%	98.68%
AO St Petersburg Heating Grid	74.99%	74.99%
<b>OGK-2</b>		
000 OGK-Investproekt	100.00%	100.00%
000 OGK-2 Finance	100.00%	100.00%
000 Centre 112	100.00%	100.00%
<b>MOEK</b>		
OAO Mosgorenergo	100.00%	100.00%
000 MOEK-Finance	100.00%	100.00%
OAO MOEK-Generatsiya	100.00%	-
000 Heat Distribution Networks Development	100.00%	100.00%
000 TsTP MOEK	100.00%	100.00%

Subsidiary	Interest	
	31 December 2016	31 December 2017
OOO TsUN	100.00%	100.00%
OOO TSK Mosenergo	77.49%	77.49%
OOO TSK MOEK	100.00%	100.00%
OOO TSK Novaya Moskva	77.49%	77.49%

GRI 102-4  
GRI 102-6**GENERATING CAPACITY LOCATIONS AND DISTRIBUTION MARKETS**

Branches	Distribution markets / Free power flow zones	Energy generating regions
<b>MOSENERGO</b>		
P.G. Smidovich GES-1 R.E. Klasson GRES-3 CHPP-8 CHPP-9 M.Ya. Ufayev CHPP-11 CHPP-12	Moscow	Moscow and the Moscow Region
CHPP-16 CHPP-17 CHPP-20 CHPP-21 CHPP-22 CHPP-23 CHPP-25 CHPP-26 CHPP-27		
<b>TGC-1</b>		
Nevsky Branch: Tsentralnaya CHPP Pravoberezhnaya CHPP Severnaya CHPP Pervomaiskaya CHPP Avtovskaya CHPP Narvskaya HPP Vyborgskaya CHPP Vasileostrovskaya CHPP Ladoga HPP Cascade Yuzhnaya CHPP Vuoksa HPP Cascade	West	St Petersburg and the Leningrad Region
Kolsky Branch Apatitskaya CHPP Niva HPP Cascade Tuloma and Serebryansky HPP Cascade Paz HPP Cascade	Kolskaya	Murmansk Region
Karelsky Branch Petrozavodskaya CHPP Kem HPP Cascade Vyg HPP Cascade Suna HPP Cascade <sup>31</sup>	West	Republic of Karelia
PAO Murmanskaya CHPP	Murmansk	Murmansk

Branches	Distribution markets / Free power flow zones	Energy generating regions
<b>OGK-2</b>		
Surgutskaya GRES-1	Tyumen	Tyumen Region
Ryazanskaya GRES	Centre	Ryazan Region
Cherepovetskaya GRES		Vologda Region
Stavropolskaya GRES	Kuban	Stavropol Territory
Adlerskaya TPP		Krasnodar Territory
Kirishskaya GRES	West	Leningrad Region
Pskovskaya GRES		Pskov Region
Troitskaya GRES	Ural	Chelyabinsk Region
Serovskaya GRES		Sverdlovsk Region
Novocherkasskaya GRES	Rostov	Rostov Region
Krasnoyarskaya GRES-2	Siberia	Krasnoyarsk Territory
<b>MOEK</b>		
	Moscow	Moscow and the Moscow Region

31 Including a group of small-scale HPPs.

## Appendix 3. Economic Sustainability

### DECOMMISSIONING OF INEFFICIENT HEAT AND POWER GENERATING CAPACITY

	Capacity	Decommissioned		Planned for decommissioning	
		2016	2017	2018	2019
<b>MOSENERGO</b>					
CHPP-8	R-25 (50)-130/13	25 MW	-	-	-
CHPP-16	T-50 (25)-90M	50 MW	-	-	-
	T-25-90-4PR1	25 MW	-	-	-
	T-30-90M	-	30 MW	-	-
	T-25-90	-	25 MW	-	-
CHPP-17	T-75-90	-	-	75 MW	-
CHPP-20	T-30-90M	30 MW	-	-	-
	PT-35-90/13	-	35 MW	-	-
	T-30-90M	-	-	-	30 MW
CHPP-22	T-240 (250)/290-240	240 MW	-	-	-
<b>TGC-1</b>					
Apatitskaya CHPP	T-36/45-90/2	36 MW	-	-	-
Pervomaiskaya CHPP	PT-58-130/13	58 MW	-	-	-
	PT-60-130	60 MW	-	-	-
	T-46-130	46 MW	-	-	-
	3 x PTVM-100	-	300 Gcal/h	-	-
	2 x PTVM-180	-	360 Gcal/h	-	-
Tsentralnaya CHPP's PP-1	GM-50	-	30 Gcal/h	-	-
	GM-50	-	-	30 Gcal/h	-
Tsentralnaya CHPP's PP-3	R-2-14	-	2 MW	-	-
<b>OGK-2</b>					
Troitskaya GRES	Generating Unit 4 Once-through boiler unit Pp 950/255 (PK-39) K-300-240 steam turbine TGV-300 generator Generating unit 5 Once-through boiler unit Pp 950/255 (PK-39) K-300-240 steam turbine TGV-300 generator	556 MW	-	-	-

	Capacity	Decommissioned		Planned for decommissioning	
		2016	2017	2018	2019
Troitskaya GRES	TG-2 T-85-90-2,5 - 1 steam turbine	-	-	85 MW	-
Serovskaya GRES	TG-5,6,7,8 K-100-90M steam turbine K-100-90 - 3 steam turbines TV2-100-2 - 4 generators E-230-10-510 boiler KGT (PK-14-2) E-230-10-510 boiler KGT (PK-14R) E-230-10-510 boiler KGT (PK-14)	-	-	338 MW	-
Krasnoyarskaya GRES-2	Water boilers No. 2,3 PTVM-100	200 Gcal/h	-	-	-
<b>MOEK</b>					
Strogino CCGT-CHPP	SGT-800 gas turbine (45 MW)	2 units (90 MW)	-	-	-
Strogino CCGT-CHPP	SST-400-C300S steam turbine	1 unit (39.6 MW)	-	-	-
Minor boiler houses	Water boilers	22 units (11 Gcal/h)	18 units (9.29 Gcal/h)	17 units (8.4 Gcal/h)	-

## Appendix 4. Environmental Sustainability

GRI 305-7

GRI 305-1  
GRI 305-4

### GHG EMISSIONS IN CO<sub>2</sub> EQUIVALENT

	2016		2017	
	CO <sub>2</sub> emissions (tonnes of CO <sub>2</sub> equivalent)	Intensity (per unit of equivalent output, tonnes/MWh)	CO <sub>2</sub> emissions (tonnes of CO <sub>2</sub> equivalent)	Intensity (per unit of equivalent output, tonnes/MWh)
<b>MOSENERGO</b>				
CO <sub>2</sub>	42,023,946.26	0.27	40,172,153.53	0.27
CH <sub>4</sub>	-	-	-	-
N <sub>2</sub> O	-	-	-	-
SF <sub>6</sub>	-	-	-	-
<b>Total</b>	<b>42,023,946.26</b>	<b>0.27</b>	<b>40,172,153.53</b>	<b>0.27</b>
<b>TGC-1</b>				
CO <sub>2</sub>	11,600,505.05	0.21	12,014,288.62	0.21
CH <sub>4</sub>	-	-	-	-
N <sub>2</sub> O	-	-	-	-
SF <sub>6</sub>	-	-	-	-
<b>Total</b>	<b>11,600,505.62</b>	<b>0.21</b>	<b>12,014,288.62</b>	<b>0.21</b>
<b>OGK-2</b>				
CO <sub>2</sub>	44,563,110.811	0.664	41,509,030.030	0.654
CH <sub>4</sub>	-	-	5,924	0.0001
N <sub>2</sub> O	-	-	-	-
SF <sub>6</sub>	-	-	-	-
<b>Total</b>	<b>44,563,110.811</b>	<b>0.664</b>	<b>41,514,954.030</b>	<b>0.6541</b>
<b>MOEK</b>				
CO <sub>2</sub>	1,535,538.00	-	2,467,481.25	-
CH <sub>4</sub>	-	-	-	-
N <sub>2</sub> O	-	-	-	-
SF <sub>6</sub>	-	-	-	-
<b>Total</b>	<b>1,535,538.00</b>	<b>-</b>	<b>2,467,481.25</b>	<b>-</b>

### SIGNIFICANT AIR EMISSIONS AND THEIR INTENSITY PER UNIT OF OUTPUT BY ALL GENERATING FACILITIES

	2016		2017	
	Total, tonnes	Per unit of equivalent output, tonnes/MWh	Total, tonnes	Per unit of equivalent output, tonnes/MWh
<b>MOSENERGO</b>				
particulates	936.375	6.07*10 <sup>-6</sup>	760.978	0.5*10 <sup>-5</sup>
gaseous and liquid pollutants	47,687.496	3.0919*10 <sup>-4</sup>	41,361.218	2.75*10 <sup>-4</sup>
Including:				
nitrogen oxides (in NO <sub>2</sub> )	41,502.354	2.6909*10 <sup>-4</sup>	36,668.5	2.44*10 <sup>-4</sup>
carbon oxide	1,334.847	8.65*10 <sup>-6</sup>	1,409.865	0.9*10 <sup>-5</sup>
sulphur dioxide	4,810.402	3.119*10 <sup>-5</sup>	3,242.464	2.2*10 <sup>-5</sup>
hydrocarbons (net of volatile organic compounds)	4.86	0.03*10 <sup>-6</sup>	0.677	0.0*10 <sup>-5</sup>
volatile organic compounds	32.976	0.21*10 <sup>-6</sup>	37.398	0.0*10 <sup>-5</sup>
benzapyrene	-	-	0.03	0.0*10 <sup>-5</sup>
other gaseous and liquid pollutants	2.057	0.01*10 <sup>-6</sup>	2.314	0.0*10 <sup>-5</sup>
<b>Total</b>	<b>48,623.871</b>	<b>3.1526*10<sup>-4</sup></b>	<b>42,122.196</b>	<b>2.80*10<sup>-4</sup></b>
<b>TGC-1 (INCLUDING MURMANSKAYA CHPP)</b>				
particulates	4,558.297	0.1*10 <sup>-3</sup>	4,549.125	0.1*10 <sup>-3</sup>
gaseous and liquid pollutants	40,438.922	0.7*10 <sup>-3</sup>	43,339.754	0.7*10 <sup>-3</sup>
Including:				
nitrogen oxides (in NO <sub>2</sub> )	18,929.351	0.3*10 <sup>-3</sup>	18,668.074	0.3*10 <sup>-3</sup>
carbon oxide	6,965.796	0.1*10 <sup>-3</sup>	6,678.050	0.1*10 <sup>-3</sup>
sulphur dioxide	14,498.690	0.3*10 <sup>-3</sup>	17,946.403	0.3*10 <sup>-3</sup>
hydrocarbons (net of volatile organic compounds)	0.567	0.0*10 <sup>-3</sup>	0.639	0.0*10 <sup>-3</sup>
volatile organic compounds	44.498	0.0*10 <sup>-3</sup>	44.564	0.0*10 <sup>-3</sup>
benzapyrene	0.004	0.0*10 <sup>-3</sup>	0.006	0.0*10 <sup>-3</sup>
other gaseous and liquid pollutants	2.020	0.0*10 <sup>-3</sup>	2.024	0.0*10 <sup>-3</sup>
<b>Total</b>	<b>44,997.219</b>	<b>0.8*10<sup>-3</sup></b>	<b>47,888.879</b>	<b>0.8*10<sup>-3</sup></b>

	2016		2017	
	Total, tonnes	Per unit of equivalent output, tonnes/MWh	Total, tonnes	Per unit of equivalent output, tonnes/MWh
<b>OGK-2</b>				
particulates	66,447.269	9.905*10 <sup>-4</sup>	59,486.881	9.38*10 <sup>-4</sup>
gaseous and liquid pollutants	200,718.369	2.9919*10 <sup>-3</sup>	18,4549.149	2.909*10 <sup>-3</sup>
Including:				
nitrogen oxides (in NO <sub>2</sub> )	57,689.63	8.599*10 <sup>-4</sup>	57,255.448	9.03*10 <sup>-4</sup>
carbon oxide	23,286.391	3.471*10 <sup>-4</sup>	19,789.538	3.12*10 <sup>-4</sup>
sulphur dioxide	119,459.278	1.7807*10 <sup>-3</sup>	106,891.536	1.685*10 <sup>-3</sup>
hydrocarbons (net of volatile organic compounds)	98.145	1.463*10 <sup>-6</sup>	335.107	5.28*10 <sup>-6</sup>
volatile organic compounds	275.834	4.112*10 <sup>-6</sup>	275.834	0.00435*10 <sup>-6</sup>
benzapyrene	0.049776	7.42*10 <sup>-10</sup>	0.036	5.68*10 <sup>-10</sup>
other gaseous and liquid pollutants	0.925	1.379*10 <sup>-8</sup>	1.686	2.66*10 <sup>-8</sup>
<b>Total</b>	<b>267,165.638</b>	<b>3.9824*10<sup>-3</sup></b>	<b>244,036.030</b>	<b>3.847*10<sup>-3</sup></b>
<b>MOEK</b>				
particulates	0.006	8.912*10 <sup>-10</sup>	0.005	7.064*10 <sup>-10</sup>
gaseous and liquid pollutants	1,335.110	1.983*10 <sup>-4</sup>	1,264.811	1.787*10 <sup>-4</sup>
Including:				
nitrogen oxides (in NO <sub>2</sub> )	1,287.184	1.912*10 <sup>-4</sup>	1,217.711	1.720*10 <sup>-4</sup>
carbon oxide	47.920	7.118*10 <sup>-6</sup>	47.095	6.654*10 <sup>-6</sup>
sulphur dioxide	0	-	0	-
hydrocarbons (net of volatile organic compounds)	0	-	0	-
volatile organic compounds	0	-	0	-
benzapyrene	0.006	8.912*10 <sup>-10</sup>	0.005	7.064*10 <sup>-10</sup>
other gaseous and liquid pollutants	0	-	0	-
<b>Total</b>	<b>1,335.116</b>	<b>1.983*10<sup>-4</sup></b>	<b>1,264.816</b>	<b>1.787*10<sup>-4</sup></b>

## TOTAL WATER WITHDRAWAL BY SOURCE, '000 CUBIC METRES

GRI 303-1  
GRI 303-3

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
Water withdrawal, '000 cubic metres								
surface waters	455,029.75	383,153.34	236,004.76	231,292.26	3,306,438.40	3,370,070.27	0	0
ground waters	126.18	123.18	0.32	0.41	1,484.35	1,409.8	0	0
public water supply systems	8,157.33	7,785.40	96,428.37	96,990.18	6,435.14	6,210.07	1,595.2	8,653.8
other water supply systems	45,793.90	42,038.12	5,259.99	7,494.00	4,247.53	4,237.78	21,608.3	21,111.9
<b>Total</b>	<b>509,107.16</b>	<b>433,100.04</b>	<b>337,693.44</b>	<b>335,776.85</b>	<b>3,318,605.42</b>	<b>3,381,927.92</b>	<b>23,203.5</b>	<b>29,765.6</b>
Water reuse, '000 cubic metres	24,385.6	23,624.09	2,192.96	2,441.74	4,497,942.50	4,291,363.14	3.7	3.5

## WASTEWATER DISCHARGED TO SURFACE WATER AND DISPOSED AND ITS TREATMENT LEVEL, '000 CUBIC METRES

GRI 306-1

	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
polluted (untreated)			96,913.99	57,532.79	2,365.85	2,382.70	0	8.07
polluted (insufficiently treated)	19,271.91	17,622.86	1,573.22	1,321.04	3,155.33	2,781.91	0	0
clean-to-standard (untreated)	297,227.9	264,807.42	128,080.71	160,803.81	3,214,589.42	3,306,401.84	0	0
treated-to-standard	13,425.65	12,620.52	1.02	2.14	5,241.01	5,615.51	0	101.72
<b>Total</b>	<b>329,925.459</b>	<b>295,050.8</b>	<b>226,568.94</b>	<b>219,659.78</b>	<b>3,225,351.61</b>	<b>3,317,181.96</b>	<b>0</b>	<b>109.79</b>

## WASTE GENERATION, TONNES

Hazard class	Mosenergo		TGC-1		OGK-2		MOEK	
	2016	2017	2016	2017	2016	2017	2016	2017
I	14.7	16.476	11.137	10.579	12.61	10.97	5.429	-
II	25.7	4.344	15.713	5.141	5.08	4.80	4.104	4.628
III	1,351.38	1,421.98	1,138.029	1,300.866	1,065.94	864.60	24.625	19.874
IV	4,192.46	4,367.36	10,535.100	9,992.100	8,206.10	9,039.87	1,294.300	1,803.7
V	140,705.81	116,754.19	96,540.000	102,006.100	2,568,187.30	2,258,738.80	9,226.190	2,309.7
<b>Total</b>	<b>146,290.039</b>	<b>122,564.355</b>	<b>108,239.979</b>	<b>113,314.786</b>	<b>2,577,477.03</b>	<b>2,268,659.07</b>	<b>10,554.658</b>	<b>4,223.298</b>

Including:

oil sludge	1,235.859	1,267.835	782.161	806.812	430.86	138.70	-	-
bottom ash	126,542.3	87,495.26	63,429.000	71,273.800	2,466,395.20	2,162,462.90	-	-

## GRI 306-2 WASTE DISPOSAL, TONNES

	2016			2017		
	Total	Oil sludge	Bottom ash	Total	Oil sludge	Bottom ash
<b>MOSENERGO</b>						
Landfilled at the company's sites	50.500	-	-	12,880.560	-	12,295.770
Disposed by the company	-	-	-	-	-	-
Neutralised by the company	-	-	-	-	-	-
Delivered to third parties	147,209.110	1,234.889	127,482.780	109,683.983	1,267.835	75,199.490
including for:						
disposal	137,471.472	438.165	127,482.780	99,687.433	488.591	75,199.490
neutralisation	1,085.960	796.724	-	1,906.667	779.244	-
storage	-	-	-	-	-	-
landfilling	8,651.679	-	-	8,689.695	-	-
<b>TGC-1</b>						
Landfilled at the company's sites	36,429.500	97.200	36,332.300	31,915.121	137.721	31,777.400
Disposed by the company	0.407	-	-	-	-	-
Neutralised by the company	-	-	-	-	-	-

	2016			2017		
	Total	Oil sludge	Bottom ash	Total	Oil sludge	Bottom ash
Delivered to third parties	646,005.987	592.714	601,341.700	211,511.244	643.936	169,996.500
including for:						
disposal	161,069.909	56.500	130,500.000	158,071.234	58.311	130,500.000
neutralisation	1,023.929	536.214	-	752.991	505.425	-
storage	443,630.700	-	443,630.700	125.100	-	-
landfilling	40,281.449	-	27,211.000	52,561.419	80.200	39,496.500

## OGK-2

Landfilled at the company's sites	1,756,521.1	-	1,755,573.6	1,530,537.296	-	1,529,700.13
Disposed by the company	80,153.966	-	-	72,358.629	-	-
Neutralised by the company	6.43	-	-	6.63	-	-
Delivered to third parties	73,486.037	428.9	39,574.1	91,438.717	145.7	59,378.7
including for:						
disposal	60,171.252	0	0	74,143.523	43.7	0
neutralisation	606.664	428.9	0	807.14	102	0
storage	915.50	0	0	1,340.27	0	0
landfilling	-	-	-	-	-	-

## MOEK

Landfilled at the company's sites	0.00	-	-	0.00	-	-
Disposed by the company	0.031	-	-	0.00	-	-
Neutralised by the company	0.00	-	-	0.00	-	-
Delivered to third parties	10,554.569	-	-	4,223.298	-	-
including for:						
disposal	1,180.511	-	-	1,616.566	-	-
neutralisation	75.765	-	-	51.276	-	-
storage	0.00	-	-	0.00	-	-
landfilling	9,298.293	-	-	2,551.650	-	-

## Appendix 5. Social Sustainability

### GRI 306-2 TOTAL NUMBER OF EMPLOYEES BY EMPLOYMENT TYPE AND GENDER

	Full-time employee				Part-time employee			
	2016		2017		2016		2017	
	Female	Male	Female	Male	Female	Male	Female	Male
Mosenergo	2,590	5,544	2,505	5,403	2	2	2	3
TGC-1	2,161	5,016	2,187	4,947	19	9	17	9
OGK-2	2,906	5,744	2,860	5,672	2	31	2	28
MOEK	4,907	9,432	4,836	9,567	9	1	19	8

### GRI 102-8 TOTAL NUMBER OF EMPLOYEES BY EMPLOYMENT CONTRACT AND REGION

Region	Permanent employees						Temporary employees					
	Employment contract with a permanent employee			Employment contract with a part-time employee			Independent contractor agreement					
	2016		2017	2016		2017	2016		2017	2016		2017
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
<b>MOSENERGO</b>	2,591	5,543	2,506	5,402	7	4	9	7	8	28	17	34
Moscow	2,163	4,254	2,100	4,132	3	2	3	6	8	28	17	34
Moscow Region	428	1,289	406	1,270	4	2	6	1	0	0	0	0
<b>TGC-1</b>	2,161	5,016	2,187	4,947	3	16	4	15	18	22	13	12
St Petersburg	1,175	2,323	1,195	2,255	1	5	1	7	7	16	4	6
Leningrad Region	154	443	148	440	0	6	0	4	1	2	0	1
Murmansk Region	400	1,027	398	1,023	0	0	0	0	3	3	3	4
Republic of Karelia	269	694	283	694	0	0	0	0	7	1	6	1
Murmansk	163	529	163	535	2	5	3	4	0	0	0	0
<b>OGK-2</b>	2,925	5,725	2,859	5,673	2	31	2	28	3	2	3	7
Tyumen Region	260	655	270	661	-	-	-	-	-	-	-	-
Ryazan Region	369	748	368	755	-	-	-	-	-	-	-	-
Vologda Region	225	357	218	339	-	-	-	-	-	-	-	-
Stavropol Territory	249	539	253	540	-	3	-	6	1	1	1	1
Krasnodar Territory	83	136	73	129	-	-	-	-	-	-	-	-
Leningrad Region	463	643	436	634	2	10	2	10	2	0	2	3
Pskov Region	117	183	115	188	-	6	-	-	-	-	-	2
Chelyabinsk Region	348	711	327	689	-	6	-	6	-	-	-	-
Sverdlovsk Region	158	338	151	312	-	-	-	-	-	1	-	1
Rostov Region	426	760	420	766	-	6	-	6	-	-	-	-
Krasnoyarsk Territory	227	655	228	660	-	-	-	-	-	-	-	-

Region	Permanent employees						Temporary employees					
	Employment contract with a permanent employee			Employment contract with a part-time employee			Independent contractor agreement					
	2016		2017	2016		2017	2016		2017	2016		2017
Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
<b>MOEK</b>	4,907	9,432	4,836	9,567	22	39	18	26	14	10	12	8
Moscow	4,906	9,425	4,835	9,560	22	39	18	26	14	10	12	8
Moscow Region	1	7	1	7	-	-	-	-	-	-	-	-

### EMPLOYEE TURNOVER BY AGE GROUP AND GENDER

	Under 30 years old				30–50 years old				Over 50 years old			
	2016		2017	2016		2017	2016		2017	2016		2017
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
New employee hires in 2016–2017												
Mosenergo	75	296	69	287	110	240	116	201	94	92	42	72
TGC-1 (including Murmanskaya CHPP)	81	231	91	270	88	182	117	195	19	65	27	51
OGK-2	41	146	49	159	79	169	164	174	30	59	54	73
MOEK	154	427	185	440	271	508	311	646	81	224	66	270
Employee dismissals in 2016–2017												
Mosenergo	28	169	58	231	63	200	86	220	145	244	169	250
TGC-1 (including Murmanskaya CHPP)	28	156	42	179	82	159	67	204	89	184	88	214
OGK-2	34	73	23	89	129	173	170	188	154	222	136	190
MOEK	112	228	122	315	242	454	277	458	165	406	232	450
Average years of tenure with the Group companies for employees dismissed in 2016–2017												
Mosenergo	2.7	2.4	2	2.1	6.1	7.6	5.8	6	25.9	24.8	21.8	19.6
TGC-1 (including Murmanskaya CHPP)	1	2	2	2	8	9	7	8	25	23	21	21
OGK-2	1	1	2	1	1	2	4	3	3	4	4	2
MOEK	3.2	2.0	2.4	2.1	7.0	5.9	6.2	5.6	14.0	13.8	14.9	13.4

### BREAKDOWN AND CLASSIFICATION OF ACCIDENTS

#### BY TYPE OF ACCIDENT (HAZARD)

Indicator	Number of injuries	
	Employees	%
Falls from height	9	57
Traffic accidents	1	6
Electrical injuries	0	0
Impacts from moving, flying, or rotating objects, machines, or machine parts, etc.	0	0



Indicator	Number of injuries	
	Employees	%
Exposure to extreme temperatures	3	19
Falls, collapses, impacts from falling objects, materials, soil etc.	0	0
Smoke, fire, and flame injuries	1	6
Physical overload and stress	1	6
Exposure to hot and red-hot equipment parts, objects, or materials, including exposure to steam and hot water	1	6
<b>Total injuries</b>	<b>16</b>	<b>100</b>

**BY AGE GROUP**

Age group	Number of injuries	
	Employees	%
Under 25 years old	0	0
25–39 years old	5	31
40–49 years old	1	6
50–59 years old	4	25
Over 60 years old	6	38
<b>Total injuries</b>	<b>16</b>	<b>100</b>

**BY GENDER**

Indicator	Number of injuries	
	Employees	%
Male	10	62
Female	6	38
<b>Total injuries</b>	<b>16</b>	<b>100</b>

\* Rounded to the nearest whole number

**LOST TIME RESULTING FROM INJURIES**

Lost days resulting from accidents	2016	2017
Mosenergo	200	151
TGC-1	223	294
OGK-2	83	347
MOEK	843	392
<b>Total</b>	<b>1,349</b>	<b>1,184</b>

**BY TENURE WITH THE COMPANY**

Tenure with the Company	Number of injuries	
	Employees	%
Under 3 years	4	25
3–5 years	2	12.5
6–10 years	4	25
11–15 years	2	12.5
Over 15 years	4	25
<b>Total injuries</b>	<b>16</b>	<b>100</b>

**INJURIES AND FATALITIES IN ACCIDENTS**

Business unit		2016	2017
		Mosenergo	Number of injuries
	including fatalities	0	0
TGC-1	Number of injuries	5	5
	including fatalities	1	0
OGK-2	Number of injuries	4	5
	including fatalities	0	0
MOEK	Number of injuries	7	3
	including fatalities	0	1
<b>Total</b>	<b>Number of injuries</b>	<b>19</b>	<b>16</b>
	<b>including fatalities</b>	<b>1</b>	<b>1</b>

## Appendix 6. GRI Content Index

**GENERAL STANDARD DISCLOSURES**

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 101: Foundation 2016</b>		
<b>GRI 101</b>	Basic information about the report	Appendix 1. Report Profile and Materiality of Disclosed Topics 110
<b>GRI 102: General Disclosures</b>		
<b>GRI 102-1</b>	Name of the organisation	Appendix 1. Report Profile and Materiality of Disclosed Topics. Appendix 2. Overview of the Group 110
<b>GRI 102-2</b>	Primary brands, products, and services	Overview of the Group 12
<b>GRI 102-3</b>	Location of the organisation's headquarters	Appendix 2. Overview of the Group 115
<b>GRI 102-4</b>	Location of operations	Business Map Appendix 2. Overview of the Group 14, 116
<b>GRI 102-5</b>	Ownership and legal form	Appendix 2. Overview of the Group 115
<b>GRI 102-6</b>	Markets served	Business Map Appendix 2. Overview of the Group 14, 16, 116
<b>GRI 102-7</b>	Scale of the organisation	Scale of the Organisation 12
<b>GRI 102-8</b>	Information on employees and other workers	Human Resources Appendix 5. Social Sustainability 94, 126
<b>GRI 102-9</b>	Supply chain	Supply Chain 60
<b>GRI 102-10</b>	Significant changes to the organisation in the reporting period: organisation's size, structure, ownership, or supply chain (location of major suppliers and supplier contract termination)	Material Changes at the Group's Companies During the Reporting Period and in the Period from 1 January 2018 to the Publication Date of this Report 40
<b>GRI 102-11</b>	Precautionary Principle or approach	Risk Management 30
<b>GRI 102-12</b>	Externally developed economic, environmental and social charters, principles, or other initiatives to which the organisation subscribes, or which it endorses	Comment: standards we comply with: Environmental Management Systems (EMS) – ISO 14001:2015 ISO 9001:2008 to assess reliability and good faith of potential suppliers. Starting from 2014, we have implemented the voluntary initiative to disclose economic, environmental and social data in line with the GRI principles. Starting from 2016, we have implemented the voluntary initiative to disclose environmental data in line with the CDP standards. –

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 102-13</b> Membership of associations, industry and/or national or international advocacy organisations	Membership in Associations and Industry Organisations	40
<b>Strategy</b>		
<b>GRI 102-14</b> Statement from senior decision-maker	Statement from the CEO of Gazprom energoholding Group	4
<b>Ethics and integrity</b>		
<b>GRI 102-16</b> Values, principles, standards, and norms of behaviour	Corporate Sustainability Values	28
<b>Governance</b>		
<b>GRI 102-18</b> Governance structure	Governance Structure	24
<b>Stakeholder engagement</b>		
<b>GRI 102-40</b> List of stakeholder groups	Stakeholder Map	6
<b>GRI 102-41</b> Percentage of total employees covered by collective bargaining agreements	Protection of Interests and Rights	98
<b>GRI 102-42</b> Identifying and selecting stakeholders	Stakeholder Map	6
<b>GRI 102-43</b> Approach to stakeholder engagement: frequency and engagement practice for each stakeholder group	Stakeholder Engagement	7
<b>GRI 102-44</b> Key topics and concerns that have been raised by stakeholder groups	Stakeholder Engagement	7
<b>Reporting practice</b>		
<b>GRI 102-45</b> List of all entities included in the organisation's consolidated financial statements	Scale of the Organisation Appendix 2. Overview of the Group	13, 115
<b>GRI 102-46</b> Defining report content	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>GRI 102-47</b> List of material topics	Appendix 1. Report Profile and Materiality of Disclosed Topics	112
<b>GRI 102-48</b> Restatements of information	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>GRI 102-49</b> Significant changes from previous reporting periods in the list of material topics, topic boundaries, or estimation methodologies used in the report	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>Basic information about the report</b>		
<b>GRI 102-50</b> Reporting period (fiscal/calendar year) for the information provided	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>GRI 102-51</b> Date of most recent report	This is the Group's third sustainability report. Previously, the Group published sustainability reports for 2012–2013 and 2014–2015.	–

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 102-52</b> Reporting cycle	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>GRI 102-53</b> Contact point for questions regarding the report or its contents	Contacts	136
<b>GRI 102-54</b> Claims of reporting in accordance with the GRI Standards	Appendix 1. Report Profile and Materiality of Disclosed Topics	110
<b>GRI 102-55</b> GRI content index	GRI Content Index	129
<b>200: ECONOMIC TOPICS</b>		
<b>GRI 103: Management Approach 2016</b>		
<b>GRI 103-1</b> Explanation of the material topic and its boundary	Economic Sustainability	44
<b>GRI 103-2</b> The management approach and its components	Economic Sustainability	44, 46
<b>GRI 103-3</b> Evaluation of the management approach	Economic Sustainability	46
<b>GRI 201: Economic Performance 2016</b>		
<b>GRI 201-1</b> Direct economic value generated and distributed	Our Performance – Economic Sustainability	48
<b>GRI 201-2</b> Risks due to climate change	Risk Management	31
<b>GRI 201-3</b> Defined pension plan obligations	Protection of Interests and Rights	98
<b>GRI 201-4</b> Total monetary value of financial assistance received by the organisation from any government during the reporting period	Government Support	48
<b>GRI 202: Market Presence 2016</b>		
<b>GRI 202-1</b> Ratios of standard entry level wage compared to local minimum wage	Staff Remuneration	96
<b>GRI 204: Procurement Practices 2016</b>		
<b>GRI 204-1</b> Percentage of the procurement budget spent on local suppliers	Supplier Selection	50
<b>GRI 203: Indirect Economic Impacts 2016</b>		
<b>GRI 203-1</b> Infrastructure investments and pro bono services supported, and other indirect economic impacts	Optimisation of Business Structure	64
<b>GRI 205: Anti-corruption 2016</b>		
<b>GRI 205-3</b> Confirmed incidents of corruption and actions taken	Anti-Corruption	63
<b>300: ENVIRONMENTAL TOPICS</b>		
<b>GRI 103: Management Approach 2016</b>		

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 103-1</b>	Explanation of the material topic and its boundary	Environmental Sustainability 68
<b>GRI 103-2</b>	The management approach and its components	Environmental Sustainability 69, 70
<b>GRI 103-3</b>	Evaluation of the management approach	Environmental Sustainability 71
<b>GRI 301: Materials 2016</b>		
<b>GRI 301-1</b>	Materials used by weight or volume	Fuel Use and Energy Efficiency Water Management Comment: our heat and electricity generation process predetermines our use of various fuels (gas, coal, fuel oil, and diesel fuel) as the core feedstock and our considerable water consumption for process and auxiliary purposes. 74, 82
<b>GRI 302: Energy 2016</b>		
<b>GRI 302-1</b>	Total fuel consumption within the organisation from renewable and non-renewable sources by fuel types used, electricity consumption, heating consumption, cooling consumption. Electricity, heating, and cooling sold	Position in the Industry Fuel Use and Energy Efficiency 21, 23, 75, 76
<b>GRI 302-2</b>	Energy consumption outside of the organisation by fuel type	Fuel Use and Energy Efficiency 76
<b>GRI 302-3</b>	Energy intensity: any organisation-specific intensity metrics can be used, specifying intensity by fuel type used	Fuel Use and Energy Efficiency 77
<b>GRI 302-4</b>	Amount of reductions in energy consumption achieved as a direct result of conservation and efficiency initiatives. Types and volumes of fuel included in the reductions	Fuel Use and Energy Efficiency 77
<b>GRI 302-5</b>	The Company's initiatives to enhance energy efficiency and energy requirements reduced in the reporting period as a result of those initiatives	Fuel Use and Energy Efficiency 77
<b>GRI 303: Water 2016</b>		
<b>GRI 303-1</b>	Total volume of water withdrawn, with a breakdown by source	Water Management Appendix 4. Environmental Sustainability 83, 123
<b>GRI 303-2</b>	Water sources/water bodies used by the organisation for withdrawal – whether they are designated as protected areas, as well as their value and importance	Water Management 84
<b>GRI 303-3</b>	Total volume of water recycled and reused	Appendix 4. Environmental Sustainability 123
<b>GRI 305: Emissions 2016</b>		
<b>GRI 305-1</b>	Direct GHG emissions	Appendix 4. Environmental Sustainability 120

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 305-2</b>	Weight of energy indirect GHG emissions in CO <sub>2</sub> equivalent – by location	Emissions 80
<b>GRI 305-3</b>	Weight of other (previously not reported) gas emissions	Emissions 80
<b>GRI 305-4</b>	Emissions intensity	Appendix 4. Environmental Sustainability 120
<b>GRI 305-5</b>	GHG emission reduction initiatives and their results versus the base year	Emissions 80
<b>GRI 305-6</b>	Emissions of ozone-depleting substances	Emissions 81
<b>GRI 305-7</b>	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions with the indication of their type and weight	Appendix 4. Environmental Sustainability 121
<b>GRI 306: Effluents and Waste 2016</b>		
<b>GRI 306-1</b>	Water discharge by quality and destination	Water Management Appendix 4. Environmental Sustainability 84, 123
<b>GRI 306-2</b>	Total weight of waste by type and disposal method	Waste Disposal Appendix 4. Environmental Sustainability 85, 124, 126
<b>GRI 306-3</b>	Total number and total volume of significant spills	Waste Disposal 86
<b>GRI 306-4</b>	Total weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and the percentage of hazardous waste shipped internationally	Waste Disposal 86
<b>GRI 306-5</b>	Ownership, size, protection status and biodiversity value of the water bodies and related habitats significantly affected by the organisation's water discharges and runoff	Waste Disposal 86
<b>GRI 307: Environmental Compliance 2016</b>		
<b>GRI 307-1</b>	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	Environmental Standards 86
<b>400: SOCIAL TOPICS</b>		
<b>GRI 103: Management Approach 2016</b>		
<b>GRI 103-1</b>	Explanation of the material topic and its Boundary	Social Sustainability 90
<b>GRI 103-2</b>	The management approach and its components	Social Sustainability 91, 92
<b>GRI 103-3</b>	Evaluation of the management approach	Social Sustainability 92
<b>GRI 401: Employment 2016</b>		
<b>GRI 401-1</b>	Average hours of training per year per employee by gender, and by employee category	Human Resources Appendix 5. Social Sustainability 95, 127

Disclosure	Section (or information disclosure directly in the table)	Page of the report
<b>GRI 401-2</b>	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Staff Remuneration 95
<b>GRI 402: Labour/Management Relations 2016</b>		
<b>GRI 402-1</b>	Minimum notice periods typically provided to employees and their representatives regarding significant operational changes, and whether these are specified in collective agreements	Protection of Interests and Rights 98
<b>GRI 403: Occupational Health and Safety 2016</b>		
<b>GRI 403-1</b>	Information on procedures to ensure occupational health and safety	Occupational Health and Safety 99
<b>GRI 403-2</b>	Rules applied in recording and reporting accident statistics	Occupational Health and Safety Appendix 5. Social Sustainability 99, 103, 104, 127
<b>GRI 403-4</b>	Health and safety topics covered in formal agreements with trade unions	Occupational Health and Safety 100
<b>GRI 404: Training and Education 2016</b>		
<b>GRI 404-1</b>	Average hours of training per year per employee, by gender and by employee category	Development and Education 105
<b>GRI 404-2</b>	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	Development and Education 104
<b>GRI 404-3</b>	Percentage of employees receiving regular performance and career development reviews – by gender	Human Resources 94
<b>GRI 419: Socioeconomic Compliance 2016</b>		
<b>GRI 419-1</b>	Fines and non-monetary sanctions imposed on the Group companies for non-compliance with laws and/or regulations	Reliable Energy Supply and Consumer Safety 109

#### GRI G4 SECTOR DISCLOSURES: ELECTRIC UTILITIES 2013

Disclosure	Section (or information disclosure directly in the table)	Page
<b>G4-DMA (previously EU21)</b>	Contingency planning measures, disaster/emergency management plan and training programs, and recovery/restoration plans	Reliable Energy Supply and Consumer Safety 108
<b>EU27</b>	Number of residential disconnections for non-payment, by duration of disconnection	Reliable Energy Supply and Consumer Safety 109

## Appendix 7 Glossary and Abbreviations

**CHPP:** Combined Heat and Power plant

**CSA:** Capacity Supply Agreement

**Electricity generating companies:** PAO Mosenergo, PAO OGK-2, and PAO TGC-1

**Gazprom energoholding:** OOO Gazprom energoholding

**Generating companies:** PAO Mosenergo, PAO OGK-2, PAO TGC-1, and PAO MOEK

**GRES:** State District Power Plant

**GRI:** Global Reporting Initiative

**Group, Gazprom energoholding Group:** OOO Gazprom energoholding and its generating companies

**HPP:** Hydro Power Plant

**IFRS:** International Financial Reporting Standards

**KPI:** Key Performance Indicator

**MOEK:** PAO MOEK

**Mosenergo:** PAO Mosenergo

**OGK-2:** PAO OGK-2

**R&D:** research and development

**Stakeholders:** interested parties who have interest at stake in their relations with the Company

**TGC-1:** PAO TGC-1

**WECM:** Wholesale Electricity and Capacity Market

### Measurement Units

**Gcal (Gigacalorie):** a unit of heat energy

**kWh (kilowatt hour):** a unit of electricity

**MW (megawatt):** a unit of electric capacity

**Gcal/h (gigacalories per hour):** a unit of heat capacity (load)

**T. o. e.:** tonne of oil equivalent

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