PJSC Gazprom Environmental Report
2018

A Strategic Resource

PJSC Gazprom Environmental Report 2018

Introduction by Deputy Chairman of the Gazprom Management Committee

Dear readers,

On behalf of the Gazprom Management Committee I present you the 2018 edition of Gazprom's Environmental Report.

Environmental responsibility is a key element in the Gazprom Group's sustainable development strategy, based on the corporate Environmental Policy and effective environmental management system.

The current year will be remembered for robust hydrocarbon resources development of the Yamal Peninsula, the construction work for the linear part of the Power of Siberia gas pipeline, the development of the Chayandinskoye field, meant to provide first natural gas to the Chinese market, the expansion of Russian gas transmission systems of the North and North-West.

In 2018, natural gas came to more than 200 localities of our country thanks to the Russian Regions Gas Infrastructure Expansion (Gasification) Program implementation.

Pipelay works in the Baltic Sea for the Nord Stream 2 project are currently underway; two strings of the TurkStream offshore gas pipeline were built ahead of the deadline.

Natural gas is the most environmentally friendly fossil fuel, so Gazprom's efforts to increase the natural gas share in the energy and transport sectors virtually revitalize Russian and European lands.

Being faithful to the sustainable development principles, the Gazprom Group continued reducing its environmental impact throughout 2018. In the reporting year, Gazprom became the first Russian energy company to conduct an independent audit (certification) on the corporate disclosure of greenhouse gas emissions under ISAE 3410 Assurance Engagements on Greenhouse Gas Statements, thus increasing the level of stakeholder confidence in the corporate carbon reporting and demonstrating the environmental benefits of Russian natural gas supplies to domestic and foreign consumers.

Today, the environmental aspect of production significantly affects the technology development assessment of a company. Through the use of best available and promising high-tech solutions, the Gazprom Group companies are demonstrating good leadership in the energy market.

The Gazprom Group's large-scale environmental campaigns in Russian regions and abroad are by now a good tradition. In 2018, they were successfully held under the Year of Volunteers in Russia.

The high scores of independent public rankings prove the effectiveness of the company's Environmental Management System.

The Gazprom Group will maintain high level of corporate environmental responsibility and energy efficiency.

Vitaly A. Markelov
Member of the Gazprom Board of Directors,
Deputy Chairman of the Gazprom Management Committee,
Chairman of the Gazprom Coordinating Committee
for Environmental Protection and Energy Efficiency

Introduction

The present Environmental Report has been formed in accordance with the Decree of the Gazprom Management Committee on Organization of Work Related to Preparation and Holding of the Annual General Shareholders Meeting of PJSC Gazprom.

The present report is based on the data of "Environmental impact of industrial activity" corporate periodical reporting statistics drafted by using corporate information and management system, and other data contained in the reports on environmental activities, corporate web resources, articles of the Group published in Russia and abroad.

The 2018 Environmental Report provides information about the Gazprom Group activities in the Environmental Policy implementation, including the current performance on air, water and land resources, waste management and measures undertaken to mitigate the environmental impact.

The Report presents data on environmental management and funding of fundamental studies and production complex technical modernization aimed at ensuring the environmental safety of the Gazprom Group operating facilities.

The data are provided in respect of the Gazprom Group on the whole, PJSC Gazprom (including retrospective data for 5 years) and some companies from the Group that contribute greatly to the activities aspects covered in the report.

The term PJSC Gazprom used in this Report refers to the parent company of the Gazprom Group, Public Joint Stock Company Gazprom and its fully owned subsidiary companies and organizations involved in hydrocarbons exploration, production, transportation, underground storage and processing activities, as well as maintenance of Unified Gas Supply System (UGSS):

OOO Gazprom dobycha Astrakhan
OOO Gazprom dobycha Irkutsk
OOO Gazprom dobycha Krasnodar
OOO Gazprom dobycha Kuznetsk
OOO Gazprom dobycha Nadym
OOO Gazprom dobycha Noyabrsk
OOO Gazprom dobycha Orenburg
OOO Gazprom dobycha Urengoy
OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk
OOO Gazprom dobycha Yamburg
OOO Gazprom geologorazvedka
OOO Gazprom transgaz Volgograd
OOO Gazprom transgaz Yekaterinburg
OOO Gazprom transgaz Kazan
OOO Gazprom transgaz Krasnodar
OOO Gazprom transgaz Makhachkala
OOO Gazprom transgaz Moscow
OOO Gazprom transgaz Nizhny Novgorod
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OOO Gazprom transgaz Saint Petersburg
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OOO Gazprom transgaz Tomsk
OOO Gazprom transgaz Ufa
OOO Gazprom transgaz Ukhta
OOO Gazprom transgaz Tchaikovsky
OOO Gazprom transgaz Yugorsk
AO Tchetchengazprom
OOO Gazprom UGS
OOO Gazprom pererabotka
OOO Novy Urengoy gas chemical complex
OOO Gazprom energo
OOO Gazprom tsentrremont
OOO Gapprom geotekhnologii
OOO Gazprom georesurs
OOO Gazprom gazomotornoye toplivo
OOO Gazpromavia Aviation Company
OOO Gazpromtrans
OOO Gazprom flot
OOO Gazprom invest
OOO Gazprom sotsinvest
OAO Gazpromtrubinvest
AO Tsentrgas

The terms Gazprom Neft Group or Gazprom Neft comprise PAO Gazprom Neft and its subsidiary companies.

The terms Gazprom neftekhim Salavat comprise OOO Gazprom neftekhim Salavat and its subsidiary companies.

The terms Gazprom energoholding comprises OOO Gazprom energoholding and its subsidiary companies (PAO Mosenergo, PAO MOEK, PAO OGK-2, PAO TGC-1, PAO Murmanskaya CHPP, AO Saint Petersburg Heating Grid).

The Gazprom Group, Gazprom or the Group will stand for PJSC Gazprom (all above mentioned 100% subsidiaries) and the following companies:

Gazprom Neft Group
Gazprom energoholding
Gazprom neftekhim Salavat
Vostokgazprom Group (OAO Tomskgazprom)
OOO Gazprom mezhregiongaz
AO Daltransgaz
Sakhalin Energy Investment Company Ltd.
(Sakhalin Energy)
OAO Severneftegazprom
PAO Spetsgazavtotrans
ZAO Purgaz

as well as PJSC Gazprom subsidiary companies conducting their activities abroad:
OAO Gazprom transgaz Belarus
ZAO Gazprom Armenia
OsOO Gazprom Kyrgyzstan
Gazprom EP International B.V.

The Gas business companies of the Gazprom Group comprises PJSC Gazprom (and all its 100 per cent subsidiary companies and organizations involved in hydrocarbons production, transportation, underground storage and refining activities, as well as maintenance of UGSS), OOO Gazprom mezhregiongaz, Vostokgazprom Group (OAO Tomskgazprom), AO Daltransgaz, Sakhalin Energy Investment Company Ltd., OAO Severneftegazprom, ZAO Purgaz, and PAO Spetsgaz-avtotrans.

The environmental impact indicators and the economic indicators are given for the Gazprom Group operations in the Russian Federation. The environmental performance abroad is reviewed separately.

Environmental Protection Management

Environmental Management System

PJSC Gazprom adheres to the principles of sustainable development, which means a balanced and socially acceptable combination of economic growth and preservation of a conducive environment for future generations.

PJSC Gazprom's Environmental Policy is a fundamental document of The Environmental Management System (EMS).

Having adopted in 1995 its own Environmental policy PJSC Gazprom became the first Russian oil and gas company, which declare its voluntary responsibility in the field of the environment.

The updated version of the Company's Environmental Policy approved by the Management Committee of PJSC Gazprom in 2015 reflects current trends in the field of environmental protection and energy efficiency, reducing the impact on climate. The Environmental Policy defines obligations and mechanisms for ensuring environmental safety, including the development of hydrocarbon fields at the continental shelf and in the Arctic area of the Russian Federation; risks minimization of the negative impact on the environment, including natural sites with increased vulnerability and facilities, the protection and preservation of which are of particular importance. The provisions of PJSC Gazprom Environmental Policy are brought to the attention of Company's personnel and external stakeholders, especially contractors and external suppliers. The Board of Directors with its decision recommended the use of PJSC Gazprom Environmental Policy in companies of the Gazprom Group.

Since 2011 PJSC Gazprom has adopted a certified EMS aimed at implementing the Environmental Policy, setting and achieving environmental goals, managing environmental aspects of PJSC Gazprom and fulfilling commitments.

EMS of PJSC Gazprom is certified in accordance with the international standard: ISO 14001:2015 Environmental Management Systems — Requirements with guidance for use. In 2018 an independent audit confirmed the compliance of the EMS of PJSC Gazprom to the requirements of ISO 14001: 2015.

Top Administrative Body of PJSC Gazprom in the Environmental Protection Management System is PJSC Gazprom Management Committee.

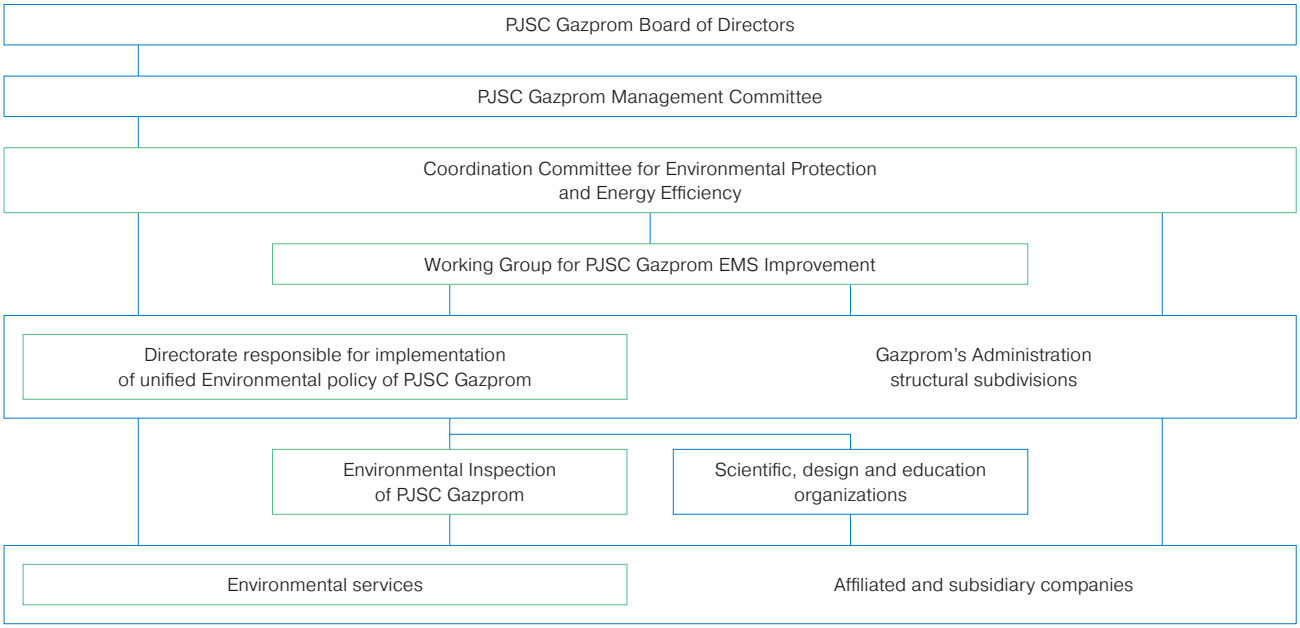
The Coordination Committee on environmental protection and energy efficiency exercises complex administration and general coordination of activities for Gazprom's Administration structural divisions, affiliate and subsidiary companies of the Gazprom Group. The Committee includes the majority of the Management Committee members and heads of Gazprom's Administration structural subdivisions.

The Directorate responsible for implementation of unified environmental policy of the PJSC Gazprom and the policy aimed at increasing the Gazprom Group energy efficiency is directly in charge of actions on interacting PJSC Gazprom subsidiary companies and organizations in the environmental activities area and decisions implementation of the Coordination Committee and senior executives of the PJSC Gazprom.

In order to ensure comprehensive approach and coordination of the environmental management activities of the PJSC Gazprom structural subdivisions, there is a constantly operating Working Group for the PJSC Gazprom's EMS improvement. The head of the group is O.E. Aksyutin, Deputy Chairman of the Management Committee of PJSC Gazprom — Head of Department.

Scope of EMS of PJSC Gazprom is defined in the Company's standard STO Gazprom 12-0-022-2017 Environmental Management System. Requirements with guidance for use. 15 structural subdivisions of the Administration, 34 subsidiaries with 100% participation and the Environmental Inspectorate of PJSC Gazprom are encompassed by EMS of PJSC Gazprom.

Structure of PJSC Gazprom Environmental Management System



Scope of 2018 PJSC Gazprom EMS application

OOO Gazprom transgaz Volgograd
OOO Gazprom transgaz Yekaterinburg
OOO Gazprom transgaz Kazan
OOO Gazprom transgaz Krasnodar
OOO Gazprom transgaz Makhachkala
OOO Gazprom transgaz Moscow
OOO Gazprom transgaz Nizhny Novgorod
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OAO Gazprom transgaz Belarus

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OOO Gazprom dobycha Yamburg
OOO Gazprom UGS
OOO Gazprom pererabotka
OOO Gazprom geologorazvedka
OOO Gazprom energo
OOO Gazprom tsentrremont
OOO Gazprom invest
Environmental Inspection of PJSC Gazprom
Administration of PJSC Gazprom

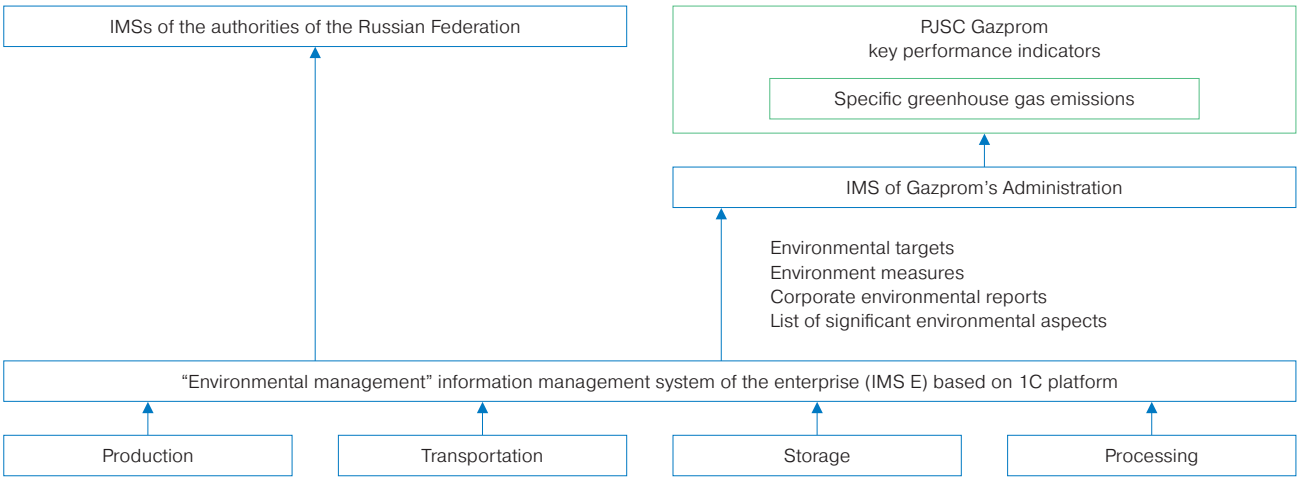
In the Gazprom Group companies not covered by Gazprom's EMS other EMS were also implemented and successfully exist, most of them are certified for compliance with the requirements of international standard ISO 14001:2015. In these companies, EMS take into account specifics of the company activities and have their own features.

Corporate environmental review and environmental control (audit) are used by PJSC Gazprom successfully as tools of voluntary environmental responsibility. Environmental design and survey works carried out by research and development organizations upon Gazprom request are an integral part of the management system.

In order to improve the efficiency of managerial decision-making, PJSC Gazprom implemented information management system (IMS) Environmental Protection Management, which includes IMS subsystem of Gazprom's Administration and IMS E subsystem for enterprises. Automation of "Environmental Management" business process allows optimizing the collection, processing and storage of EP reporting data and data on functioning of the EMS, as well as monitoring the key performance indicator of PJSC Gazprom.

In 2018 PJSC Gazprom completed automation of "Environmental Management" business process in 21 subsidiary company. IMS E allows sending prescribed reports to IMSs of the authorities of the Russian Federation.

PJSC Gazprom Information Management System Environmental Management



PJSC Gazprom Coordination Committee for Environmental Protection and Energy Efficiency

In 2018, at the meeting of Gazprom Coordination Committee for Environmental Protection and Energy Efficiency the following issues were discussed:

- results of environmental activities and work on improving energy efficiency of subsidiary companies in 2017, and the results of the Green Year in PJSC Gazprom;
- activities of gas distribution companies belonging to OOO Gazprom mezhregiongaz Group of Companies aimed at reducing emissions and natural gas leaks into the atmosphere;
- the issue of conversion of corporate transport to natural gas fuel and creation of the necessary infrastructure;
- results of the development and implementation of the Roadmap on Transition to the Best Available Techniques in PJSC Gazprom;
- measures of ensuring the protection of the environment while implementing investment projects in Gazprom Mountain Tourist Center;
- the work of OOO Gazprom energoholding for process waste disposal, including recycling of ash and slag waste;
- issues of ensuring environmental safety in the development of the Kovyktinskoye field.

Environmental Training

A prerequisite for successful environmental management is a process of continuous improvement of environmental knowledge and culture of the employees.
Leading educational institution for continuous professional personnel education system in PJSC Gazprom is Gazprom Corporate Institute which has made a significant contribution to the Company's development since 1995.
A multi-level system of Institute's corporate training covers all groups of personnel from young professionals to the reserve of top managerial. Technical and informational equipment of the Institute are at the level of world's leading training centers, and and the training meets high quality standards and is carried out on a wide range of educational programs, including environmental.

In 2018, in order to improve environmental education, the Corporate Institute implemented a number of training projects.

Managers and new employees of PJSC Gazprom received basic knowledge on EMS and Environmental Policy during the introductory training.

Managers and experts of environmental services of subsidiary companies have been trained under the following programs:

— Development and implementation of an environmental management system based on ISO 14001:2015 requirements at the enterprises of gas industry, internal audit;
— Organizing environmental support for production activities in oil and gas industry;
— The best available technologies, transition to technological regulation and integrated environmental permits, new requirements and international experience.

As part of professional development programs for experts the following environmental courses were organized:

— Basic principles for environmental protection during offshore oil and gas field development under Offshore Drilling and Operation of Oil and Gas Wells program;
— Environmental support solutions for field development projects under New Methods and Technologies of Field Development and Gas Treatment Before Trunk Transportation program;
— Environmental protection for construction projects developers under Preparation of Project Documentation for Capital Construction Facilities program;
— Environmental support of engineering surveys. Engineering and environmental surveys and the requirements and procedure for conducting state ecological expertise under professional training program of Gazprom School for Training Chief Project Engineers;
— Features of conducting ecological expertise of project documentation under professional training program of Gazprom School for Training Chief Project Engineers;
— Environmental impact assessment under Conducting Project Expertises in the Gas Industry Professional Development program.

The use of remote educational technologies has allowed training a wide variety of the Gazprom Group's employees for the entire year to under the following courses:

— Environmental Protection in PJSC Gazprom;
— Environmental management in PJSC Gazprom.

Methane Footprint webinar on the role of methane in climate changes and the reduction of methane emissions in PJSC Gazprom was attended by more than 450 employees from 47 subsidiary companies of Russia, Belarus and Kyrgyzstan.

In 2018, 8,679 employees of subsidiary companies (4,020 of them studied EMS) were trained on the grounds of Corporate Institute and other training institutions and improved their skills, from them — in PJSC Gazprom — 6,805 people (3,760 of them studied EMS), in the Gazprom Neft Group — 955 people (239 of them studied ESM), in the Gazprom energoholding Group — 207 people.

Environmental training of the Gazprom Group personnel, 2014–2018, pers.

In 2014–2018 44,926 employees underwent environmental training in the Gazprom Group.

Competition of Environmental Services and Ecologists of PJSC Gazprom Subsidiary Companies

A competition of Environmental Services and Ecologists of PJSC Gazprom subsidiary companies is held annually in PJSC Gazprom in compliance with OAO Gazprom Order No. 113/A dated April 30, 2008.

In 2018, according to 2017 results among environmental services, OOO Gazprom transgaz Stavropol (S.D. Nazarenko, Head of the Environmental Protection Division) won the Competition.

Winners of the Competition of ecologists:

— G.A. Fedchenko, a leading engineer of Environmental Protection Division of OOO Gazprom transgaz Stavropol;
— L.A. Solovischuk, Head of the Environmental Protection Division of OOO Gazprom dobycha Yamburg;
— A.V. Rud', a leading engineer of Environmental Protection and Energy Saving Division of OAO Gazprom transgaz Belarus.

Environmental Targets and Programs

In the frame of PJSC Gazprom's EMS, environmental targets are set, programs of environmental protection measures are developed and implemented based on annually defined significant environmental aspects.

In 2018, the following environmental aspects were recognized significant for PJSC Gazprom: methane emissions to atmospheric air during repair of trunk gas pipelines (TGP) and nitrogen oxides emissions during operation of compressor stations (CS), wastewater discharges, waste disposal, as well as noise emission.

The corporate environmental targets of PJSC Gazprom set for the period of 2017–2019 were approved by Member of the Board of Directors of PJSC Gazprom, Deputy Chairman of the Management Committee of PJSC Gazprom and Head of Coordinating Committee on environmental protection and energy efficiency V. A. Markelov.

In 2018, four out of the six targets set for 2017 to 2019 were met. The growth in above-limit impact charges against the 2014 baseline was due to a failure to obtain necessary environmental permits on time, which did not result in higher environmental impact. The rise in specific fuel and energy consumption for own operational needs was driven by a disproportionate increase in fuel and energy consumption along with higher natural gas transportation volumes (up 15.5% in 2018). Analysis of energy consumption by trunk gas pipelines under comparable operating conditions confirmed that specific fuel and energy consumption is going down (see Energy Savings and Increasing Energy Efficiency section).

Achieving Corporate environmental targets of PJSC Gazprom in 2018, %

№	Corporate environmental target	Entities covered by EMS	Progress against the target (vs the 2014 baseline)
1	Reduction of methane emissions, %	All subsidiaries engaged in natural gas transportation	Down 3.8%
2	Reduction of specific emissions of nitrogen oxides, tonnes per mmcm	All subsidiaries engaged in natural gas transportation	Down 2.2%
3	Reduction of discharge of contaminated and insufficiently treated wastewater into surface water bodies, %	All subsidiaries	Down 23.5%
4	Reduction of landfill share, %	All subsidiaries	Down 5.3%
5	Reduction of the payment for exceeding the allowed environmental impact, %	All subsidiaries	Up 2.7%
6	Reduction of specific fuel and energy consumption for own operational needs, kg c.e. per mmcm·km	All subsidiaries engaged in natural gas transportation	Up 1.8%

Financing of Environmental Protection

In 2018, total expenditures of the Gazprom Group for environmental protection in the Russian Federation decreased by 3% compared to year 2017, mainly due to the reduction of high investment expenditures of the Gazprom Neft Group.

The Gazprom Group environment protection costs dynamics, 2014–2018, RUB bn

Capital investments into environmental protection and rational use of natural resources, 2014–2018, RUB mm

	2014	2015	2016	2017	2018
Gazprom Group	15,578.35	15,754.33	22,541.85	35,584.53	29,188.61
Gas business companies	7,703.04	6,931.87	2,542.10	4,450.87	5,612.57
including PJSC Gazprom	7,526.22	6,893.16	2,270.89	2,862.86	5,283.52
Gazprom Neft Group	3,995.61	3,114.05	14,275.03	27,101.67	19,028.63
Gazprom energoholding	800.78	2,837.54	368.31	579.20	1,374.55
Gazprom neftekhim Salavat	3,078.92	2,870.87	5,356.41	3,452.79	3,172.86

The funds invested by PJSC Gazprom in 2018 increased by 1.8 times compared to 2017 investments; the funds were invested in the framework of large-scale investment construction projects of PJSC Gazprom, such as the development of the gas production centre in Yamal, construction of trunk pipelines Ukhta — Torzhok 2, Bovanenkovo — Ukhta 2 and Nord stream 2, TurkStream, construction of Amur gas processing plant complex for production, storage and shipment of liquefied natural gas (LNG) in the area of Portovaya compression station.

The Gazprom Group's capital investments into environmental protection and rational use of natural resources decreased by 18% compared to 2017 is due to completion of a number of large-scale investment projects in the Gazprom Neft Group, such as the construction of innovative wastewater treatment facilities at the Moscow Refinery (AO Gazpromneft — Moscow Refinery) and pressure-tight filler rack at Omsk Refinery (AO Gazpromneft — Omsk Refinery).

Gazprom Neft invested funds to implement a number of investment programs on construction and modernization of major environmental facilities in oil refining and production, on reconstruction and modernization of gas transportation, treatment and processing facilities and gas facility at the fields, on ensuring reliability of pipelines, and land reclamation. In 2018, Gazprom Neft investments in air protection were assigned for: the construction of a gas purification unit for catalytic cracking regeneration gases at the Omsk Refinery, commissioning of the second gas turbine unit and the gas turbine power plant and for run of four additional gas pumping units (GPU) at OOO Gazpromneft Yamal, commissioning of infrastructure facilities for utilization of associated petroleum gas (APG) at Urmanskoe and Archinskoe fields.

In 2018, more than 70% of Gazprom energoholding's investments aimed at creating a desulfurization system at the Trinity state regional power plant (a subsidiary of PAO OGK-2).

OOO Gazprom neftekhim Salavat invested, inter alia, in the construction of the treatment plant for sulfide-alkaline drains of the Monomer plant and the refinery plant, into tank farms and racks modernization.

In 2014–2018, the Gazprom Group invested RUB 118.65 bn into environment protection and rational use of natural resources.

In 2018, the investments were assigned for: air protection — RUB 15,814.68 mm, or 54% of the Group's investments; protection and rational use of land — RUB 6,646.81 mm (23%), including restoration — RUB 3,081.61 mm; protection and rational use of water resources — RUB 6,106.77 mm (21%), of which RUB 4,322.92 mm — for construction of wastewater treatment facilities and water recycling systems.

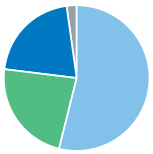
RUB 620.35 mm were spent to the other purposes (2%), including facilities and landfills for waste utilization, decontamination and disposal — RUB 307.93 mm, protection and rational use of forests — RUB 35.42 mm, protection and reproduction of fish stocks — RUB 33.45 mm, other — RUB 243.55 mm.

In 2018, the Gazprom Group commissioned: 49 plants and facilities for wastewater treatment with a capacity of 52.31 thousand cubic meters per day; 3 recycling water supply systems with a capacity of 0.27 thousand cubic meters per day; 18 waste disposal and recycling facilities with a capacity of 6.81 thousand tonnes per year; one polygon for utilization, decontamination and disposal of toxic industrial, household and other wastes with a capacity of 17.02 thousand tonnes per year.

Current expenses of the Gazprom Group in 2018 environmental protection increased by 14% compared to 2017. This was due to the start of operation of the sulfide-alkaline wastewater treatment plant for Refinery and Monomer plant, as well as with the technical re-equipment of the unit for the production of elementary sulfur in Gazprom neftekhim Salavat.

Structure of capital investments into environmental protection and rational use of natural resources, the Gazprom Group, 2018, %

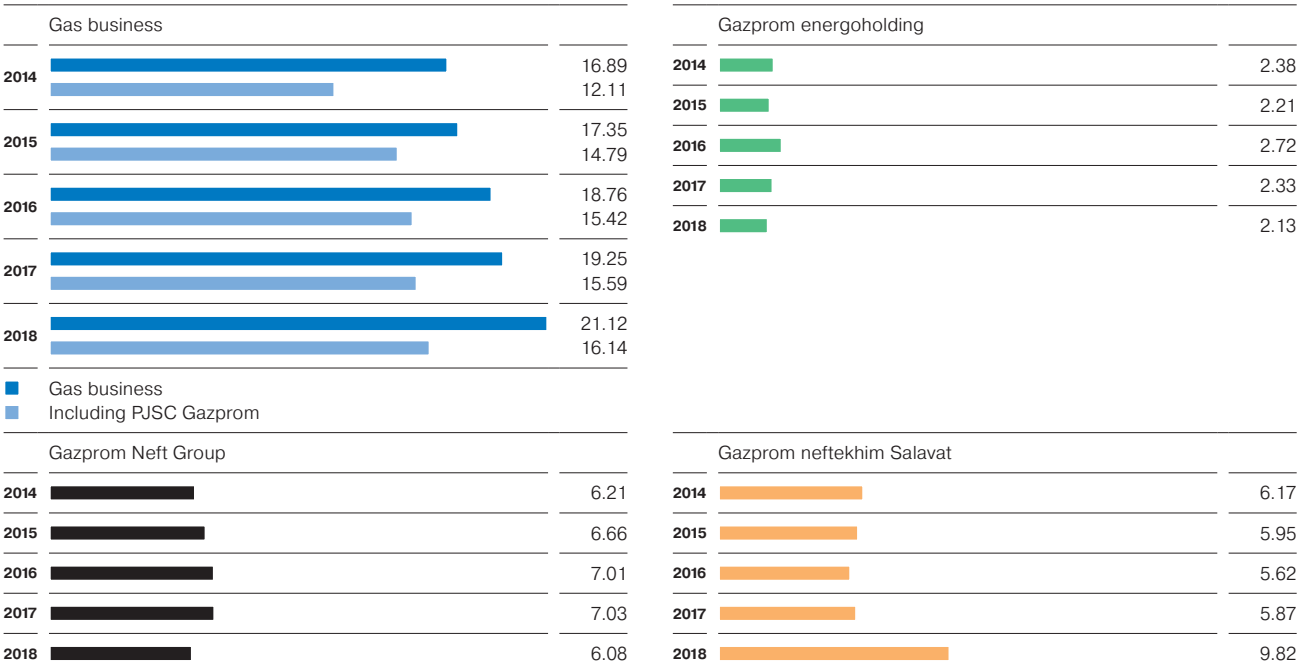
Air protection	54
Protection and rational use of lands	23
Protection and rational use of water resources	21
Protection and rational use of forest resources, protection and restoration of fish stocks, enterprises and landfills for utilization, neutralization and disposal of waste	2



Current environmental expenditures, 2014–2018, RUB mm

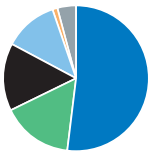
	2014	2015	2016	2017	2018
Gazprom Group	31,656.24	32,169.03	34,103.25	34,467.98	39,154.34
Gas business companies	16,895.69	17,348.59	18,757.29	19,246.65	21,124.79
including PJSC Gazprom	12,113.02	14,787.92	15,423.62	15,595.46	16,137.67
Gazprom Neft Group	6,210.19	6,656.05	7,005.29	7,027.52	6,080.42
Gazprom energoholding	2,380.27	2,214.70	2,717.38	2,325.85	2,132.36
Gazprom neftekhim Salavat	6,170.09	5,949.69	5,623.29	5,867.97	9,816.77
including current (operational) expenditures for environment protection					
Gazprom Group	18,047.89	16,399.90	17,189.74	18,219.75	22,638.04
Gas business companies	8,079.39	8,561.32	9,539.58	10,083.97	10,527.75
including PJSC Gazprom	7,141.84	8,328.66	9,273.12	9,707.42	10,104.97
Gazprom Neft Group	3,843.48	2,282.08	2,190.53	2,520.95	2,527.70
Gazprom energoholding	544.65	413.00	457.90	515.12	613.87
Gazprom neftekhim Salavat	5,580.37	5,143.50	5,001.73	5,099.71	8,968.72
including fees for environmental protection services					
Gazprom Group	9,403.46	12,806.27	14,725.57	14,495.59	14,584.14
Gas business companies	4,988.78	6,591.72	7,735.50	7,854.85	9,226.03
including PJSC Gazprom	3,300.71	4,284.04	4,690.93	4,592.33	4,662.63
Gazprom Neft Group	2,316.29	4,095.48	4,685.08	4,387.15	3,225.50
Gazprom energoholding	1,686.30	1,729.35	1,843.82	1,683.04	1,378.41
Gazprom neftekhim Salavat	412.09	389.72	461.17	570.55	754.20
including current costs for overhaul of main production assets (environmental protection aspects)					
Gazprom Group	4,204.88	2,962.86	2,187.94	1,752.64	1,932.16
Gas business companies	3,827.52	2,195.54	1,482.21	1,307.83	1,371.01
including PJSC Gazprom	1,671.01	2,175.23	1,459.57	1,295.71	1,370.07
Gazprom Neft Group	50.41	278.49	129.68	119.42	327.22
Gazprom energoholding	149.32	72.36	415.66	127.69	140.08
Gazprom neftekhim Salavat	177.63	416.47	160.38	197.70	93.85

Dynamics of current expenditures for environmental protection in the Gazprom Group, 2014–2018, RUB bn



Costs for wastewater collection and treatment usually prevails within the Gazprom Group current expenditures and in 2018 amounted to RUB 20.38 bn (52%). The Gazprom Group spent RUB 6.14 bn on conservation and rehabilitation of land, surface and ground waters; RUB 4.88 bn — on air protection and preventing climate change; RUB 5.70 bn — on waste management; RUB 0.49 bn — on biodiversity conservation and natural areas preservation; RUB 1.57 bn — on other environmental activities: protection of the environment against noise, vibration and other physical effects; radiation safety of the environment; environmental impact reduction R&D, etc.

Structure of the Gazprom Group's current environmental expenditures, 2018, %



Waste water collection and treatment	52
Protection and reclamation of lands, surface and underground waters	16
Waste management	15
Atmospheric air protection and prevention of climate change	12
Protection of biodiversity	1
Other activity areas in the environmental protection sphere	4

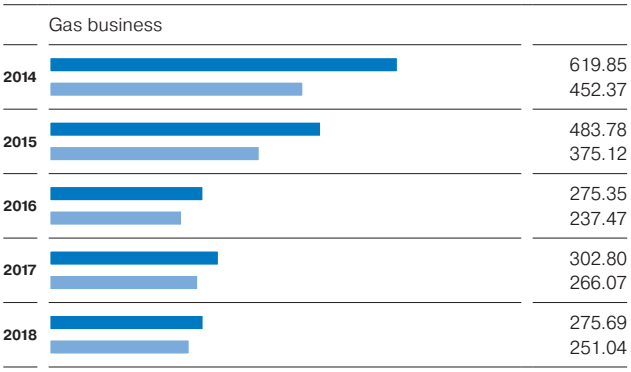
Adverse Environmental Impact Fee

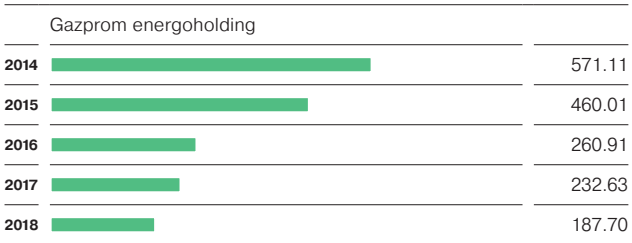
In 2018, the Gazprom Group transferred to budgets of different levels RUB 615.76 mm as payment for adverse environmental impacts.

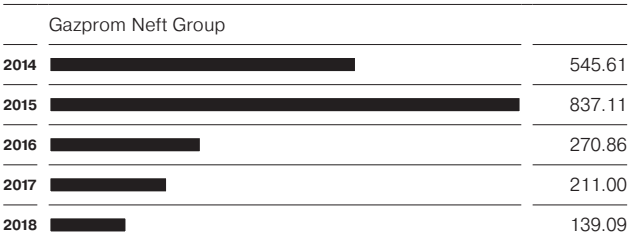
Adverse environmental impact fee, 2014–2018, RUB mm

	2014	2015	2016	2017	2018
Gazprom Group	1,746.89	1,790.42	824.80	767.97	615.76
Gas business companies	619.85	483.78	275.35	302.80	275.69
including PJSC Gazprom	452.37	375.12	237.47	266.07	251.04
Gazprom Neft Group	545.61	837.11	270.86	211.00	139.09
Gazprom energoholding	571.11	460.01	260.91	232.63	187.70
Gazprom neftekhim Salavat	10.32	9.52	17.68	21.54	13.28

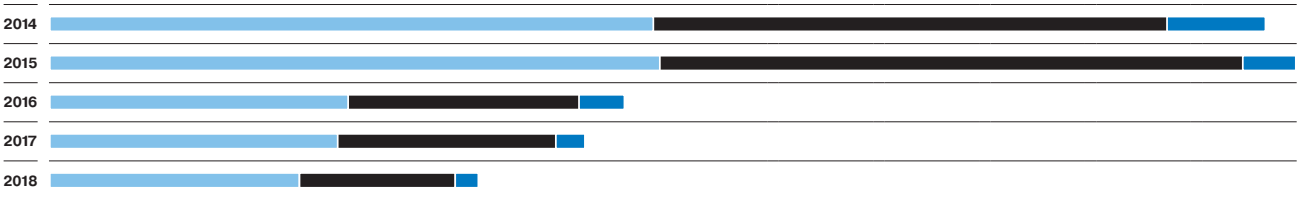
Adverse environmental impact fee dynamics in the Gazprom Group, 2014–2018, RUB mm







Dynamics of environmental payments of the Gazprom Group by types of adverse environmental impact, 2014–2018, RUB mm



	2014	2015	2016	2017	2018
Air pollutant emissions	866.34	875.7	427.38	412.39	356.94
Industrial and consumption waste disposal	740.44	840.06	333.70	315.36	223.46
Pollutant discharge into surface water bodies	139.96	74.66	63.72	40.23	35.36

In the adverse environment impact fee structure, payments for air emissions pollutants (58%) and for industrial and consumption waste disposal (36%) were predominant in 2018.

The Gazprom Group share of over-norm emission payment in total amount of payment for adverse environment impact as a whole was 32%, for PJSC Gazprom — 21%, for the Gazprom Neft Group — 59%, for Gazprom energoholding — 26%, for Gazprom neftekhim Salavat — 27%. The excess emission payment, in the vast majority of cases, was due to organizational reasons (late receipt or prolongation of environmental permits).

Over recent years, there is a clear trend of reduction of the amount of adverse environmental impact fee, which is mainly due to reduction of fees for pollutant emissions in the process of APG flaring at the fields of Gazprom Neft, nullification of extra factors in fee calculation, deduction of funds unnecessarily paid earlier when making advance payments, and works ensuring timely receipt of permits.

In 2014–2018, the Gazprom Group decreased the environmental impact fee paid by three times.

Environmental Performance and Energy Saving

Impact to the Atmosphere

In 2018, total pollutant emissions from stationary sources of the Gazprom Group companies amounted to 2,894.02 thousand tonnes which is slightly more than 2017 value.

At waste gas treatment facilities 1,839.41 thousand tonnes of pollutants, including 1,772.14 thousand tonnes at Gazprom energoholding, 108.30 thousand tonnes at PJSC Gazprom, 8.97 thousand tonnes at other companies were captured and neutralized. Weight of captured and neutralized pollutants is construed by 93% of solid particles, mainly by ash of solid fuels of power generating facilities, and by 7% – gaseous and liquid substances (where 95% is the share of sulfur dioxide).

Structure of pollutants emissions in the Gazprom Group is mostly dependent on specific production activities of PJSC Gazprom and other gas business companies. Basic pollutants within total emissions of the Group include hydrocarbons (mainly methane), carbon oxide, nitrogen oxides, and sulfur dioxide. Solid particles emissions come mostly from the Gazprom energy sector, whereas volatile organic compounds are commonly associated with operations of the companies of the Gazprom Neft Group and gas production sector.

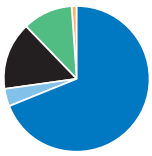
A slight increase of pollutant emissions in 2018 is due to an increased volume of production, transport and pressurization/extraction of natural gas.

Dynamics of total air pollutant emissions in the Gazprom Group, 2014–2018, thousand tonnes

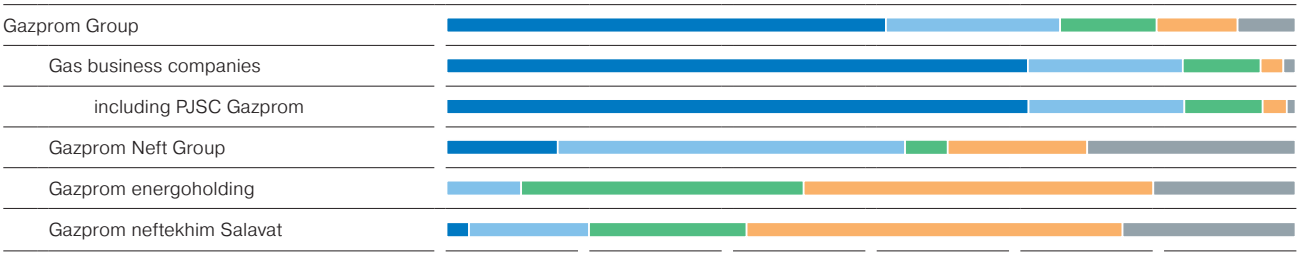
2014	2,797.63
2015	2,830.57
2016	2,868.46
2017	2,795.97
2018	2,894.02

Share of the Gazprom Group companies in total emissions, 2018, %

PJSC Gazprom	69
Other Gas business companies	4
Gazprom Neft Group	15
Gazprom energoholding	11
Gazprom neftekhim Salavat	1



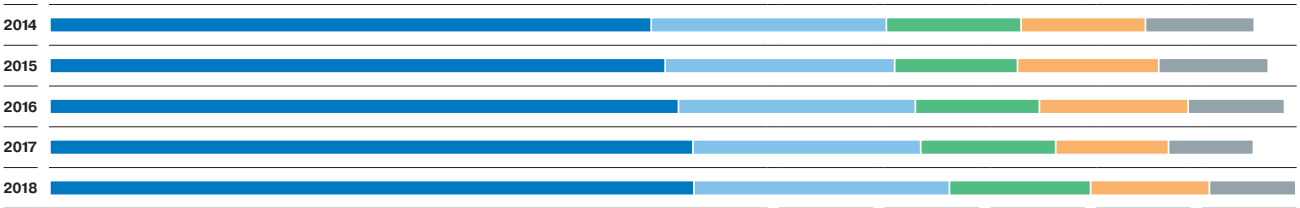
Component structure of air emissions in the Gazprom Group, 2018, thousand tonnes, %



	Gazprom Group	Gas business companies	including PJSC Gazprom	Gazprom Neft Group	Gazprom energoholding	Gazprom neftekhim Salavat
Hydrocarbons (including methane)	1,497.78	1,440.04	1,365.13	56.73	0.14	0.87
Carbon oxide	594.10	383.61	365.53	177.30	28.55	4.64
Nitrogen oxides	328.62	192.51	183.71	21.81	108.20	6.10
Sulfur dioxide	276.16	56.54	56.49	71.13	133.95	14.54
Other substances*	197.36	29.92	20.55	106.33	54.42	6.69

* Other substances include: volatile organic compounds, solid substances, other gaseous and liquid substances.

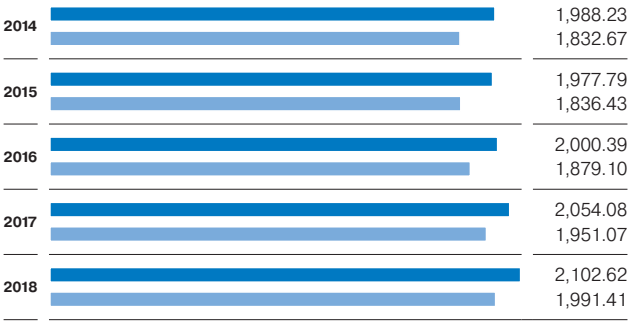
Dynamics of air pollutant emissions from the Gazprom Group's stationary sources, 2014–2018, thousand tonnes



	2014	2015	2016	2017	2018
Hydrocarbons (including methane)	1,398.48	1,430.80	1,462.35	1,495.67	1,497.78
Carbon oxide	546.95	533.64	550.48	529.92	594.10
Nitrogen oxides	313.10	286.26	288.46	313.57	328.62
Sulfur dioxide	289.33	328.43	346.09	262.66	276.16
Other substances	249.77	251.42	221.08	194.15	197.36

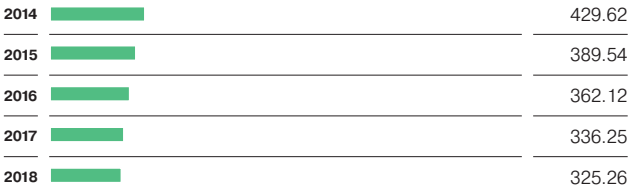
Dynamics of total air emissions in the Gazprom Group, 2014–2018, thousand tonnes

Gas business

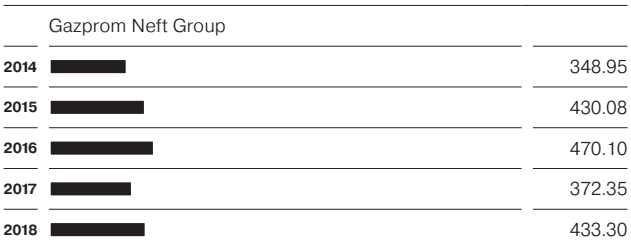


Gas business
Including PJSC Gazprom

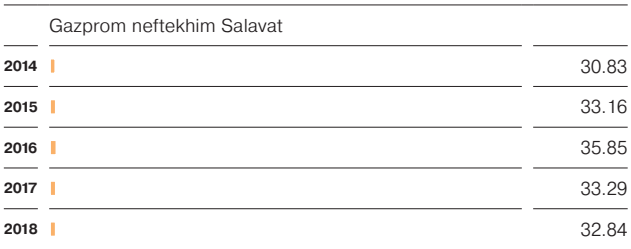
Gazprom energoholding



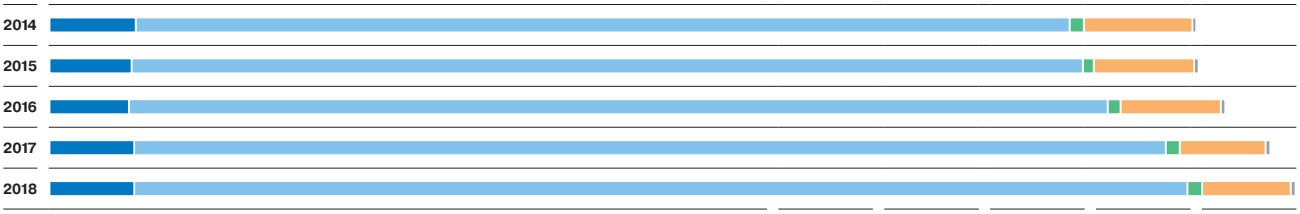
Gazprom Neft Group



Gazprom neftekhim Salavat



Dynamics of total air pollutant emissions in PJSC Gazprom* by activity types, 2014–2018, thousand tonnes



	2014	2015	2016	2017	2018
Production	137.65	131.05	126.75	135.30	135.35
Transportation	1,492.61	1,520.37	1,564.34	1,648.55	1,683.16
Underground gas storage	22.66	17.38	20.57	22.34	23.69
Processing	174.12	161.08	160.14	137.18	141.45
Other (supporting) activities	5.63	6.55	7.30	7.70	7.76

* Pollutant emissions (including methane) at PJSC Gazprom facilities were calculated according to documents of PJSC Gazprom standardization system, included in the List of Guidelines used in 2017 for calculation, rating and monitoring of pollutant emissions to air, approved by AO Scientific Research Institute for Atmospheric Air Protection on December 30, 2016.

Pollutant emissions from stationary sources of the Group's gas business companies amounted to 2,102.62 thousand tonnes, which is by 2.4% more than in 2017. PJSC Gazprom share accounted to 95% of total emissions of the gas business and defines overall trend of the indicators.

Total emissions of PJSC Gazprom increased by 40.34 thousand tonnes or by 2.1%, compared to 2017. The main reasons are growth in activity in production, transportation and UGS, as well as scope of trunk gas pipeline repair.

At the same time, it should be noted that due to implementation of energy efficiency and energy saving programs, in 2018, during repairs of main gas transport, PJSC Gazprom prevented natural gas (methane) release into air in the amount of 725.9 thousand tonnes.

Increase in the Gazprom Neft Group total pollutant emission into air by 16% compared to 2017 is due to the increase of volumes of APG utilization due, in turn, to lunching of new oil wells. A detailed description of projects on the use of APG at oil fields of the Gazprom Group is disclosed in a separate section of this Report.

Total Gazprom energoholding emission decreased by 3% which is mainly due to change in the fuel balance with increase of natural gas share.

Emissions from Gazprom neftekhim Salavat facilities decreased by 1.4% due to the take of data from AO Meleuz Mineral Fertilizers after the latter was sold.

Subsidiary companies of PJSC Gazprom hold a large number of environmental campaigns aimed at reducing emissions of pollutants into the air every year. Gas transport companies use "hot tapping" technology for natural gas pumping using transportable compressors: a bypass is organized for the gas from the repaired sections of the pipeline to the neighboring areas. Gas producing subsidiaries conduct process researches at wells without discharging natural gas into the atmosphere, introduce the use of multi-component surface-active substances (surfactants), which improve conditions for removal of formation fluids from the well bottom hole and so reduce gas emissions into the atmosphere.

Greenhouse Gas Emission

Greenhouse gas (GHG) management is a part of the Corporate Strategy of PJSC Gazprom which contributes to the achievement of the national target to ensure a 75% reduction of GHG emissions by 2020 as compared to the 1990 level.

In order to demonstrate its environmental responsibility, in March 2018 PJSC Gazprom signed the Guiding Principles on Reducing Methane Emissions across the Natural Gas Value Chain. Earlier the document was supported by such companies as Shell, Total, Eni, Equinor (former Statoil), BP, ExxonMobil, Repsol, and Wintershall. By signing the document, Gazprom made a commitment to further reduce methane emissions from its facilities. The commitment was made as part of the wider efforts by the global energy industry to ensure that natural gas continues to play a critical role in helping to meet future energy demand while addressing climate change.

The Guiding Principles were developed in cooperation with the United Nations Environmental Program and supported by organizations such as the International Energy Agency, the International Gas Union, the Oil and Gas Climate Initiative, the Environmental Defense Fund, the Sustainable Gas Institute, etc.

Through this document, Gazprom reaffirms its environmental responsibility to the international community.

In 2018 PJSC Gazprom, along with the leading international energy companies, signed the Guiding Principles on Reducing Methane Emissions.

PJSC Gazprom reporting system for GHG emission reduction covers PJSC Gazprom parent company and 100% of Gazprom subsidiary companies and organizations engaged in production activities (including exploration), transportation, underground storage and processing of hydrocarbons as well as UGSS which are financially and operationally managed by the company.

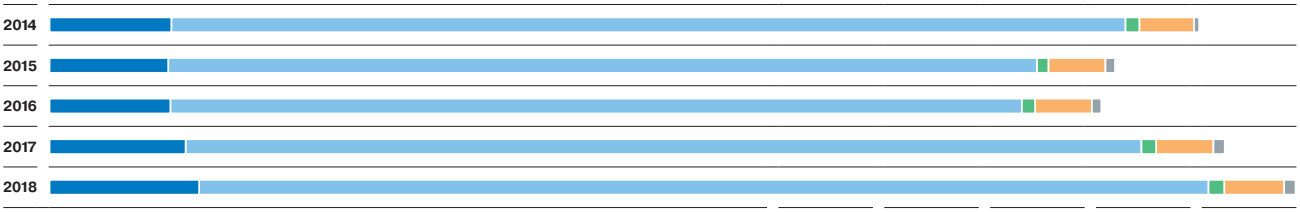
The management and reporting system for GHG emissions reduction has all the necessary elements: informational support for managerial decisions by Gazprom's top management; monitoring of energy saving and energy efficiency indicators, process facilities and natural environments conditions in Gazprom's regions of responsibility; development and adoption of the best available techniques (BAT), innovative resource- and energy-saving technologies and corporate regulatory documents, etc.

PJSC Gazprom understands that some uncertainties may affect the accuracy of GHG emissions quantitative estimates and, inter alia, instrument measurement accuracy of natural gas flow meters, methodological calculation methods inaccuracies for natural gas volume measuring and methodological analytical methods inaccuracies for identification of fuels and hydrocarbon mixtures' physical and chemical characteristics (density, composition), as well as risks of deliberate or accidental information distortion in sampling, aggregation and processing of the primary data used to evaluate GHG emissions. These risks are identified and controlled at all stages of the reporting process. Taking into account the Methodological Guidelines and the international Corporate Accounting and Reporting Standard "The Greenhouse Gas Protocol", possible deviations of these indicators from cumulative effect of all possible negative factors are not deemed significant if they do not exceed 5% of total GHG emissions combined.

In general, 2018 GHG emissions from PJSC Gazprom's facilities increased compared to 2017 due to the growth of production, transportation, and natural gas injection in UGS.

GHG emissions of PJSC Gazprom in 2018 amounted to 120.09 mm tonnes of CO_2-equivalent, where methane accounts for 27%.

Dynamics of greenhouse gas emissions from main activities of PJSC Gazprom, 2014–2018, mm tonnes of CO2-equivalent



	2014	2015	2016	2017	2018
Production	11.69	11.39	11.60	13.07	14.39
Transportation	92.12	83.87	82.20	92.28	97.52
Underground gas storage	1.26	1.02	1.20	1.34	1.44
Processing	5.20	5.44	5.41	5.46	5.71
Other (supporting) activities	0.43	0.85	0.83	1.02	1.03

Methane emissions from main activities of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent

Production	1.24
Transportation	30.74
Underground gas storage	0.47
Processing	0.03
Other (supporting) activities	0.02

In 2018, the main measures to reduce GHG emissions in PJSC Gazprom were prevention of natural gas bleeding during trunk pipelines repair works (725.9 thousand tonnes of methane) and reduction of methane emissions during process operations (30.9 tonnes). The prevented methane emissions totaled to 725.9 thousand tonnes, or 17,858.19 thousand tonnes of CO_2-equivalent.

PJSC Gazprom effectively reduce GHG emissions in its economic activity and carries out practical work in order to create a low-carbon economy using the following tools:

— substitution of other hydrocarbons in the fuel and energy balance by natural gas;
— introduction of use of methane-hydrogen energy;
— development of innovative technologies for hydrogen production from methane without emission of carbon dioxide.

In 2018 the Roadmap for Greenhouse Gas Emissions Management System in the Gazprom Group companies for the period up to 2020 and up to 2030 was developed, which was formed on the basis of modern approaches to the information support of managerial and investment decisions taking into account the multivariance in scenarios of the development and of the environmental priorities.

This Roadmap sets the targets (taking into account the variance of PJSC Gazprom development) for the forecast figures of specific GHG emissions for 2020, 2025 and 2030, as well as measures for achieving thereof.

Forecast figures of specific GHG emissions in PJSC Gazprom, 2020–2030, tonnes of CO_2-equivalent/toe

2020	2025	2030
0.239–0.248	0.223–0.243	0.211–0.230

Since 2009, PJSC Gazprom participates in the Carbon Disclosure Project (CDP), an international investment partnership. Since 2013, the Company has expanded a set of reporting indicators for the questionnaire and has been providing additional data on indirect GHG emissions.

Indirect energy greenhouse gas emissions per activity types of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent

Production	0.51
Transportation	4.62
Underground gas storage	0.10
Processing	2.98

Thus, over the past seven years, PJSC Gazprom has been a constant leader in the energy sector of the Russian CDP investment partnership rating. According to the international CDP rating, PJSC Gazprom has the best (lowest) index of the carbon footprint of products among the 26 largest oil and gas companies in the world. Such a high result demonstrates the effectiveness of corporate climate policy.

PJSC Gazprom has been acknowledged as the best Russian oil and gas company according to the 2011–2018 CDP questionnaire results (https://www.cdp.net/en/scores-2018).

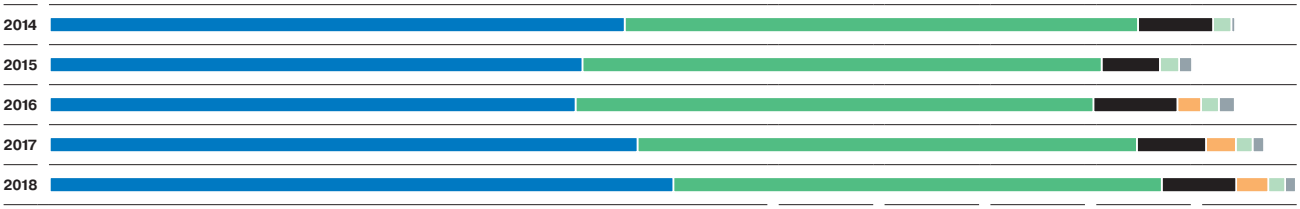
The participation of PJSC Gazprom in CDP climate and water programs provided an opportunity to demonstrate its corporate GHG emissions and water resources management strategies to global financial institutions and investors, which take these data into account for their investment portfolio policy development.

In 2018, PJSC Gazprom became the first Russian energy company to pass an independent audit (certification) of corporate GHG reporting to the International Standard on Assurance Engagement (ISAE) 3410, Assurance Engagements on Greenhouse Gas Statements.

The GHG control and metering system is being implemented and improved in other Gazprom group companies. Since 2016, all subsidiary companies of the Group, regardless of their activity type, carry out monitoring and calculate GHG emissions using an unified algorithm — according to the Methodology Guidance and Procedure Manual on Greenhouse Gas Emissions Volumes Evaluation by Business and Other Organizations Performing Activities in the Russian Federation approved by Order of the Ministry of Natural Resources and Environment of the Russian Federation No. 300 of June 30, 2015.

In 2018, the GHG emissions from the Gazprom Group facilities amounted to 239.97 mm tonnes of CO_2-equivalent as a whole, which is more than in 2017 by 6.14 mm tonnes of CO_2-equivalent. The indicator growth is associated with the increase in production in all business segments of the Group activities.

Dynamics of greenhouse gas emissions in the Gazprom Group, 2014–2018, CO_2-equivalent, mm tonnes



	2014	2015	2016	2017	2018
PJSC Gazprom*	110.70	102.56	101.24	113.17	120.09
Gazprom energoholding	98.85	99.99	99.72	96.17	94.06
Gazprom Neft Group	14.46	11.22	16.18	13.31	14.33
Gazprom neftekhim Salavat	–	–	4.56	5.75	6.18
Sakhalin energy	3.52	3.70	3.42	3.22	3.25
Other companies	0.72	2.49	3.07	2.21	2.06

* GHG emissions classified by main economic activities of PJSC Gazprom: production, transportation, underground storage and processing of natural gas, and PJSC Gazprom emissions from other activities.

Greenhouse gas emissions by category of source in the Gazprom Group, 2018, CO_2-equivalent, mm tonnes

Emissions sources (processes)	Total	CO_2	CH_4
Greenhouse gas emissions, total	239.97	207.06	32.91
Stationary fuel combustion	188.27	188.27	0.00
Flaring	10.91	10.80	0.11
Fugitive emissions	32.99	0.19	32.80
Oil processing	3.79	3.79	0.00
Ammonia production	0.21	0.21	0.00
Petrochemical production	0.16	0.16	0.00
Other industrial processes	3.53	3.53	0.00
Air transport	0.09	0.09	0.00
Railway transport	0.02	0.02	0.00

GHG emissions due to process losses of hydrocarbons are controlled by the Ministry of Energy of the Russian Federation by establishing and controlling the execution of norms of process losses for natural gas, gas condensate and associated (petroleum) gas during the extraction and for natural gas during transportation using trunk pipelines. Every year PJSC Gazprom provides to the Ministry of Energy of the Russian Federation information on the number of inevitable process losses of hydrocarbons for the approval and reference information on the implementation of technical measures aimed at reducing thereof.

Leaks control system in subsidiary companies of PJSC Gazprom is implemented according to the approved Programs of the detection, measurement and metering of gas leaks, which are based on the provisions and requirements of corporate standards: STO Gazprom 027-2006 “Standard program for gas emission evaluation at OAO Gazprom facilities” and STO Gazprom 031-2007 “Methods for measuring the volume of methane emission into the atmosphere at OAO Gazprom facilities”.

OOO Gazprom gaznadzor conducts regular inspections of the subsidiary companies, and the results of such inspections are submitted to PJSC Gazprom every month. Parameters controlled: methane emissions with leaks of natural gas from ground processing equipment, interconnecting lines and valves operated at the facilities of PJSC Gazprom.

Utilization of Associated Petroleum Gas

Gazprom activities aimed at decreasing (eliminating) of APG flaring are of considerable importance for GHG emissions reduction and resource efficiency.

APG combustion is a burning issue of the oil and gas sector under the global tendencies of economy transition to the low-carbon and energy-efficient development and due to the reasons of economic losses and environmental risks. The implementation of investment projects for APG utilization at the Gazprom Group fields targets at achievement of a minimum APG utilization level of 95% in accordance with the Russian Government Decree No. 1148 of November 8, 2012.

In 2018, the rate of the APG effective utilization factor for fields of Gazprom's natural gas production subsidiaries (including OAO Tomskgazprom) comprised 97.7%, for the Gazprom Neft Group — 78.3%, Sakhalin Energy Investment Company Ltd. — 97.4%.

The Gazprom Neft Group aims to ensure the required level of APG utilization (95% of production) alongside with the start of new deposits commercial development and the increase in the extracted oil and gas volumes. Terms for achieving procedural values of 95% were approved by the Board of Directors of Gazprom Neft: 2020 — for assets with developed gas infrastructure, 2022 — for the whole the Gazprom Neft Group taking into account new assets.

In order to meet established targets, there was developed the APG Utilization and Efficiency Improvement Program for the utilization and improvement of the efficiency of APG use, which provides for the implementation of investment projects on natural gas infrastructure construction.

Active investment policy and delivering measures of the Program on time ensure the consolidated index progress and 95% of APG effective utilization by 2022 with a twofold increase of gas production as compared to 2017.

Actual 2018 indicator at current assets amounts to 78.3%, and is increased as compared to 2017 by 2.5%. However, the actual growth of APG production was 3 bcm or 25.9% as compared to 2017 volumes. The progress on effective gas utilization is provided by launching gas facilities and effective management of the equipment of current assets.

One of the most important events in APG utilization projects was the launch of the second phase facilities of the compressor station (CS) with a comprehensive gas treatment unit (CGTU) at the Novoportovskoye oil, gas and condensate field (OGCF), and CS first phase Process Line-4 facilities of the Orenburg OGCF. The newly commissioned compressing capacities of the Novoportovskoye OGCF increased gas infrastructure performance to 7.2 bcm per year. Commissioning of CS Process Line-4 facilities together with the earlier commissioned pipeline for external transmission increased gas infrastructure performance of the Orenburg OGCF by two times.

In the short term, it is expected the completion of facilities construction for the Urman-Archinsk group of fields, further development of the gas program at the Novoportovskoye field, the implementation of APG utilization projects at new fields, in particular at the Severo-Samburgskoye and Tazovskoye fields.

A portfolio of projects of the Gazprom Neft Group's gas program being implemented allows the company to maintain an APG effective utilization uptrend. Key factors in the growth rate are the effective management of product flows and equipment, and launching of new infrastructure facilities for the company.

AO Messoyakhaneftegaz received a approval of the State Expertise (Glavgosexpertiza) of Russia on the development project for well cluster for APG injection of into the reservoir at the Zapadno-Messoyakhskoye OGCF with the inter-field gas pipeline from the Vostochno-Messoyakhskoye OGCF. APG storage project in the gas cap of the neighboring OGCF is unique to the oil and gas industry.

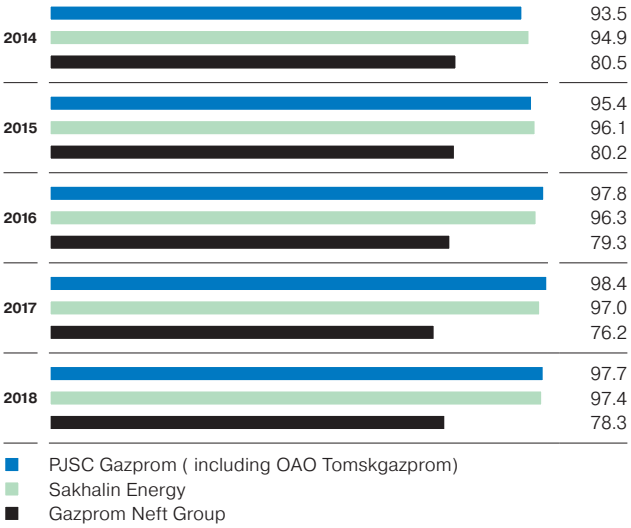
During the project the company will build the following necessary infrastructure on the two license areas:
CS with the capacity of 1.5 bcm of gas per year — at the Vostochno-Messoyakhskoye field, two well clusters with nine wells for injection of APG into the reservoir — at the Zapadno-Messoyakhskoye field. Two fields will be linked with 54 km long inter-field pipeline for the transport of compressed gas.

Implementation of the new project will allow AO Messoyakhaneftegaz to maximize the use of APG. Even now, APG obtained during oil production at Messoyakhskoye field is used for process needs: it is used to operate the gas turbine power plant and as a fuel oil for heating furnaces and boilers. Transportation and subsequent injection of APG from the Vostochno-Messoyakhskoye field into the gas cap of the neighboring Zapadno-Messoyakhskoye field will make it possible to continue to use gas from the underground storage. Implementing such a project directly on the Vostochno-Messoyakhskoye field where there is an active oil production is impossible due to its geological structure: there are no fields with appropriate characteristics and areas for storing large volumes of gas.

Construction of an APG UGS and gas infrastructure will allow Messoyakhskoye to reach a maximum level of the rational use of gas and will provide an opportunity to implement a custom project for Russia, which is of great importance for the environment.

During the construction of gas treatment and transportation facilities it is planned to use the equipment of domestic production. The whole infrastructure will be implemented using modular assembly with maximal ex-works readiness. This will ensure rapid rate of construction and the overall profitability of the project. It will be implemented in two and a half years.

Dynamics of apg utilization in the Gazprom Group's companies, 2014–2018, %



Improving Environmental Performance of Transport

Expanding the use of natural gas as a motor fuel is not only a strategic focus in the domestic and foreign markets but a contribution to the implementation of the climate and environment policy of the Russian Federation.

PJSC Gazprom has developed and implemented a schedule for reconstruction of existing CNG filling stations up to 2020, works on natural gas compression modules installation at operating fuel filling stations of Russian oil companies are carried out, mobile gas tankers are operated to supply gas motor fuel to consumers located at far from CNG filling stations. 10 priority region to expand the gas filling infrastructure and gas fuel market development are: St. Petersburg and the Leningrad Region, Moscow and the Moscow Region, Krasnodar Territory, Rostov Region, Stavropol Territory, the Republic of Tatarstan and Bashkortostan, Sverdlovsk Region.

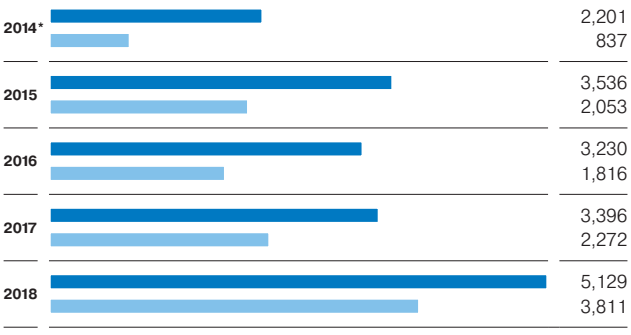
In 2018 CNG filling stations of Gazprom network comprised 293 facility with total capacity of gas filling of 2.2 bcm of natural gas per year.

In the period from 2015 to 2018 OOO Gazprom gazomotornoye toplivo built 85 new gas refill facilities; in 2018 there were commissioned 51 CNG filling stations.

The company coordinates the work of interested participants in the domestic gas market, involves large organizations with large fleets.

In 2018, the Gazprom Group replenished the fleet of gas motor vehicles with 5,129 units, including 80 units in the CIS countries. In the Russian Federation, PJSC Gazprom reequipped 4,120 cars to gas motor fuel, OOO Gazprom mezhregiongaz — 744, Gazprom Neft Group — 183, Gazprom neftekhim Salavat — 2 motor vehicles.

Number of vehicles switched to natural gas by the Gazprom Group, 2014–2018, vehicles per year



* The data reported through 2014 are provided for PJSC Gazprom only.

Gazprom systematic work aimed at increasing the use of gas in road transport brings significant results. From 2015 to 2018, demand for the fuel in the gas filling network in Russia grew by 37% — up to 598.2 mmcm.

In PJSC Gazprom there is a program for gas conversion of corporate vehicles. According to the results of 2018, the total number of NGV vehicles reached 11,802 units, accounting for 68.2% of the total number of operated car park (17,300 units), suitable for conversion to gas motor fuel and having gas filling infrastructure. In the reporting year there was purchased 1,326 units of gas motor vehicles and 10 mobile gas refilling infrastructure units (mobile car gas refilling stations, mobile CNG filling stations, modular compressor units).

The consumption of natural gas as a fuel in subsidiaries of the primary business in 2018 totaled 66.3 mmcm.

The production and sales of natural gas as a vehicle fuel is the strategic focal area of PJSC Gazprom. OOO Gazprom gazomotornoye toplivo is a special-purpose company established for ensuring the continuous development of the NGV market.

Natural gas (methane) is regarded as a key alternative to petroleum fuels — the average cost in Russia is RUB 15 per cm (1 cm of methane is equivalent to 1 liter of gasoline).

When using natural gas (methane) as fuel in the amount of harmful emissions from the vehicle into the atmosphere is reduced nearly 10 times, and the motor life is increased by 1.5 times.

During 2018 FIFA World Cup in Russia Gazprom gas filling network provided uninterrupted vehicles filling with natural gas. In the 11 cities hosting championship football matches, the event special network was formed from 47 gas filling facilities with a total capacity of 407.5 mmcm of natural gas per year.

In the cities of Moscow, St. Petersburg, Yekaterinburg, Volgograd, Nizhny Novgorod and Kaliningrad, in the run-up to the World Cup 11 modern gas filling facilities of Gazprom began to work; in Rostov-on-Don 4 CNG stations were reconstructed.

Five new gas filling complexes was built for the football championship in Moscow; in St. Petersburg gas filling network increased by two CNG stations; in the cities of Yekaterinburg, Nizhny Novgorod, Kaliningrad and Volgograd each one new facility was commissioned.

According to the transport support strategy at 2017 FIFA Confederations Cup and 2018 FIFA World Cup in Russia for the events there were used passenger transport vehicles running on environmentally friendly fuel — natural gas.

Operation of NGV buses in the period of the football World Cup in Russia reduced the burden of transport on the environment and reduced costs.

For the identification of natural gas as a fuel Gazprom registered EcoGas trademark. During the football championship the fuel brand was introduced to the key stadiums in the cities of Moscow, St. Petersburg, Kazan and Sochi.

In 2018 in the framework of the VIII St. Petersburg International Gas Forum, there was hosted the finish of the longest in the world rally with NGV equipment for LNG "Gas to Engines".

The rally was attended by trucks, cars and buses, mainly using of LNG, Russian and Chinese manufacturers — AvtoVAZ, GAZ, KAMAZ, RariTEK, UAZ, Ural, Anka, Hanchzhunshenlen, Shantsy, Yuytun, as well as automotive gas tankers.

For 30 days the rally participants have overcome 9,881 km on the territory of China, Kazakhstan and Russia. Gas-engine equipment has successfully passed the test, demonstrating high reliability, safety, environmental friendliness and economy.

Motor rally started September 4, 2018 in the Chinese city Zhudun. The rally route has been mainly traced in newly created international transport route Europe — China. Motor rally passed through Suqian city, Zhengzhou, Xian, Dingxi, Wuwei, Jiayuguan, Hami, Turpan, Usu, Khorgos (China); Almaty, Taraz, Turkestan, Kyzylorda, Aralsk, Aktobe (Kazakhstan); Orenburg, Almetyevsk, Kazan, Nizhny Novgorod, Vladimir, Torzhok and ended in St. Petersburg (Russia).

Refilling vehicles with natural gas in China were provided by provided a subsidiary of CNPC — KunLun Energy, on the territory of Kazakhstan and Russia — OOO Gazprom gazomotornoye toplivo. For this purpose stationary objects and mobile gas refilling stations were used.

Work on the gas filling infrastructure in the international transport route Europe — China is carried out in the framework of cooperation of Gazprom, CNPC and JSC NC KazMunayGas. The corresponding memorandum was signed on October 5, 2017 during the VII St. Petersburg International Gas Forum.

As part of the rally there was organized a meeting with representatives of the authorities and the public, manufacturers and suppliers of NGV technology and equipment, as well as companies that use the equipment on natural gas and engaged in its servicing.

The rally "Gas to Engines" demonstrated economical, ecological and safety benefit of use of natural gas as a vehicle fuel, manifold lineup of NGV technology, its high consumer properties, quality, and reliability.

The VIII St. Petersburg International Gas Forum held within the framework of the International Forum "Russian Energy Week".

The international rally "Gas to Engines" was organized by the largest energy companies in Russia, China and Kazakhstan - PJSC Gazprom, CNPC and JSC NC KazMunayGas. Among the partners: the German company Uniper, as well as the Association of Support and Development of motorsport "Silkway Rally" — the organizer of the international rally "Silk Way".

The purpose of the international rally "Gas to Engines": show the scale of the use of the current gas fueling infrastructure and identify locations for prospective facilities along transcontinental transport route Europe — China, as well as to test the Russian factory equipment running on methane.

International transport corridor Europe — China is a large-scale comprehensive investment project covering the territory of Russia, Kazakhstan and China. The total length of the route St. Petersburg — Moscow — Kazan — Orenburg — Aktobe — Kyzylorda — Shymkent — Almaty — Urumqi — Lanzhou — Zhengzhou — Lianyungang is more than 8 thousand km.

Gazprom continues evaluating options for the development of natural gas as engine fuel segment abroad. Almaty (Kazakhstan) hosted a round table Car Industry on the Way to Green Economy on the prospects of development of the NGV industry. Participation in the round table were the organizers and runners up of international motor rally Gas to Engines, representatives of the largest energy companies in China, Kazakhstan and Russia (CNPC, JSC NC KazMunayGas and PJSC Gazprom).

In Kazakhstan there are 15 CNG stations. 2,100 NG vehicles use CNG, of which 1,170 are buses.

Water Use

The Gazprom Group companies seek to mitigate the impact, including by reducing the consumption of water for production purposes and reduce the discharge of waste water into surface water bodies.

In 2018, the Gazprom Group companies intake 4,280.21 mmcm water for water supply purposes, which is lower than in 2017 by 5.4%. Water intake from natural sources decreased by 5.1% and was 4,065.34 mmcm.

Waste water discharge in 2018 has decreased by 6.5% to 3,871.11 mmcm.

Water discharge to surface water bodies has decreased by 6.3% compared to 2017 and reached 3,658.44 mmcm. Water discharge to irrigation field and filtration fields was 6.48 mmcm, to underground horizons — 44.69 mmcm including 36.66 mmcm for reservoir pressure maintaining. 11,063.73 mmcm was used in recycling and return water supply systems.

Aggregated figures of the Gazprom Group water use, 2014–2018, mmcm

	2014	2015	2016	2017	2018
Total water intake	4,895.38	4,511.81	4,538.21	4,523.45	4,280.21
including water from natural sources	4,410.68	4,290.12	4,301.46	4,283.52	4,065.34
Own needs	4,779.50	4,387.64	4,449.27	4,421.11	4,180.89
including production needs	4,506.18	4,149.04	4,192.10	4,164.84	3,947.36
Water discharge to surface water bodies	4,179.09	3,853.75	3,855.45	3,905.26	3,658.44
including clean and treated as per standards	3,991.59	3,660.57	3,691.24	3,781.68	3,579.48

In 2014–2018 the Gazprom Group:
- **consumed water for production purposes decreased by 12.4%;**
- **wastewater discharge into surface water bodies was reduced by 12.5%.**

The share of natural sources in the Group water intake comprises 95%, of which 96.2% are presented by surface sources, and 3.8% by underground sources. Water consumption structure by source types depends on the Group's specifics of production and location.

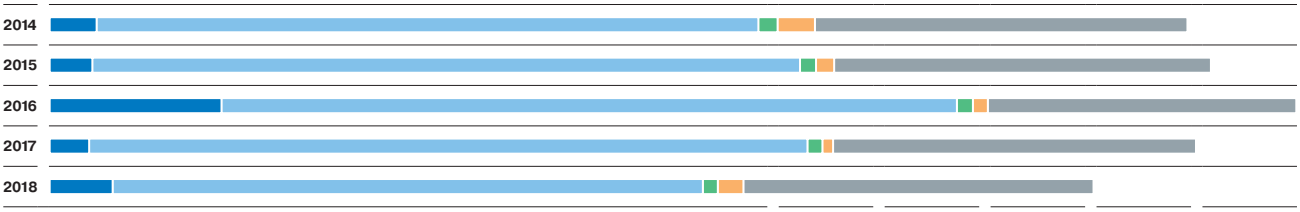
The Gazprom Group wastewater discharge into surface water bodies was reduced by 12.5% from 2014 to 2018. In the total volume of the Group discharge to surface water bodies, untreated clean waters as per standards and effluents treated to standard quality comprised 97.8%.

The Gazprom energoholding accounted for 93% of total water consumption of the Group companies and 98% of total wastewater discharge into the surface water bodies. The Group gas business share in the water consumption is insignificant, about 2.4% (of which 1.4% is the share of PJSC Gazprom).

Dynamics of water discharge to surface water bodies in PJSC Gazprom by activity types, 2014–2018, mmcm

	2014	2015	2016	2017	2018
Gazprom Group	4,179.09	3,853.75	3,855.45	3,905.26	3,658.44
Gas business companies	40.35	34.09	35.10	33.87	31.80
including PJSC Gazprom	10.66	10.88	11.69	10.74	9.78
Gazprom Neft Group	0.32	27.20	0.11	0.12	0.11
Gazprom energoholding	4,091.95	3,754.12	3,781.85	3,832.00	3,587.15
Gazprom neftekhim Salavat	46.47	38.34	38.39	39.26	39.38

Dynamics of water discharge to surface water bodies in PJSC Gazprom by activity types, 2014–2018, mmcm



	2014	2015	2016	2017	2018
Production	0.44	0.40	1.61	0.37	0.59
Transportation	6.20	6.63	6.89	6.73	5.53
Underground gas storage	0.18	0.15	0.15	0.14	0.14
Processing	0.35	0.17	0.14	0.10	0.24
Other (supporting) activities	3.49	3.53	2.89	3.40	3.28

The Gazprom Group performed a large number of environmental events aimed at increasing water utilization efficiency both in industrial and in household sectors, and also to improve the treatment of wastewater discharged. Effluent (without treatment and poorly treated) discharge into surface water basins as a result of the measures taken has reduced by 36% against 2017 value.

In 2018 the Gazprom Group commissioned 49 units for a total wastewater treatment capacity of 52.31 thousand cm/day (Gazprom Neft companies — 26 units, OOO Gazprom gazomotornoye toplivo — 12 units, OOO Gazprom transgaz Krasnodar — 2 units, OOO Gazprom transgaz Saint Petersburg — 3 units, OOO Gazprom UGS — 3 units, OOO Gazprom dobycha Nadym — 2 units, and OOO Severneftegazprom — 1 unit).

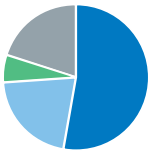
3 recycling water supply systems of 0.3 thousand cmd capacity are launched (2 in OOO Gazprom mezhregiongaz and 1 in OOO Gazprom transgaz Ukhta).

Waste Management

In 2018, the companies of the Gazprom Group generated 3,555.09 thousand tonnes of waste, which is by 13.9% lower than in 2017. The reduction is due to decrease in ash and slag waste (V waste hazard class) generation at Gazprom energoholding by 18.8% (which is primarily the result of natural gas share increase compared to coal) and drilling waste by 21.1% in the Gazprom Neft Group.

Waste structure in the Gazprom Group by types, 2018, %

Ash and slag waste	53
Drilling waste	21
Oil sludge	6
Other waste types	20

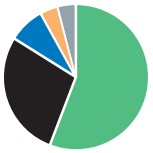


Dynamics of waste generation in the Gazprom Group, 2014–2018, thousand tonnes

2014	4,831.42
2015	4,954.05
2016	4,289.81
2017	4,130.29
2018	3,555.09

Share of the Gazprom Group companies in waste generation, 2018, %

Gazprom energoholding	56
Gazprom Neft Group	28
PJSC Gazprom	8
Gazprom neftekhim Salavat	4
Other Gas business companies	4



During 2014–2018, volume of the Gazprom Group waste reduced by 26.4%.

The major part (97.6%) of waste generation in the Gazprom Group is represented by low-hazard or non-hazard waste.

The main volume of waste of the Gazprom Group is represented by ash and slag waste from Gazprom energoholding (solid ash from coal combustion at HPPs), as well as drilling waste and oil sludge generated mainly at oil and gas production and oil refining facilities.

During 2018, the Gazprom Group launched 18 waste treatment and disposal facilities with capacity of 6.81 thousand tonnes per year, including 17 units in Gazprom Neft Group, 1 unit in PJSC Gazprom (OOO Gazprom dobycha Noyabrsk). One landfill for utilization, treatment and disposal of production, household and other wastes with a capacity of 17.02 thousand tonnes per year in PJSC Gazprom (OOO Gazprom dobycha Noyabrsk) were put into operation.

Dynamics of waste generation in the Gazprom Group companies, 2014–2018, thousand tonnes

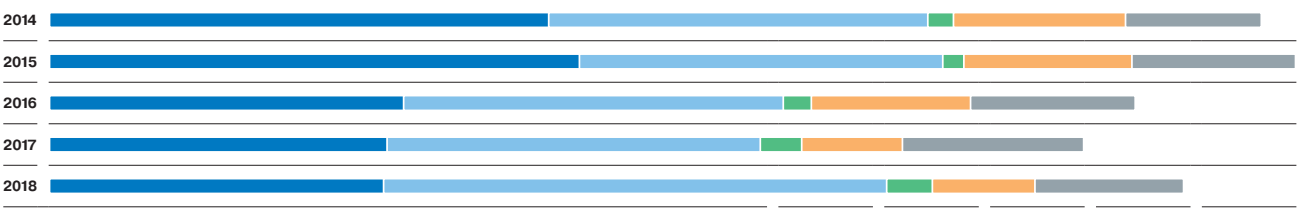
	Gas business	Including PJSC Gazprom
2014	492.02	305.53
2015	460.07	314.16
2016	419.49	273.65
2017	412.59	260.70
2018	430.81	285.90

	Gazprom energoholding
2014	3,413.63
2015	3,625.24
2016	2,842.56
2017	2,508.76
2018	1,998.40

	Gazprom Neft Group
2014	657.25
2015	1,105.76
2016	906.77
2017	1,134.00
2018	1,007.25

	Gazprom neftekhim Salavat
2014	56.91
2015	93.71
2016	120.98
2017	74.94
2018	118.64

Dynamics of waste generation by activity types in PJSC Gazprom, 2014–2018, thousand tonnes



	2014	2015	2016	2017	2018
Production	125.99	133.73	89.37	85.18	84.27
Transportation	95.65	91.66	95.78	94.15	126.98
Underground gas storage	6.45	5.36	7.10	10.45	11.54
Processing	43.44	42.40	40.20	25.42	25.91
Other (supporting) activities	34.00	41.01	41.20	45.50	37.20

In 2018, amount of PJSC Gazprom waste rose compared to 2017 by 9.7% to 285.90 thousand tonnes.

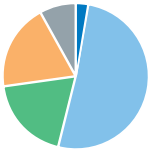
The main increase in waste formation by 34.9% was in the gas transportation subsidiaries of PJSC Gazprom and was 126.98 thousand tonnes. This is due to the ongoing repair and reconstruction of the linear part of trunk pipeline.

In 2018, at the subsidiary companies of PJSC Gazprom in circulation there were 334.48 thousand tonnes of waste (taking into account 33.9 thousand tonnes available at the beginning of the year, 285.9 thousand tonnes generated during the year and 14.68 thousand tonnes received from other companies).

180.74 thousand tonnes of which have been treated, utilized and neutralazed in-house and given to outside companies; 63.68 thousand tonnes was placed on the operated burial were buried at operational landfills.

Structure of waste management in production and consumption in PJSC Gazprom, 2018, %

Treatment utilized and neutralized at the enterprise	3
Transferred to third-party organizations for treatment, utilize and neutralization	51
Transferred to third-party organizations for storage and disposal	19
Located on operated sites of landfilling	19
Availability at the enterprise by the end of the reported year, including in sites of storage	8



The Gazprom Group companies pay great attention to the Wenvironmentally safe handling of oily wastes.

In the reporting year, the oil-contaminated waste has increased by 58% compared to 2017 and comprized to 219.92 thousand tonnes, of which more than 90% — in the Gazprom Neft Group.

The increase in generation is due to the ongoing planned cleansing of well clusters in the Gazprom Neft Group.

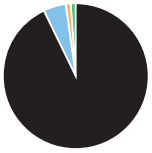
In 2018, a total of 253.92 thousand tonnes of oil-contaminated waste (including 33.23 thousand tonnes available at the beginning of the year, 219.92 thousand tonnes generated during the year and 0.77 thousand tonnes from other) were handled by the facilities of the Gazprom Group. 85.3% of these were transferred to specialized organizations licensed for use, neutralization and safe disposal.

Environmentally friendly utilization of drilling waste generated in the course of well construction and operation is a major challenge for the upstream oil and gas companies of the Group.

In 2018, the drilling waste turnover amounted to 866.08 thousand tonnes (including the amount available at the beginning of the year — 108.93 thousand tonnes, generated — 748.0 thousand tonnes, and 9.14 thousand tonnes received from other companies), out of which 79.5% (688.88 thousand tonnes) were transferred to specialized licensed companies for utilization, neutralization and safe storage and disposal.

Share of the Gazprom Group companies in oil-contaminated waste generation, 2018, %

Gazprom Neft Group	93
Gas business	5
Gazprom neftekhim Salavat	1
Gazprom energoholding	1

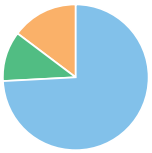


Share of the Gazprom Group companies in drilling waste generation, 2018, %

Gazprom Neft Group	92
PJSC Gazprom	5
Sakhalin Energy	3

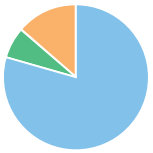
Structure of oil-contaminated waste handling in the Gazprom Group, 2018, thousand tonnes

Treatment, utilized and neutralized at the enterprise	0.11
Transferred to third-party organizations for utilize, neutralization and treatment	188.83
Transferred to third-party organizations for storage	27.88
Availability at the enterprise by the end of thereported year, including in sites of storage	37.10



Structure of drilling waste handling in the Gazprom Group, 2018, thousand tonnes

Treatment, utilized and neutralized at the enterprise	1.27
Transferred to third-party organizations for utilize, neutralization and treatment	688.88
Transferred to third-party organizations for storage	59.28
Availability at the enterprise by the end of the reported year, including in sites of storage	116.64



One of the main requirements for technological process of well drilling is prevention of drilling adverse environmental impact, especially in extreme climatic conditions of the Far North. For these purposes, field infrastructure development involves practical implementation of some solutions that provide minimal environmental impact during drilling. For instance, during operational well drilling, a pit-free drilling is used. Practice of drilling waste utilization with production of mineral construction materials for use at civil works for fields arrangement is widely applied.

Land Use

As a result of geological survey, construction and repair works, operation of wells, pipelines and other facilities by the Gazprom Group, impact on vegetation and soil cover takes place.

Gazprom pays constant attention to practical ways of resolving the issues of restoration and preservation of disturbed soils. Biological and technical remediation works aimed at recovery of land productivity and its economic value, landscapes preservation are conducted. The Gazprom Group implements comprehensive measures to improve the pipeline systems reliability that has a positive effect on the preservation of natural environment components.

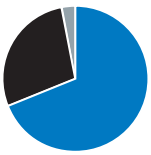
During the reporting year, the Group companies disturbed 25.79 thousand ha of land, which is 39% lower than in the previous period, of which 17.85 thousand ha is disturbed by PJSC Gazprom, 7.32 thousand ha the Gazprom Neft Group, and 0.62 thousand ha is disturbed by other companies of the Group. Reducing the area of land disturbed during 2018 was due to the fact that most of the land required for the implementation of the investment project of Power of Siberia gas pipeline leased for construction in 2016–2017.

Soil protection activities parameters in the Gazprom Group, 2014–2018, ha

	2014	2015	2016	2017	2018
Area of disturbed lands during the year	15,407.40	58,054.53	27,027.45	42,162.29	25,786.97
including polluted areas	105.43	82.30	71.31	87.33	111.26
Disturbed lands restored per year	12,589.34	18,220.34	42,450.24	19,600.05	15,767.52
including polluted areas	464.39	187.37	94.08	89.10	96.13

Share of the Gazprom Group companies in indicators of disturbed lands, 2018, %

PJSC Gazprom	69
Gazprom Neft Group	28
Other Group companies	3



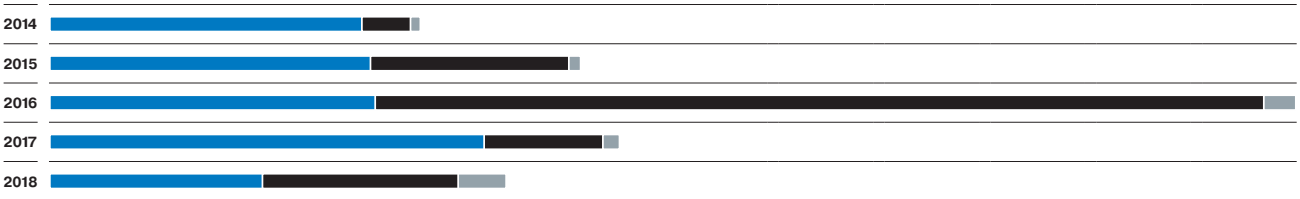
The problem of disturbed land resources is not an important environmental issue for the Group, as rehabilitation measures are undertaken to the required extent. The majority of companies fully recover the lands disturbed during the year.

Works on remediation and rehabilitation of the lands are performed at the operational sites of producing companies of the Group.

Used lands, i. e. lands where production operations causing soil damage are completed, underwent reclamation including lands disturbed in the previous period.
In 2018, 15.77 thousand ha was reclaimed, PJSC Gazprom reclaimed 7.33 thousand ha, the Gazprom Neft Group reclaimed 6.76 thousand ha, and other companies of the Group reclaimed 1.67 thousand ha.

The decline in terms of reclamation of disturbed land in 2018 was due to unfinished work on the repair and construction of facilities on land leased in the previous periods.

Dynamics of disturbed land recultivation in the Gazprom Group companies, 2014–2018, thousand ha



	2014	2015	2016	2017	2018
PJSC Gazprom	10.69	10.98	11.14	14.82	7.33
Gazprom Neft Group	1.79	6.85	30.17	4.16	6.76
Other Group companies	0.11	0.39	1.14	0.62	1.68

Actions necessary to restore contaminated land quality were carried out on an area of 96.13 ha, including purification and reclamation of 95.23 ha in the Gazprom Neft Group of land contaminated during the year.

In order to reduce the area of contaminated land, the Gazprom Neft Group developed an investment project Clean Area. Earmarked funds of the projects are channeled at maintaining the integrity and developing the pipeline transport. This project ensures that there are no growth areas of contaminated land due to the continuing operations.

The implementation of the Gazprom Neft Group target programs in 2015–2018 allowed stable annual decline in the number of pipeline ruptures; and the overall decline in the number of failures in pipelines decreased by 30%.

Economic and technological restoration methods used are aimed at preventing development of negative erosion processes; they contribute to landscapes stabilization and restoration of soil and vegetation cover. The techniques provide the use of accessible materials, including secondary materials (e.g. drilling waste), geotextile, and plant growth stimulants. Specially selected strains of soil microorganisms allow strengthening of topsoil, including slopes of facility embankment, increasing speed and intensity of root formation and growth of plants.

The Group companies take every precaution to prevent pollutant penetration into the soil, surface and ground waters, avoid erosion and other types of the soil degradation. The environmental monitoring and control of the Gazprom Group construction and reconstruction operations are provided for inspection of reclaimed soil compliance with environmental regulations on soil state — soil, geobotanical, agro-chemical and other types of surveys.

Protection of Biodiversity

Measures to protect animal and plant species, their habitats are provided at the earliest stages of project development, as well as during the construction and operation of production facilities.

The Gazprom Group companies are contributing to the international, Russian and regional programs for the protection of flora and fauna in the regions of its presence.

Implementing complex projects in oil and gas production, Gazprom is fully aware of its responsibility for the preservation of the ecological balance. Work is conducted in several directions: implementing up-to-date technological solutions to minimize the impact of operational activity in the country; continuous environmental monitoring; programs for the conservation of biodiversity in the area of responsibility of the companies, as well as in other regions of Russia.

RUB 521.650 mm were allocated in 2018 for the conservation of biodiversity and protection of natural areas, protection and reproduction of fish stocks.

A significant number of measures for the protection and reproduction of fish resources was carried out, including the most valuable species.

The subsidiaries of PJSC Gazprom continued annual eco-campaigns on rescue of juvenile fish. Thus, in summer in Astrakhan region due to high temperature and almost complete lack of precipitation there were dried the plurality of ducts and reservoirs formed after the disappearance of floodwater in delta of the Volga River. In order for the level of biodiversity in the region not to decrease, the participants of the rescue operation fished out of the drying up water bodies and released into the Volga River nearly 30 thousand ordinary juvenile fishes — silver carp, roach, rudd, carp, and perch.

In the summer months of 2018 in waters of Sakhalin, Yakutia and the Khanty-Mansiysk Autonomous Okrug there were released more than 9 million young fish and larvae of peled, chum salmon and whitefish. Of those, more than 5 million nelmy larvae were released at the Kubena River in Vologda area, more than 25 thousand chum fry — in the basin of the Krasnoyarka River, 12 thousand peled larvae — at the Aannaah River which later get from there to Vilyuy Reservoir, 200 thousand white salmon fingerlings and nearly 1.5 million young fishes of peled — at the Irtish river.

Gazprom Neft, which implements the first project on oil production in the Russian Arctic shelf, embarked on a new phase of a large-scale program to support biodiversity. In addition to work in the company's area of responsibility in the Barents Sea, there continues an initiative on the reproduction of aquatic biological resources in the Republic of Karelia. Besides, there were released 25 thousand two-year salmons (most valuable species of fish of the salmon family, having great commercial importance and being under special protection) in the Keret River flowing into the White Sea. Stocking of the Keret River is aimed at the preservation and restoration of salmon populations in the Karelian part of the White Sea.

Gazprom Neft and the Yamalo-Nenets Autonomous District signed an agreement to carry out activities for the conservation of biodiversity and reproduction of commercial fish stock.

During 2017–2018, Gazprom Neft released more than 41 million fingerlings of peled, whitefish and other valuable species into the Ob-Irtysh rivers basin. In the future, the company's program for the conservation of marine biological resources and their habitats within the county will be extended. The program for the reproduction of aquatic biological resources is an annual contribution of Gazprom Neft to the preservation and restoration of the fragile Arctic environment.

A major role in maintaining biodiversity is given to specially protected natural areas (SPNA) of the federal, regional and local levels. Realizing this, the Gazprom Group renders financial and practical assistance to such territories.

For example, OOO Gazprom dobycha Orenburg renders financial and organizational support to the Orenburgsky State Nature Reserve project on returning of the Przewalski's horses to itsnatural habitat.

Thanks to the assistance of gas workers who is supporting projects in the Orenburg region from the early days, more than three dozen of Przewalski's horses have settled at Orenburg habitat.

Starting from 2013, OOO Gazprom transgaz Moscow renders volunteer and charitable assistance to the two protected areas — the Prioksko-Terrasny Nature Biosphere Reserve and the Oka State Nature Biosphere Reserve. OOO Gazprom transgaz Moscow makes a significant contribution to the project of the European bison population plain in Oryol, Kaluga and Bryansk regions.

OOO Gazprom transgaz Moscow is also working for the second year with the Voronezhsky State Nature Biosphere Reserve. In 2018, the company's employees together with the reserve state inspectors and employees of the scientific department cleared the part of the coast of the picturesque lake off the aggressive locust.

The number of protected areas in the Altai region includes Lebediny State Natural Reserve, which is under the tutelage of PJSC Gazprom from 2013. The Company allocated nearly RUB 9 mm for the conservation of nature reserve area. In addition to the annual purchase of feed mixture for wintering birds, in the reserve there were built a modern viewing

platform, new more durable bridges, there was carried out a study on the reservoir ecosystem, there was installed a fence at the entrance to the reserve for system monitoring and protection of the territory; vehicles, modern photo and video equipment was purchased. During the period of charity campaign there increases the number of wintering whooper swans — from 200 to more than 750 units. Lebediny reserve falls within the responsibility of the Altai Local Operations & Maintenance Department for TGPs of OOO Gazprom transgaz Tomsk, which in 2018 transferred the funds to this reserve in order to purchase a new, more powerful snowmobile. In addition to the snowmobile there were acquired fuels and lubricants for vehicles and special grain mixture for feeding birds.

In June 2018 in Kemerovo there was held a presentation of Chernovoy Naryk new nature reserve located on the left bank of the Chernovoy Naryk at the border of districts of Novokuznetsk and Prokopyevsk in Kemerovo region — a unique plot of primeval taiga, which became a protected natural area of regional significance. The goal of forming the reserve is to maintain extremely vulnerable areas of outstanding natural value due to the habitat of relict species of animals, as well as the location of rare and endangered species of plants and animals listed in the Red Book of the Russian Federation and the Kemerovo region. The new reserve is located within the boundaries of the current license of OOO Gazprom dobycha Kuznetsk. For several years now, an endemic of the Salair ridge, a ringed worm with an Eisenia of the Salair, has been observed in this area. The research is being conducted (with participation of the Russian geographical society) on influence of methane-coal wells on livelihoods of the endemics. Development of new production sites and territories is performed taking into account the results obtained.

There were completed preliminary works to prepare supporting materials in the Sakhalin area to create two new specially protected natural areas (SPNAs) in the Nogliki District for the conservation of salmon populations. The total area of Nabil reserve and Dagi River Natural Park will be about 200 thousand ha. The creation of two SPNAs will allow regional authorities to commence the protection of water bodies — the Nabil, Wazi, Orkunie, Dagi Rivers, as well as parts of the Nyisky and Nabil bays that are key spawning places for Sakhalin taimen and other salmonid species.

The work was organized by the regional Department of Forestry and Hunting, with the support of OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk and Sakhalin Energy. Since 2007, Sakhalin Energy together with Exxon Neftegas Limited participates in the implementation of the monitoring program of the gray whale. In 2018, OOO Gazpromneft-Sakhalin joined them. Joint Monitoring Program is implemented with the aim to evaluate the condition of the animals, their number, to expand the scientific knowledge base of gray whales on the factors affecting the whales in their habitat.

In 2018 in the city of Yuzhno-Sakhalinsk, there was held an annual meeting to discuss the results of the field work for this program. According to the results of photo-identification studies involving more than 33,000 pictures, Sakhalin catalogue of gray whales was replenished with several new units, mostly calves. A large number of whales are also registered in the feeding area, indicating a favorable environment for their survival.

Information received in the framework of a joint program is used to minimize the impact on gray whales, as well as to define and implement measures to reduce the risks to mammals and their habitats during the manufacturing operations of companies.

A plan to protect this population is designed, implemented and updated. Each version of the plan passed an independent examination of the International Advisory Group for the Conservation of Western Pacific gray whale, which was established by the International Union for Conservation of Nature (IUCN) in 2006 on the initiative of Sakhalin Energy.

In 2018, Sea Lion — My Neighbor environmental project of the Boomerang club was carried out with the support of oil and gas company Sakhalin Energy and the administration of the Nevelsk city district. Nevel breakwater (pier) at Sakhalin is the only place in the world where the northern sea lions are resting after migration within the coastal zone of the city. Every year from February to July, from 300 to 1200 adult units sail to the breakwater. In April 2018 there was installed the first in Russia observation deck in the city of Nevelsk to observe these shy and cautious animals. Environmental Education Complex is equipped with two fixed binoculars. In addition to anti-vandal binoculars at the site, there was set a figure of Steller sea lions from metal rods, filled with debris, which is most often found in coastal areas — plastic bags and bottles, fishing nets, ropes and others. Installation is aimed at drawing people's attention to the global problem of pollution of the world ocean. Three information booths present data about the biology of sea lions, especially their rookeries and migration, and the negative impact of debris on marine life.

Energy Savings and Increasing Energy Efficiency

Over the years, PJSC Gazprom has created an effective corporate management system on energy savings and energy efficiency, which was praised in the latest State report on the status of energy saving and energy efficiency improvement in the Russian Federation, prepared by the Ministry of Energy of Russia, as the best among the companies of the fuel and energy sector. At the same time, PJSC Gazprom continues its systematic work on further improvement of the system and getting ready for certification under ISO 50001 international standard.

An important stage of this work was the approval by the Management Committee of PJSC Gazprom of the founding document on energy efficiency and energy saving control system — PJSC Gazprom Policy in Energy efficiency and Energy Saving (approved by the Resolution of the Board of PJSC Gazprom on October 11, 2018 under No. 39).

The policy of PJSC Gazprom in energy efficiency and energy saving is the basis for the establishment of corporate goals and the formation of energy saving and energy efficiency startegy. The policy on a mandatory basis refers to all employees of PJSC Gazprom and its operating subsidiaries; the Policy is also recommended for implementation by employees of other affiliates of PJSC Gazprom.

The purpose of this Policy of PJSC Gazprom in energy efficiency and energy saving is the most efficient use of natural energy resources and energy saving potential, including:

— continuous improvement of energy efficiency of PJSC Gazprom and its subsidiaries on the basis of efficient management of technological processes and the application of innovative techniques and equipment;
— permanent reduction in unit costs due to standardization, management and energy savings in terms of production activities;
— permanent reduction of the environmental impact;
— continuous improvement of energy efficiency and energy saving management systems, ensuring compliance with ISO 50001 requirements.

To achieve these goals, PJSC Gazprom developed and implemented a three-year program of energy saving and energy efficiency in the subsidiaries of transportation companies (including AO Tchetchengazprom), production, processing, underground storage and distribution of gas, as well as in OOO Gazprom energo.

As a result of energy saving and energy efficiency improvement programs of PJSC Gazprom in 2011–2018, actual saving of fuel and energy resources (FER) comprised 22.5 mm t c.e., including: 19.1 bcm of natural gas; 2.2 bnkWh of electric energy; 1.8 mm Gcal of heat energy.

Reduction of natural gas specific consumption for APN during transportation
Target for the period 2011–2020 — 11.4%.
Actual annual savings achieved over the period from 2011–2018 is 18.5%.
The goal is achieved.

Energy saving and energy efficiency increase objectives fulfillment for PJSC Gazprom for the period 2011–2018

	Cumulative sum of natural gas saving, bcm	Cumulative sum of heating energy saving, thousand Gcal	Cumulative sum of electrical energy saving, mmkWh	Total fer saving, cumulative, mm t c.e.
2011	2.4	102.9	194.1	2.8
2012	4.2	344.7	437.0	5.0
2013	6.1	562.6	742.9	7.3
2014	8.2	799.9	997.5	9.8
2015	10.9	1,004.9	1,258.1	12.5
2016	12.8	1,259.8	1,518.1	15.3
2017	15.8	1,528.2	1,849.6	18.9
2018	19.1	1,764.1	2,213.8	22.5

Outcomes of the program of energy saving and energy efficiency improvement of PJSC Gazprom, 2018

Type of activity	Natural gas, mmcm	Electrical energy, mmkWh	Heat energy, thousand Gcal
Extraction of gas, condensate, oil	387.51	34.74	11.94
Gas transportation	2,480.84	267.18	50.34
Underground Gas Storage	19.47	2.38	0.00
Gas, condensate, oil processing	41.87	41.05	170.47
Gas distribution	21.09	9.69	2.76
Non-core activities	1.13	9.21	0.35
Total	2,951.91	364.25	235.86
Total, thousand t c.e	3,409.45	118.38	33.69

The biggest contribution in FER saving was due to TGP transportation sector; it was achieved due to the implementation of a large variety of energy-saving actions.

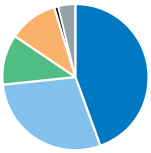
Volume of natural gas saving during the repair of TGPs in 2018 is over 1 bcm.

The work on the improvement of technology to significantly increase the volume of preserving gas under repairs on gas transportation facilities continues; besides, there continues a number of programs to implement energy efficient equipment, such as turbo expander installations on gas distribution stations (GDS) for producing LNG and to generate electricity, end gas heat recovery at CSs, as well as the introduction of innovative technology projects, including the use of the mechanism of energy service contracts.

OOO Gazprom transgaz Yugorsk continues preparation and implementation of technologies of end gas heat recovery at compressor stations, and OOO Gazprom transgaz Tchaikovsky continues the development of turbo expander technologies at gas distribution stations for electric energy generation. Both projects are implemented using energy service contracts. Autonomous power plants, such as gas turbine power plants, including those fueled with APG, are used for power supply to the Gazprom Group facilities located in hard-to-reach territories.

Main areas of natural gas saving in TGP transportation, 2018, %

Reduction of gas consumption for process needs of CS, TGP LS, GDS	44.7
Optimization of operating modes of GTS process facilities	28.8
Improvement of GPU technical state by means of repair	11.1
Reconstruction and upgrade of CS process equipment	11.1
Reduction of gas losses at the CS, TGP LP, GDS facilities	0.6
Other activities	3.7



Main areas of electrical energy saving in TGP transportation, 2018, %

Optimization of operating modes of electric equipment	65.3
Technical and organizational measures	15.9
Increasing electrical equipment technical condition by means of repair	6.7
Introduction of variable frequency drives and electric engine cushion start	3.4
Other activities	8.7

The main production subsidiaries and Administration of PJSC Gazprom are working on the introduction of ISO 50001 requirements: 2011 “Energy Management Systems. Requirements and Application Guide” with subsequent certification of energy management systems (EMSs). In 2018, EMS certificates are already obtained by the following companies: OOO Gazprom dobycha Astrakhan, OOO Gazprom dobycha Noyabrsk, OOO Gazprom transgaz Volgograd, OOO Gazprom transgaz Moscow, OOO Gazprom transgaz Nizhny Novgorod, OOO Gazprom transgaz Samara, OOO Gazprom transgaz Tchaikovsky, OOO Gazprom transgaz Yugorsk, OOO Gazprom pererabotka, OOO Gazprom energo.

Energy policy that forms the basis of the energy management system is applied by PAO Gazprom Neft and it is gradually introduced at the company’s enterprises since 2011. The PAO Gazprom Neft energy management system meets the requirements of the international standard ISO 50001:2011. The main instrument ensuring planned energy efficiency indicators of the company is the Program of energy saving and increase of energy efficiency.

Gazprom Neft’s energy and technical policy in energy efficiency is aimed at improving the energy efficiency of enterprises while ensuring the required level of reliability, safety and productivity, as well as reducing an adverse impact on the environment and reducing consumption of irreplaceable energy resources.

The energy efficiency program in upstream sector was implemented in 2018 exceeding the target. Energy savings amounted to 462 mmkWh (RUB 1,504 mm). The key indicator of the energy efficiency of the upstream sector, specific electricity consumption for liquid product production, was 28.39 kWh/t, i.e. 2% less than a planned standard for the year. The unified ISO 50001 certificate also includes OOO Gazpromneft Yamal and AO Messoyakhaneftegaz which have successfully passed the audits of international certification company DQS.

In 2018, the midstream companies continued implementation of measures stipulated in the comprehensive energy saving program. As a result, the fuel and energy resources saving in the midstream companies exceeded the targets and was amounted to: thermal energy — 170.4 thousand Gcal; fuel — 50.9 thousand t c.e.; electrical energy — 9.3 mmkWh.

In general, energy-saving activity of Logistic, processing and sales division allowed saving of 3,347 TJ of thermal and electric energy and fuel. The economic benefit exceeded the targets and amounted to RUB 790 mm.

In accordance with the approved plan of the development of the Unified Energy Management System in logistics, processing and sales, the reporting period saw extension of its perimeter was by two companies: AO Gazpromneft MZSM and the branch of OOO Gazpromneft — Ryazan Plant of Bituminous Materials.

Modernization and repair of key Omsk refinery facilities in 2018 allowed reducing fuel consumption by 2.6%, thermal energy — by 1.5%. The main contribution to the reduction of fuel consumption was made by modernization of technological furnaces, which accounts for 65% of the total energy consumption of the plant.

Fuel and energy consumption in the OOO Gazpromneft shelf in 2018 was as follows: electricity — 159.345 mmkWh, thermal energy — 15.19 thousand Gcal, fuel — 76.32 thousand t c.e.

Performance indicators of PAO Gazprom Neft energy efficiency and energy saving programs, 2018

	Upstream sector	Downstream sector	OOO Gazprom Neft Shelf	Total
FER consumption				
Electrical energy, mmkWh	10,055	3,395	159	13,609
Heat, thousand Gcal	298	9,844	15	10,157
Fuel, thousand t. c.e.	6,799	3,059	76	9,934
FER saving				
Electrical energy, mmkWh	462	19	0	481
Heat, thousand Gcal	0	279	0	279
Fuel, thousand t. c.e.	1	138	0	139

Gazprom energoholding companies have developed energy efficiency and energy saving policy documents in accordance with the legislative requirements. All Gazprom energoholding power generating companies adopted and approved mid-term program of energy saving and energy efficiency. In addition, since 2013 PAO OGK-2, PAO Mosenergo, PAO TGC-1 and PAO MOEK adopted Program of actions to improve operational efficiency ("Efficiency" project), which includes campaigns in the field of energy efficiency. The main issues of the programs is the implementation of projects on technical re-equipment and reconstruction (start-up of new facilities); improvement of the equipment efficiency (within the framework of capital and medium repairs), other organizational and technical measures (modernization of lighting systems, etc.); energy surveys, development and application of methodological documents based on the principles of rational use of energy resources.

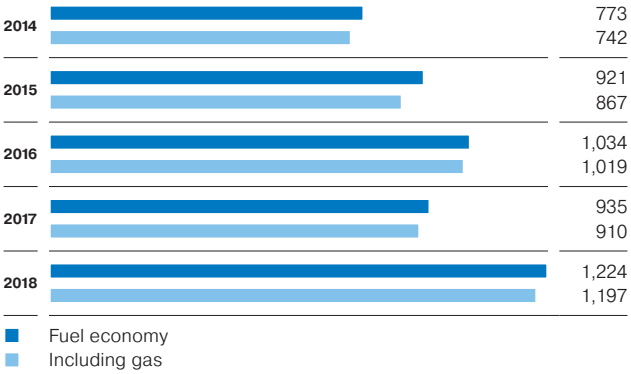
In 2018 PAO Mosenergo implemented energy management system in accordance with the requirements of GOST R ISO 50001-2012 "Energy Management Systems. Requirements with guidance for use". Other Gazprom energoholding group companies continue to implement energy management systems.

Outcomes of the programs of energy saving and energy efficiency improvement of Gazprom energoholding, 2018

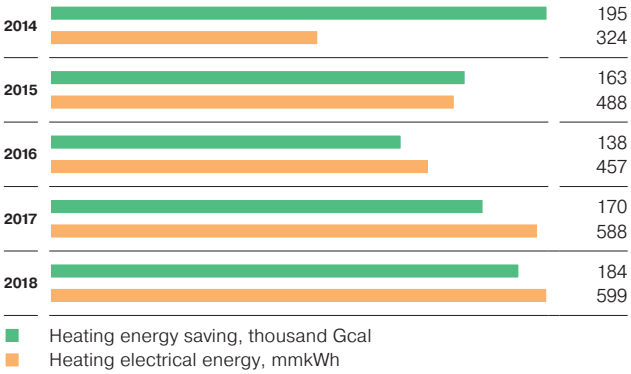
	Fuel economy, thousand t c.e		Electric energy saving, mmkWh	Heat energy saving, thousand Gcal
	Total	including gas		
PAO Mosenergo	1,177	1,164	572	123
PAO TGC-1*	13	12	9	0
PAO OGK-2	34	21	17	0
PAO MOEK	0	0	1	61
Total	1,224	1,197	599	184

* From 2018 the reporting span of PAO TGC includes indicators of energy saving programs and energy efficiency of AO Saint Petersburg Heating Grid.

Performance indicators in fuel economy of Gazprom energoholding, 2014–2018, thousand t c.e.



Performance indicators for saving electricity and heat at Gazprom energoholding, 2014–2018



Use of Renewable and Secondary Sources of Energy

The Gazprom Group supports use of alternative energy sources where it is economically and technically feasible, particularly in far regions or technologically isolated areas. It complies with provisions of Federal Law No. 261-FZ dated November 23, 2009 "On energy saving and energy efficiency improvement, and on modification of some legislative acts of the Russian Federation".

The Gazprom Group utilizes renewable energy sources (RES) and secondary energy sources (SES) for energy generation for auxiliary needs and sale to third-party consumers. Solar and wind generators, gas flow heat and energy converters into electric energy are widely used at the facilities of production, main gas transportation and gas distribution networks to provide current power supply to telemetry systems, cathodic protection of main pipelines, lighting, etc. 12.84 bnkWh of electric power was produced by OOO TGC-1 (Gazprom energoholding) and OOO Nugush hydroengineering complex (Gazprom neftekhim Salavat) by means of hydraulic power generation. The main volume of production falls on TGC-1 hydroelectric power plants which make a significant contribution to the green energy of the North-West Federal district of Russia.

In 2018, the Gazprom Group used, excluding hydro units, 2,154 power plants based on SES and RES, such as turbo expanders, thermoelectric generators, solar modules and batteries, wind turbines. The total volume of electric power generated by these power plants is amounted to 582.66 thousand kWh.

Indicators of production of electricity from renewable and secondary energy sources in the Gazprom Group, 2016–2018

	Electricity generation, kWh			No. of units, pcs.		
Generation type	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
All types of RES and RES	13,036,783,055.3	13,723,908,386.0	12,844,199,280.1	1,907	2,077	2,272
including PJSC Gazprom	297,211.1	362,391.6	459,666.3	1,329	1,423	1,555
Turbo expander plants	38,470.5	143,915.5	93,165.0	10	20	17
including PJSC Gazprom	38,470.5	143,915.5	93,165.0	10	20	17
Heat and electric energy generation	774.1	2,670.0	6,438.8	672	719	726
including PJSC Gazprom	774.1	2,670.0	6,438.8	672	719	726
Solar and wind generators	321,235.7	324,887.5	483,060.3	1,107	1,220	1,411
including PJSC Gazprom	257,966.5	215,806.1	360,062.5	647	684	812
OOO Gazprom mezhregiongaz	63,050.2	108,862.4	110,039.8	459	535	597
OAO Severneftegazprom	219.0	219.0	219.0	1	1	1
Gazprom Neft Group	0.0	0.0	12,739.0	0	0	1
Water-wheels	13,036,422,575.0	13,723,436,913.0	12,843,616,616.0	118	118	118
including Gazprom energoholding	13,007,579,963.0	13,685,902,140.0	12,819,013,716.0	115	115	115
Gazprom neftekhim Salavat	28,842,612.0	37,534,773.0	24,602,900.0	3	3	3

Indicators use of renewable and secondary energy sources in PJSC Gazprom, 2015–2018

	No. of units, pcs.
2015	1,210
2016	1,329
2017	1,423
2018	1,555
	The amount of electricity produced, kWh
2015	264,635
2016	297,211
2017	362,392
2018	459,666

In October 11, 2018 in Moscow in the framework of the "Energy and Civil Society — 2018" forum a team of authors from OOO Gazprom dobycha Yamburg was awarded the prize named after N.K. Baibakov for "Improving the reliability of power supply systems of autonomous control systems of gas well clusters at Yamburg gas condensate field" study. The main value of the study is in solving the problems of energy production using renewable energy sources. The practical application of the methods described was implemented at 103B gas well pads of Lower Cretaceous fields at Yamburg gas condensate field as part of remote control system developed by OOO NPF Vympel.

Environmental Performance and Energy Saving Abroad

Republic of Armenia

ZAO Gazprom Armenia is a 100% subsidiary of PJSC Gazprom, engaged in transportation, storage, processing, distribution and selling of natural gas, electric power generation and selling of electric energy in the territory of the Republic of Armenia.

In 2018, total pollutant emissions into the atmospheric air comprised 69.48 thousand tonnes, i.e. 21.6% lower than in previous year. Reduction of total emissions is due to environmental measures aimed at improving the reliability and safety of industrial facilities. GHG emissions from the gas business facilities and power decreased and amounted to 2.46 mm tonnes of CO_2-equivalent, which is 5.5% less than in 2017. This was due to the decrease in the amount of fugitive emissions caused by the reduced injection and use volumes of natural gas at the CS of Abovyan underground gas storage facility.

Water disposal into surface water bodies in 2018 amounted to 146.00 thousand cm. 100% of this volume are regulatory effluents.

During the year, 0.124 thousand tonnes of waste was produced, 94% of which belongs to environmental hazard classes IV and V.

The increase of payments for negative impact on the environment in 2018 to 87.3% is due to the increase in fees for nitrogen oxides associated with the increase in power generation at Hrazdan-5 thermal power plant.

Inspections of state environmental control (supervision) bodies were not carried out in the reporting year.

Highlights of ZAO Gazprom Armenia in environmental protection, 2014–2018

Parameters	2014	2015	2016	2017	2018
Total emissions into the atmosphere, thousand tonnes	86.13	80.07	83.80	88.61	69.48
GHG emissions million tonnes of CO_2-eq.*	–	–	2.44	2.61	2.46
Water discharge to surface water bodies, thousand cm	265.70	105.00	122.00	115.00	146.00
including clean and treated as per standards	265.70	105.00	122.00	115.00	146.00
Produced waste amount, thousand tonnes	0.13	0.36	0.19	0.12	0.12
Disturbed lands as of the end of the year, ha	0.00	0.00	0.00	0.00	0.00
Charges for negative environment impact, RUB thousand	301.65	360.27	449.85	592.42	1,109.56
Share of payments within established rates in the total payment amount, %	100	100	99.99	100	100

* GHG calculation was made according to the Guidelines and Methodological guidance on evaluation of GHG emissions volume by organizations performing economic and other activity in the Russian Federation, approved by the Order of the Ministry of Natural Resources and Ecology of the Russian Federation No. 300 dated June 30, 2015.

Republic of Belarus

OAO Gazprom transgaz Belarus is a 100% subsidiary of PJSC Gazprom involved in natural gas transportation and storage in Republic of Belarus. The company is included in the scope of PJSC Gazprom Environmental Management System.

In December 2018, the certification body (Republican unitary enterprise “Belarusian state Institute of Metrology”) conducted a recertification audit in the company which confirmed the compliance of EMS of OAO Gazprom transgaz Belarus with the requirements of the state standard of the Republic of Belarus STB ISO 14001-2017, and issued a certificate of conformity.

Total emissions of pollutants into the air amounted 23.17 thousand tonnes, which is 14.1% lower than in 2017. This is due to the decrease in repair work on GTS, changing of operation modes of Osipovichy UGS and change in park structure of used gas-pumping units having different emission characteristics. The total volume of emissions was within the established standards.

Wastewater discharges into the surface water amounted to 131.69 thousand cm, which is 7.9% less than in 2017. This is due to the direction of waste water to replenish the firefighting reservoir, and also due to the reduced use of water during hydraulic tests of gas transportation system. 100% of the discharges were clean or treated as per standards.

During the year, 4.92 thousand tonnes of waste were produced at the facilities of OOO Gazprom transgaz Belarus, which is 17.4% less than in 2017. This is related to decrease in formation of scrap metal as a result of repair work at the line part of gas pipelines.

During the year, 167.5 ha of lands were disturbed which is nearly 3 times more than in 2017. This is due to enlargement

of repair work area at the line part of gas pipelines. There were reclaimed 165.1 ha of land.

The fee for a negative impact on the environment within the established standards was RUB 22.66 mm, which is 8% less than in 2017. There was no excess exposure. The decrease in payments for negative impact on the environment compared to 2017 was due to the reduction of methane and carbon dioxide emissions (this is due to the reduction in repair and optimization of technological processes, mainly in the underground gas storage, as well as with the expansion of the overflow of gas utilization system at Osipovichi UGS), as well as reducing emissions of sulfur dioxide, which is a consequence of reducing forging work volumes.

Implementation of the Energy saving program of OAO Gazprom transgaz Belarus allowed preventing release of 12.5 thousand tonnes of methane into the air at works on line part of TGPs repair.

Reduction of GHG emissions by 15.7% was due to a decrease in methane emissions.

No inspections of the company by the territorial bodies of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus were carried out in the reporting year.

Highlights OAO Gazprom transgaz Belarus in the field of environmental protection, 2014–2018

Parameters	2014	2015	2016	2017	2018
Total emissions into the atmosphere, thousand tonnes	25.70	24.85	23.78	26.98	23.17
GHG emissions million tonnes of CO_2-eq.*	0.29	0.32	0.30	0.38	0.32
Water discharge to surface water bodies, thousand cm	37.47	167.42	97.48	142.94	131.69
including clean and treated as per standards	37.47	167.42	97.48	142.94	131.69
Produced waste amount, thousand tonnes	2.29	5.00	4.13	5.96	4.92
Disturbed lands as of the end of the year, ha	0.00	14.00	0.00	0.00	0.00
Charges for negative environment impact, RUB thousand	30,441.11	25,600.88	22,116.42	24,608.43	22,664.04
Share of payments within established rates in the total payment amount, %	100	100	100	100	100

* GHG emissions calculation was made in accordance with the requirements of the Technical Code of Practice (TAP), "Protection of the environment and natural resources. Climate Greenhouse gas emissions and absorption Rules for calculating emissions by implementing energy efficiency measures, renewable sources of energy", approved by the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus on September 5, 2011 № 13-T "On approval and enactment of the technical regulations and making changes in technical normative legal act".

Kyrgyz Republic

OsOO Gazprom Kyrgyzstan is a 100% PJSC Gazprom subsidiary operating in transportation, storage, distribution and marketing selling of natural gas in the Republic of Kyrgyzstan.

In 2018, total pollutant emissions into the atmospheric air comprised 3.82 thousand tonnes, GHG — 0.09 mm tonnes of CO_2-equivalent. A significant increase in performance compared to 2017 was due to the increase in the number of purging of dust collector and gas distribution station held at CS-5A "Sokuluk" when cleaning the inner cavity of Bukhara gas region — Tashkent — Bishkek — Almaty TGP.

Increase in the value of the actual methane emission compared with numbers scheduled for repair of gas transportation system is due to feeding of contaminated gas from the Republic of Kazakhstan, resulting in unscheduled repairs of gas transportation system and CSs.

2018 saw almost 40% increase in water consumption, which is associated with the commissioning of the reconstructed and new office buildings with increased ablution facilities. Compared to the last year, it increased by 12,5%. The water disposal was carried out mainly to utility systems, discharges to surface water objects were not carried out. Purified water is also used for greenery watering and dedusting during construction.

Water discharge in other systems (storage points (septics) installed in the branches, where there is no municipal sewer network) was 10.8% of the total water discharge volume.

The volume of waste was 0,18 thousand tonnes. 12.5% increased waste is related to the commissioning of new office buildings.

The area of disturbed land in the reporting year amounted to 75.1 ha, which is almost 5.5 times less than in 2017. This is due to the reduced volumes of construction and repair work on TGPs. All the disturbed land will be reclaimed within a year.

Payment for adverse impact on the environment was carried out within the established standards and amounted to RUB 66.5 thousand.

In 2018, the state supervisory bodies in environmental protection of the Kyrgyz Republic conducted four inspections at the facilities of OsOO Gazprom Kyrgyzstan. As a result of the inspections, two violations were revealed and were timely eliminated, no penalties were imposed.

Highlights of OSOO Gazprom Kyrgyzstan in the field of environmental protection, 2014–2018

Parameters	2014	2015	2016	2017	2018
Total emissions into the atmosphere, thousand tonnes	1.67	1.88	13.52*	1.49	3.82
GHG emissions million tonnes of CO_2-eq.**	–	–	0.33	0.04	0.09
Water discharge to surface water bodies cm	0.00	0.00	0.00	0.00	0.00
including clean and treated as per standards	0.00	0.00	0.00	0.00	0.00
Produced waste amount, thousand tonnes	0.16	0.16	0.14	0.16	0.18
Disturbed lands as of the end of the year, ha	0.00	0.00	0.00	0.00	0.00
Charges for negative environment impact, RUB thousand	41.32	166.95	61.75	63.84	66.50
Share of payments within established rates in the total payment amount, %	100	100	100	100	100

* In view of the technological gas losses.
** GHG calculation was made according to the Guidelines and Methodological guidance on evaluation of GHG emissions volume by organizations performing economic and other activity in the Russian Federation, approved by the Order of the Ministry of natural resources and ecology of the Russian Federation No. 300 dated June 30, 2015.

Non-CIS Countries

Gazprom EP International B.V. is a PJSC Gazprom operator of projects on exploration and development of hydrocarbon fields outside the Russian Federation. Realizing its high responsibility to partners and communities of countries where the Company operates, Gazprom EP International B.V. takes all measures required to protect environment, keeping to the highest environmental standards implementing technological and scientific innovations aimed at minimizing the environmental impact.

Currently the company runs activities in 14 CIS and Non-CIS countries and facilitating economic development and strengthening the energy potential of its partners by offering a range of high-quality services: geological exploration, drilling, and construction of pipelines, compressor stations, and many other things.

Vietnam

The Gazprom Group's policy for the development of new markets abroad determines the Socialist Republic of Vietnam as one of the most promising countries in the Asia-Pacific region for the implementation of energy projects. Participation in searching exploration and extraction hydrocarbons in Vietnam profitable for the Gazprom Group primarily from an economic point of view. Joint operating company Vietgazprom is the operator of offshore projects licensed blocks 112, 129, 130, 131, 132 at the stage of geological exploration.

In addition, Gazprom EP International BV and OOO Gasprom gazomotornoye toplivo take part in the project of the development of NGV market of Vietnam.

To date, there were conducted market researches to determine the potential demand for GMF in road and water transport sectors in the major metropolitan areas of the country — Ho Chi Minh City, as well as eight surrounding provinces of the key economic region of southern Vietnam. The pilot project of this enterprise will include the construction and operation of small tonnage plant for the production of 14 thousand tonnes of LNG per year, the organization of transport and logistics complex and construction of road network for cryogenic gas stations. The project aims to improve the environmental situation in the region through the use of clean and cheap fuel; its implementation is in the interest of Ho Chi Minh City, Bà Ria-Vũng Tàu province, which, as of Petrovietnam, supported a pilot project of GMF production and marketing in the city of Ho Chi Minh. At the beginning of September 2018, it was decided to approve the feasibility study of a pilot project to build a small tonnage LNG complex on the territory of Vietnam. The signed document paves the way for practical implementation of the project.

Bangladesh

Gazprom EP International B.V. is the General Contractor for construction of wells in the Bengal oil and gas basin, at the Shahbazpur field located in the Bola district of the Barisal administrative region. The operator for the Project is the BAPEX company — a subsidiary of Petrobangla, Bangladesh state oil and gas Corporation. The project gave rise to the exploration drilling of North Bola — 1, well completed in 2018 and launched in 2017.

Construction of wells was carried out in compliance with the laws of the People's Republic of Bangladesh of environmental protection and natural resources. Removal of cuttings was organized by the drilling contractor to the landfill, specially allocated for this purpose by the operator of the project.

In 2017, according to the requirements of the local environmental legislation, the drilling water sludge from East Shahbazpur — 1 and North Bola — 1 wells was taken out by the general contractor for further utilization by the operator to a specially designated landfill on the Bola Island.

Implementation of measures to reduce the negative impact of drilling operations on the environment and the local population of nearby settlements. In accordance with the project documentation provided waterproofing of production sites and places of accommodation tanks for the preparation and storage of mud, installation of metal trays and drainage hoses for the transport of waste to the sludge pit and prevention of pollution of groundwater and soil production drilling waste.

Due to very high seasonal rainfall, regular removal of excess rainwater from the slurry pits was carried out by pumping out into the transport tanks and by removal from the work sites. Regular checks of integrity of the waterproof

protective anti-filtration screen in slurry barns were carried out. Formed during well construction waste is subjected to sorting: metall waste, food waste, hazardous waste (halogen lamps, batteries) were collected in separate containers in production sites and residential towns. The resulting waste is exported and transferred for disposal to specialized local organizations Bol district. Medical waste field clinics were collected separately and stored in the clinic prior to transmission to the defusing organization authorized to dispose of such waste in accordance with the contract between Gazprom EP International BV and the drilling contractor.

Organizational measures for preventing of adverse environmental impacts from well construction also included regular discussion on environmental safety issues during production meetings and on-the-job training, daily inspections of the state of industrial and environmental safety at the facility. The drilling contractor included workers training on oil products spills elimination into the program of weekly training sessions on actions in case of emergency situations. Construction of wells completed February 27, 2018.

Environmental Assessment of Projects

According to the requirements of Russian and international laws, the Gazprom Group companies perform environmental assessment of planned business activities at all the investment life cycle stages — from and investment idea to construction projects.

Since 1994, PJSC Gazprom provides corporate expert review before submitting the documents to the state expert review and state environmental expert review (for facilities specifical in the Federal Law № 174-FZ Concerning Environmental Review dated November 23, 1995).

The corporate expert review procedure is governed by the STO Gazprom 2-2.1-031-2005 “Regulations on the review of preliminary and detailed project design documentation in OAO Gazprom”.

The review of the design object is carried out in the frame of corporate expertise to verify the compliance of preliminary and detailed project materials with the requirements of the Russian legislation, international norms and rules, regulatory documents of PJSC Gazprom in the field of environmental protection, energy saving and energy efficiency.

The purpose of corporate expert review is to improve documentation quality in terms of adoption of modern environmental and energy-efficient solutions aimed at reducing environmental risks in the projects implementation.

In 2018, as part of a corporate environmental expert review 357 sets of preliminary and detailed project design documentation for construction, reconstruction, modernization and technical re-equipment of facilities were considered, including 209 requests for projects of technical specifications for the development of the object.

Design specifications, preliminary and detailed design documentation have been reviewed and agreed for a number of strategically important production facilities, such as:

- Trunk gas pipeline Power of Siberia. Stage 4.1. Section Belogorsk — Blagoveshchensk, Stage 4.2. CS. 7A Zeyskaya CS;
- Infrastructure development of the Chayandinskoye OGCF. Stage 1.1, 1.2, 2;
- Infrastructure development of the Kovykta GCF (Stage 1. Platform for drilling and approach them in the vicinity of the GPP-2 (9 well clusters);
- Construction of injection wells at the well pads №№ 40, 51 Chayandinskoye OGCF for injection helium concentrate on the project “Drilling on operational field. Operating gas wells Chayandinskoye OGCF”;
- Infrastructure development of the Cenomanian-Aptian fields in Kharasaveyskoye GCF. Connecting pipeline;
- Underground reservoirs for drilling waste disposal of observation and production gas wells at the Kharasaveysky OGKF;
- Justification of investments into reconstruction and new construction of the system for collecting and transporting gas etan-contamination northern regions of the Tyumen region to the Baltic coast of the Leningrad Region for raw gas processing;
- Justification of investments into construction of the polyethylene production complex in the Astrakhan region;
- Justification of investments in the construction of a gas processing plant as part of a complex for the processing of ethane-containing gas.

Operational Environmental Monitoring and Control

Operational environmental control is organized in each subsidiary of the Gazprom Group. In addition, Environmental Inspection Service of PJSC Gazprom checks the compliance of subsidiaries and contractors with environmental legislation, corporate standards and norms in the field of environmental protection and rational nature use, including the most important capital construction projects, and conducts internal audits of the environmental management system of PJSC Gazprom.

Corporate environmental control at the facilities of PJSC Gazprom is carried out on the basis of the Order of OAO "Gazprom" on September 3, 2007 № 236 On Approval of the Environmental Inspectorate of OAO "Gazprom", STO Gazprom 1.14-2009 Procedure for organiz and conducting control (supervision) in OAO "Gazprom" for compliance with the requirements established in the standards and other normative documents, STO Gazprom 2-1.19-275-2008 Environmental protection at the enterprises of JSC "Gazprom". Operational Environmental Control. General requirements, STO Gazprom 12-0-022-2017 Environmental Management System. Requirements with guidance for use "STO Gazprom 12-3-023-2017 Environmental Management System. The procedure for planning and conducting an internal audit.

PJSC Gazprom is the only Russian oil and gas company having its own Environmental Inspection Service.

In 2018 the Environmental Inspection Service of PJSC Gazprom performed 354 checks of compliance with environmental legislation.

The Inspection carried out 196 inspections, including 168 in the form of EMS audits in 49 production subsidiaries and organizations of PJSC Gazprom. Employees of the Environmental Inspection Service of PJSC Gazprom checked 9 gas production companies, 18 gas transmission companies (including OAO Gazprom transgaz Belarus), 11 branches of OOO Gazprom UGS, 3 gas processing plant, 5 branches of OOO Gazprom energo, ZAO Gazprom Armenia, OsOO Gazprom Kyrgyzstan, OOO Gazpromtrans and others. The inspection plan is 100% complete.

At the construction and reconstruction sites 54 inspections of the activities of customers and general contractors were carried out. The objects of such organizations as OOO Gazprom invest, OOO Gazprom tsentrremont, OOO Gazprom sotcinvest, OOO Stroygazconsulting, OOO Stroygazmontazh, AO StroyTransNefteGaz and others were among the checked.

In 2018 the Environmental Inspection Service conducted 13 preliminary technical audits in subsidiaries PAO Gazprom Neft (Administration of PAO Gazprom Neft, AO Gazpromneft — Moscow Oil Refinery, AO Gazpromneft-Noyabrskneftegas, OOO Gazpromneft-Vostok, OOO Gazpromneft-Yamal, OOO Gazpromneft-Orenburg), as well as in AO Gazprom teploenergo, OAO Daltransgaz, AO Severneftegazprom, OAO Vostokgazprom (OAO Tomskgazprom), OOO Gasprom gazomotornoye toplivo, OOO Gazprom neftekhim Salavat, OOO Gazprom tsentrremont (OOO Gazprom podzemremont Urengoj). Completeness and accuracy of environmental aspects identification during the implementation of investment projects were selectively checked in 10 subsidiaries of PJSC Gazprom.

Furthermore, subsidiaries PJSC Gazprom 81 was carried out checking the technical state of operation and efficiency of the facilities and / or waste water purification plants, performance measures to prevent discharges of untreated and inadequately treated sewage into water. Such checks are 7 gas production, gas transportation subsidiaries 17, OOO Gazprom UGS, OOO Gazprom pererabotka, OOO Gazprom energo. The operation of 187 wastewater treatment plants and facilities were inspected in the framework of control activities. Results of all assessments with analysis of results and recommendations for improvement of environmental activities were brought to the management of the audited organizations; measures to eliminate and prevent violations were worked out. An indicator of violation elimination possibility within the prescribed period was 97%.

The operational environmental system (OEM) of the Gazprom Group use high level technical equipment and is in constant development. Rules, procedure and features for OEM systems design and implementation at various production facilities are regulated by a number of industry and departmental regulations, including standards of the organization.

The Gazprom Group's OEM system includes stationary and mobile eco-laboratories, meteorological and hydrological stations, automated control posts, and observation wells. This makes it possible to control pollutant emissions into the atmospheric air from organized sources; quality of atmospheric air at the border of sanitary protection zones and in settlements; noise; radiation background; quality of surface water and ground water, bottom sediments; quality of drinking water supply sources; state of geological environment, soil and snow cover; solid waste and waste waters.

If SPNA or objects of special ecological status are influenced by economic activity, the Gazprom Group includes into OEM programs relevant observations of their condition.

In the Black sea, surveys of the offshore section of the side gas pipeline to the automated gas distribution station Novomikhaylovskaya of the main gas pipeline Dzhubga — Lazarevskoye - Sochi are regularly carried out. The works include a visual inspection of the location of the pipeline and the sampling of sea water. The state of the underwater world is monitored by the underwater remote-controlled complex "Gnome".

According to the results of monitoring in 2018, no violations of the environmental situation were revealed. The General state of marine biota is satisfactory. Pollution of sea water by oil products is not found. Rapidly growing mussel colonies were found in some sections of the pipeline. Colonies of marine plants are attached to the protruding parts of the pipeline.

In the Taganrog Bay of the Azov Sea, water monitoring is constantly carried out on bacteriological and chemical pollutants.

In the area of Prirazlomnaya marine ice-resistant platform, in connection with the development of the Novoportovsky oil and gas condensate field, OEM of marine environment and atmospheric air is carried out. Monitoring of natural environment components of the Novoportovsky license area, oil receiving point at Cape Kamenny, Gulf of Ob in the area of the Arctic terminal facilities for year-round oil export, Yamal flora and fauna is carried out. The results of the monitoring conducted in 2018, showed that the state of the surveyed area is within the normal range, the measured values correspond to the natural background, deviations from the parameters of the natural functioning of coastal ecosystems have been identified. The species diversity in communities is at a high enough level.

To assess the environment condition, to identify environmental impact of production facilities and to develop measures to eliminate or reduce the impact, Sakhalin Energy Investment Company Ltd. has implemented a number of local environmental monitoring and biodiversity conservation programs. Environmental monitoring and biodiversity activities were conducted in the following areas: monitoring of river ecosystems; monitoring of flora and vegetation; monitoring of wetlands; monitoring of protected bird species; monitoring of Steller's sea eagle; ballast water control in the coastal zone of the Aniva Bay in the area of production complex Prigorodnoye; monitoring of gray whales. The results of local environmental monitoring and biodiversity conservation activities confirmed that the implementation of the HSE management system, including risk assessment and timely implementation of measures for prevention and reduction, allows the company to carry out production activities, minimizing impact on the environment.

In order to prevent and reduce methane emissions into atmosphere, Gazprom's gas transporting subsidiaries conduct helicopter surveys of trunk gas pipelines technical condition using laser gas leak detectors; detect natural gas leaks at CS with the use of infrared imagers; conduct in-line inspection to prevent gas losses and reduce risks of environmental impact. For example, OOO Gazprom transgaz Makhachkala, OOO Gazprom dobycha Orenburg carried out helicopter surveys of linear sites of the main gas pipelines and taps of gas pipelines for detection of fistulas and leaks of gas by laser locators.

OOO Gazprom transgaz Surgut, OOO Gazprom transgaz Saratov and OOO Gazprom transgaz Nizhny Novgorod use remote laser detector "DLS-Pergam." The device used in helicopter surveys trace gas in order to detect methane. The following accessories, in addition to direct most of the optical block and certified assembly complex, includes electronic unit, a laptop, a complex video and photographic, laser rangefinder, and two software packages for data handling, reporting and editing of electronic maps. If even the slightest methane leaks are detected, the recording of time, wind direction, distance to the ground, GPS coordinates of the leak occurs automatically, in addition, the determination of the concentration of methane in the atmosphere and photographs are taken as well. The device is capable of measuring the gas concentration with a height of 30–200 m. Furthermore, OOO Gazprom transgaz Saratov air patrol carried out by means of unmanned aerial vehicles (UAV), leading photo- and video-fixing conditions in the place where gas pipelines.

In monitoring observations, one of the effective primary information sources are data of remote earth sensing obtained from spacecraft, as well as from aircraft, including UAV.

Since March 2014, OOO Gazpromneft-Noyabrskneftegas (Gazprom Neft Group) has been using UAVs to monitor the technical condition of pressure pipelines. UAVs use allowed to expand the territory of air monitoring for the oilfield transport system more than six times. Regular inspection of pipeline routes for assessment of their technical condition significantly increases reliability of the entire transport infrastructure of the company. During the monitoring process, compliance of oil pipelines with the design parameters is assessed, environmental monitoring functions are performed. The vehicles are equipped with high-tech digital optics — high-resolution camera and ultra-sensitive infrared imager. this arrangement allows for round-the-clock flights with two shifts of operators. The aircraft is controlled from the ground station using navigation equipment, the system provides for rapid adjustment of the trajectory, altitude and other movement parameters. Regular inspection of pipeline routes for assessment of their technical condition significantly increases reliability of the entire transport infrastructure of the company. During the monitoring process, possible deviations in the production facilities operation are detected, compliance of oil pipelines with the design parameters is assessed, environmental monitoring functions are performed. In 2018, the use of helicopter-type UAVs was continued.

In 2016, the management of PJSC Gazprom decided to replace the method of air patrolling of trunk pipelines from manned aircraft to UAVs for air patrolling in subsidiary transportation companies.

At the end of 2017 a tender for the execution of missions to UAVs for aerial patrol pipelines won domestic UAV development Zala Aero Group (OOO "DPT", is the part of the Concern Kalashnikov, Izhevsk). Since 2018 Zala Aero began to patrol the highway gas transmission subsidiaries. Since 2018, Zala Aero has been patrolling trunk gas pipelines in gas transportation subsidiaries.

Drones produced by Izhevsk Zala Aero are single-screw aircraft type machines. Focusing on GPS- and GLONASS-coordinates, they perform aerial photography of trunk gas pipelines and branch pipelines with a length of more than 50 km. Aerial photography provides high-definition and higher resolution images. The state of engineering infrastructure and pipeline protected areas are clearly visible in the images.

Due to the combination of the camera with the UAV navigation system, each image has accurate satellite coordinates.

Automated OEM systems of PJSC Gazprom for existing facilities are operated as a part of integrated operational and supervisory control system.

OOO Gazprom dobycha Orenburg successfully operates a system of comprehensive monitoring of the air. In 2018, more than 3.6 million air measurements were carried out by automated gas content control stations and mobile environmental laboratories of the gas and environmental safety Center of the subsidiary. Exceeding the maximum permissible concentrations of pollutants were recorded in less than 0.01% of cases. 3.2 thousand operations at production facilities were carried out under the control of mobile laboratories.

In some cases, the Gazprom Group's OEM systems are integrated with regional environmental monitoring systems. For example, as a result of the modernization of the environment, the Moscow refinery (Gazprom Neft Group) has been operating a modern automated air monitoring system (AAMS) since 2015, which provides real-time information on the impact on atmospheric air. AAMS combines sensors installed inside the pipes of technological objects of the plant, and automatically continuously transmits information to the Central control station of the plant and to the GPU (state legal direction) Mosecomonitoring of the Moscow Sity Government Department for Environmental Management and Protection. In addition to direct monitoring of sources, twice a day an independent laboratory takes control air samples on the territory of the enterprise and within its sanitary protection zone. The results of measurements are provided to the state supervisory authorities, as well as published on the website of the plant and on a special external screen "Eco-informer".

In 2018, the Federal Supervisory Natural Resources Management Service noted the successful environmental policy of the Moscow Refinery and awarded it with a diploma for the introduction of an automated air monitoring system.

The Omsk Refinery and the Ministry of Natural Resources and Environment of the Omsk Region signed an agreement on development of cooperation in the field of environmental protection. This document establishes the intent of the Omsk Refinery and continue to participate in efforts to improve the environmental situation in the region.

Thanks to the modernization program, the Omsk Refinery introduces the best modern environmental technologies and reduces the impact on the environment. The modernization program has already helped to reduce the impact of the Refinery on air by 36% at present, and by 2020 this impact will be further reduced by 28%.

In 2018, the Omsk Refinery donated a mobile environmental laboratory worth RUB 21mm to the Omsk region. The mobile monitoring station is equipped with a modern gas-analytical system for detecting air pollutants, including hydrogen sulfide, nitrogen oxides, hydrocarbons, methane, sulfur dioxide and carbon monoxide; and devices for measuring urban noise. An automatic weather station collects weather data, including wind speed and wind direction.

In February 2018, in the framework of the Russian Investment Forum in Sochi PAO Gazprom Neft, Federal Supervisory Natural Resources Management Service and the Ministry of Digital Development, Communications and Mass Media of the Russian Federation signed an agreement on the pilot project for the implementation in the refining industry ASMV using technology Internet of things.

Moscow and Omsk Refineries will become experimental sites for the development of a unified federal requirements for technical solutions and design techniques sectoral monitoring systems. Testing will take place at the two plants. Gas analyzers, mounted units, are in online mode, to transmit data to the supervisory authorities. Pilot test results will form the basis of state regulations to equip all businesses ASMV refining industry.

The companies affiliated with Gazprom energoholding (PAO Mosenergo and PAO MOEK) continue active work to reduce the environmental impact of production facilities.

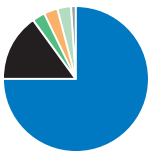
In order to prevent excessive emissions of pollutants from thermal power plants and boilers of PAO Mosenergo and PAO MOEK, automated environmental monitoring systems were installed, allowing to measure the concentrations of pollutants in the exhaust gases in real time and, if necessary, to carry out emission reduction. The systems automatically transmit information to the environmental services of the companies themselves and to the GPU Mosecomonitoring.

The Gazprom Group expenditures on operational environmental monitoring and control, 2014–2018, RUB mm

2014	2,728.39
2015	2,963.09
2016	2,505.00
2017	2,705.73
2018	2,602.79

Structure of expenditures on operational environmental monitoring and control in the Gazprom Group, 2018, %

PJSC Gazprom	75
Gazprom Neft Group	15
Sakhalin Energy	3
Gazprom energoholding	3
Gazprom neftekhim Salavat	3
Other companies of the Group	1



In 2014–2018, the Gazprom Group provided RUB 13.51 bn for operational environmental monitoring and control.

Prevention of Accidents

Every year, the Group companies take measures to prevent accidents, to increase equipment reliability and reduce the accident risk at the Gazprom Group's production facilities. These measures include technical diagnostics of pipelines in the field, injection of corrosion inhibitors; timely repair and maintenance work; anti-flood and anti-erosion measures; regular inspection of plugged and abandoned wells; regular helicopter surveys of linear sections of trunk pipelines and branches to detect holes and gas leaks, including the use of lidars; equipping with necessary equipment and technical means to eliminate hydrocarbon spills.

Environmental consequences of accidents at the Gazprom Group facilities were recorded in seven cases. The accident occurred in the reporting year on gas transportation facilities of the Group: OOO Gazprom transgaz Moscow — three accidents, OOO Gazprom transgaz Volgograd, OOO Gazprom transgaz Nizhny Novgorod, OOO Gazprom transgaz Ukhta, OOO Gazprom transgaz Yugorsk — one accident.

As a result of accidents gas losses in PJSC Gazprom amounted to 15.20 mmcm, estimated amount of damage to the environment due to accidents — RUB 1,738.47 thousand.

On March 4, 2018 at 516 km of the TGP Petrovsk-Novopskov (OOO Gazprom transgaz Volgograd) the destruction of the pipe section occurred, which was accompanied by an explosion and ignition of gas. The causes of the accident were the microcrack formation in the butt joints of pipes and, as a consequence, the destruction of the pipeline.

In OOO Gazprom transgaz Nizhny Novgorod, on October 24, 2018 at 187.5 km of the TGP Gorky — Center (Vladimir LPUMG) gas emission occurred, which was accompanied by the destruction of the pipeline and fire. As a result, a ditch of 35 × 6 × 3 m was formed. Corrosion processes were the technical causes of the accident.

In OOO Gazprom transgaz Ukhta, on August 28, 2018 an accident occurred at 321 km of the TGP Ukhta — Torzhok 2. with the gas release, which was accompanied by the destruction of the pipeline and fire. The causes of the accident — the development of longitudinal cracks of stress corrosion of character in the process of a gas pipeline under the influence of the corrosion factor and operating loads.

On may 9, 2018, in the operation mode in the area of underground laying of the Igrim — Serov — Nizhny Tagil gas pipeline section (563.5 km), in Gazprom transgaz Yugorsk, a pipe burst with gas emission and destruction occurred. The technical defect was the cause of the accident, which arose as a result of mechanical impact on the pipe surface.

There were three accidents with environmental consequences in OOO Gazprom transgaz Moscow in 2018.

On September 4, 2018, at 27 km of the second line of the gas pipeline branch to the GRS of Zheleznogorsk city, gas emission and destruction of the pipe took place. The destruction of the pipe was due to stress corrosion cracking.

On November 3, 2018, at 1,843.4 km of TGP Central Asia — Center there was a gas release with a fire. With the destruction of the pipeline formed a ditch of 25x15 m and a depth of 6 m. The accident was caused by mechanical damage during operation unidentified heavy machinery. Cracks during operation, stresses caused by internal pressure, combined with critical dimensions led to the destruction of the trunk pipeline.

On December 29, 2018, at 12.3 km of TGP Serpukhov – Leningrad destruction occurred with the release and ignition of gas. The accident cause was the mechanical impact on the outer wall of the pipeline in the place of localized cracks, corrosion damage on the outer surface of the pipeline.

At the facilities of other the Gazprom Group companies, there were no accidents with environmental consequences in the reporting year.

In 2018 the Gazprom Group was 917 pipeline ruptures. The total amount of spilled oil and petroleum products as a result of pipeline ruptures was 70 tonnes.

The Gazprom Neft group made a major contribution to the volume of spilled oil and petroleum products, which amounted to 69 tonnes due to gusts of 884 pipelines. Pipeline gusts in the Gazprom Neft Group occurred on the linear parts of the in-field pipelines. The main reasons for the gusts were internal corrosion defects (94%) due to transportation corrosive environments in the fields oil and gas.

Environmental Risk Insurance

The Gazprom Group environmental insurance covers the liability for emergency environmental contamination and aimed at provision of environmental safety, compensation of the environmental damage and compensation of losses of third parties.

In 2018, PJSC Gazprom and AO SOGAZ re-signed a comprehensive insurance contract for causing harm to the environment (environmental risks), the life, health and property of third parties in respect of activities related to land and offshore, construction and geological survey works of hydrocarbons; transport, preparation, processing of hydrocarbons; storage of gas, crude oil, petroleum products and other preparation, processing hydrocarbon feedstock; and auxiliary commercial or non-commercial activities directly related to the above activities, including: operation and / or use of lawfully (possession / disposal / use) of their own and / or lease and / or leasing of buildings, premises, including non-production assets: offices, rest homes and other commercial real estate; operation and / or the use of sources of high-risk insured persons. The amount and terms of insurance coverage in the contract remain unchanged.

The territory of the insured activity implementation is the Russian Federation and the continental shelf of the Russian Federation.

The insurance contract is voluntary and complements obligatory general liability insurance contracts of a hazardous facility owner (as per Federal Law No. 225-FZ dated July 27, 2010). Voluntary insurance contract is covered by liability who is not insured under the compulsory insurance of civil liability for damage resulting from an accident at the hazardous facility, as well as liability for any damage as a result of the accident, the amount of damage caused by exceeding the limits of liability for compulsory insurance and / or the responsibility of compulsory insurance contracts limit is reached.

The insurance contract replaces all voluntary general liability insurance contracts of legal persons who operate sources of increased hazard, signed earlier by each subsidiary company.

Amount of insurance payments of AO SOGAZ in the reporting period comprised RUB 18.69 mm (RUB 23.51 mm in 2017), including RUB 18.24 mm for damages of the previous years (RUB 23.43 mm in 2017).

State Environmental Supervision

In 2018 the state supervisory authorities conducted 753 checks of compliance with the operation of the facilities of the Gazprom Group, as a result of which revealed 435 violations. As a result, 503 inspections revealed no violations.

Of the 435 identified violations, 35 (8%) were overturned by the court, 253 (58%) were eliminated within the prescribed period, deadlines for 106 violations did not expired in the reporting year. During the year, 357 violations were eliminated, including 104 revealed as the results of audits of previous years.

Of the identified violations, 275 (63%) did not pose a threat of damage to the environment and did not entail penalties for legal entities.

In the reporting year, we paid fines in the amount of RUB 17.12 mm, including RUB 3.46 mm by the results of audits of previous years. Payments on the fines amounted to: the Gazprom Neft Group — RUB 10.22 mm; PJSC Gazprom — RUB 2.17 mm; Gazprom energoholding — RUB 3.67 mm, to the other subsidiary companies — RUB 1.06 mm.

Overall in 2018 for environmental damage, the Gazprom Group has paid RUB 188,64 mm, including RUB 177,14 mm for the damage of past years. The harm caused as a result of accidents in 2018 amounted to RUR 1.74 mm. Compensation for damage was mainly made for damage caused as a result of incidents on the pipelines of the Gazprom Neft Group in 2017, as well as for minor land pollution in the Yamal-Nenets Autonomous district. In connection with the judicial review of the application to reduce the amount of the claim for compensation for damage by the amount of costs for land reclamation, payments for damage made in 2018.

Scientific and Technical Support of Environment Protection

Scientific Research and Development

In order to improve operational efficiency in the Gazprom Group companies, scientific research is being carried out; new technologies are being developed and implemented decreasing negative environmental impact.

During 2018, environmental R&Ds worth RUB 123.9 mm were completed for PJSC Gazprom , inter alia using the resources of corporate research institutes OOO Gazprom VNIIGAZ and OOO NIIgazekonomika.

In 2018, research on the following topics was continued:

— Development of a Roadmap for GHG Emission Management System in the Gazprom Group companies for the period up to 2020 and in the future up to 2030,
— Development of selective catalytic NO_x reduction for exhaust gases of gas pumping units, with the subsequent control of the cleanup process by automatic gas detectors,
— Development of guidance documents on environmental technology standardization and obtaining Complex Environmental Permits for Gazprom facilities,
— Development of the 2020–2024 Comprehensive Environmental Program of PJSC Gazprom,
— Creating a prototype unit with the performance of 1,000 cm per hour for the methane-hydrogen mixture production.

Research has begun for:

— Development of technologies and reagents for the hydrocarbon pollution response in the coastal area and coastline while implementing offshore fields development projects,
— Development of a surfactant formulation for containment of hydrocarbon pollution on the water surface;
— Improving GHG emissions estimates from energy sector sources during natural gas activities in Russia, carbon footprint assessment for different natural gas transportation routes,
— Development of technical specifications and feasibility study on a new generation refrigerants with minimal potential environmental impact of the oil and gas industry,
— Adaptation technologies for the security of production facilities under permafrost changing conditions.

PJSC Gazprom pushed forward energy saving R&D in the area of innovative energy efficient technologies; besides, analysis and proposal development for improving energy efficiency of Gazprom operating procedures were carried out in accordance with the requirements of the corporate Energy Saving and Energy Efficiency Concept for 2011–2020.

Legal, environmental and economic regulatory R&Ds executed:

— Analysis of international documents and requirements and the development of the risks response system with reference to the introduction of national and international regulating GHG emissions measures,
— Environmental and energy efficiency benchmarking of Gazprom's competitors (including foreign companies),
— Evaluation of the economic consequences for PJSC Gazprom of environmental legislation changes in 2017 (for the purpose of identifying and evaluating the potential environmental and energy cost reduction by the Company through full use of state incentives),
— Study of environmental and economic effects of the technical solutions implementation in the design documents in 2017 (for the purpose of regulatory requirement changes accounting, introducing of the standardization principle on the basis of BAT and international practice of green project financing). In accordance with the corporate Energy Saving and Energy Efficiency Concept for 2011–2020 within the framework of R&D the analysis and proposals development of the energy efficiency improvement for Gazprom's operating procedures were carried out, including the development of science-based guidelines on norms of process natural gas losses during trunk pipeline transmission.

The subsidiaries of PJSC Gazprom and other companies of the Gazprom Group also carried out environmental and energy efficiency R&Ds.

The enhancement method of integrated microbe engineering for wastewater treatment plants operation was developed for Gazprom dobycha Krasnodar (in order to ensure the regulatory requirements for effluent quality).

Gazprom neftekhim Salavat in order to minimize man-made environmental load undertook the selection work on wastewater soluble organic compounds treatment methods for A-35/6 refinery unit.

The Gazprom Neft Group carried out R&D on f the development of innovative, industrial safe and environmentally friendly high-octane petrol component production technologies for Gazpromneft — Moscow Refinery.

Gazprom energoholding commissioned R&D on the development of waste ash recycling technology for the Krasnoyarsk state district power station GRES-2. The possibilities of using waste ash for commercial production by metallurgical processing were studied, and also volume waste ash usage as secondary material for the land restoration of the Borodino open coal mine. The project will increase ash dump capacity, reduce negative impacts on the environment and improve ash waste sell-off.

Use of the Best Available Techniques

Gazprom's 2025 Innovative Development Program is mainly aimed at the continuous technology improvement of the Company to maintain technological leadership in the global energy business. The Program provides for active cooperation with corporate and third-party research organizations on R&Ds, with state development institutes and higher education institutions to arrange joint research and personnel training.

Improvement of environmental safety and energy efficiency of production activities of the Gazprom Group companies is achieved largely owing to implementation of innovative technical and process solutions.

In order to develop a set of BAT introduction and adaptation measures for PJSC Gazprom the Roadmap on transition to the best available techniques in PJSC Gazprom was prepared and approved .Work on the development of BREFs for the gas industry continued.

In 2018, the following corporate regulatory documents were developed in PJSC Gazprom:

— BREF Underground Natural Gas Storage in PJSC Gazprom,
— BREF Natural Gas Transmission in PJSC Gazprom.

With a view to reduce and prevent as far as possible the negative impact on climate, Gazprom utilizes a range of technologies and practices. For example, the following BATs for reduction of natural gas losses and emissions in the Production segment are:

— natural gas utilization of process equipment discharge during planned preventive maintenance,
— undertaken without popping of gas gas-dynamic testing and well logging, blowing of well clean using a concentric gas-lift, well start-ups and re-injection gas pipelines cleaning pipeline cavities, adoption of telemetry well testing systems,
— consumption for own operational needs of weathered and separator gases,
— mechanized removal of liquid plugs from well bottoms in order to avoid venting of natural gas at flare stacks,
— optimization of flare system operating modes,
— replacement of Cold Cranking process operation to manually cranking of a gas generator for a gas-pumping unit under hot stand-by mode,
— regular leak resistance monitoring, maintenance, repair and overhaul of wellhead X-mass trees, shutoff and control valves of the GPU process equipment.

The best available techniques and practices to reduce natural gas losses and emissions in the Processing segment are:

— no combustion of liquid hydrocarbons from tanks and vessels during shutdown for repair works thanks to processing them on operating units; optimization of fuel gas consumption for own operational needs.

The best available techniques and practices to reduce natural gas losses and gas emissions in the UGS segment are:

— outgassing into low-pressure pipelines during planned preventive maintenance of gas gathering line headers and CS process equipment,
— gas blowdown from process lines by boiler stations during neutral period at the end of the withdrawal season,
— reducing the number of starts / stops of GPUs,
— replacing X-mass tree equipment without killing a well,
— utilization of reservoir blowdown technology instead of flaring,
— bypass of natural gas from the UGS processing area to a natural gas trunk pipeline after gas withdrawal and injection,
— utilization of temporarily blocking compositions while killing a well during workover,
— regular leak resistance monitoring, maintenance, repair and overhaul of wellhead X-mass trees, shutoff and control valves of the GPU process equipment.

The best available techniques and practices to reduce natural gas losses and gas emissions in the Transmission segment are:

— reducing bleeding during overhaul at the linear part of a natural gas trunk pipeline thanks to bypass of natural gas from the disconnected part of the pipeline into the adjacent part of the trunk pipeline, gas removal from the disconnected pipeline section via GDSs, gas recovery via GPUs for the input units of next CS or GPU multistage gas recovery in a single CS or gas removal from the disconnected pipeline section to the input of other trunk pipeline section of the using a mobile CS;
— reducing bleeding during planned preventive maintenance of compressoryards of CSs thanks to bypass of natural gas from the disconnected circuit of a compressor yard for own operational needs of the adjacent process associated compressor yard, gas removal from the disconnected circuit of a compressor yard to the adjacent part of a trunk pipeline via bridges;
— process modes optimization of natural gas transmission system facilities;
— carrying out repair works on a natural gas trunk pipeline without stopping gas transmission through the technology utilization of hot taping, fiberglass coupling with threaded tightening, polymer composite materials, the replacement of valves and split couplings installation;

— operating modes optimization for compressor yars, CSs and gas flow distribution in the gas transportation system using software and computer systems such as Astra-gas, Agat-KC, Volna, SONET;
— blowing down precipitators of CSs and GDSs without gas venting;
— combustion chambers upgrade;
— cleaning the flow section of axial compressors;
— operating modes optimization of GPUs and gas air cooling units;
— the efficiency upgrading of heaters and hot water boilers to reduce fuel gas consumption on GDSs;
— regular leak resistance monitoring of tightness, maintenance, repair and overhaul of shutoff and control valves of the GPU process equipment.
— carrying out the helicopter leak detection of the trunk pipeline's linear part and offshoot pipelines using laser radars.

To preserve the good quality of water resources, the Gazprom Group is adopting advanced treatment methods. For example, the first year functioning of the Biosphere innovative biological treatment facilities at the Moscow Refinery (the Gazprom Neft Group) showed great results in water resources preservation. Unique complex reached its design capacity and provides nearly closed water consumption cycle. In 2018, the Moscow Refinery reduced its river water consumption by more than 70%, as well as significantly reduced the burden on municipal treatment facilities thanks to the Biosphere. Setting the Biosphere in operation in late 2017 became an important stage of the Moscow Refinery modernization program, conducted by Gazprom Neft since 2011.

In 2018, the Gazprom neftekhim Salavat refinery completed the next step of tank batteries and racks modernization, upgraded the section of hydrogen and ammonia separation from blowdown and flash gases of an ammonia production nit, completed the construction of a sulphide-alkaline wastewater treatment plant with a capacity of 50 tonnes per hour. Offsetting into operation this new high-tech plant will secure such figures that effluents can be transferred for advanced treatment to main sewage treatment plants without any interruption of the treatment technology. Also, irrecoverable water losses through sewage will be stopped resulting in water consumption reduction and thus decreasing burden on the Belaya River ecosystem.

Gazprom Neft continued initiated in 2017 UAS tests for cargo delivery to remote production sites with no ground connection or, if economically feasible, using helicopters. The project on UAS's application for goods delivery was developed and implemented within the framework of the Gazprom Neft technology development program.

At the facilities of Gazprom Neft is wildly used the Green Seismic technology of seismic exploration, which allows saving trees from cutting down. Thanks to modern technical means and organizational solutions, the Green Seismic can significantly reduce anthropogenic environmental impact. The technology is versatile and can be used both in forest regions and in agricultural areas, in mountainous terrain or infrastructure facilities, where wireless sensors are much easier to install than conventional ones.

In 2018, Gazprom Neft tested for the first time in Russia the innovative molecular method of hydrocarbon exploration — areal geochemical survey. This new technology permits to reliably identify prospective potentially productive zones for further study and exploration drilling without large financial investments at the early stages. The method is based on aboveground detection of hydrocarbon gases molecules, reflecting the geographical location of an oil-saturated zone. The company has successfully tested areal geochemical survey onthe Vorgensky license area of the remote group of Gazpromneft-Noyabrskneftegas fields over 3.5 thousand km^2 area. As a result exploration target was determined. Handling a large number of structures over 7,000 skm area will continue in 2019. The method is characterized by high financial, organizational and environmental efficiency.

Gazprom's Science and Technology Prize

Gazprom's Science and Technology Prize has been awarded annually since 1998. The Prize is an important component of the corporate scientific and technological policy aimed at promoting innovations in the Company's businesses and maintaining its technological leadership within the global energy industry. The Prizes are granted for major developments in natural gas production, transmission, storage, refining and usage, resulted in creation or improvementand — which is most important — efficient use of new machinery, devices, equipment and materials specimens.

In 2018, Gazprom's subsidiaries nominated 14 projects for the Prize, with 117 authors engaged in the projects. The total economic impact of the awarded works results implementation exceeded RUB 18 bn.

The submitted works were evaluated by an expert group comprising specialists of PJSC Gazprom and its subsidiaries. Experts assessed the urgency, novelty, scientific and technological level (research intensity), application field, scope of projects and economic impact of their usage in Gazprom. Most of the nominated scientific and technical developments have direct or environmental impacts. The 2018 Prizes went to following projects:

Creating and adopting innovative methods of tight gas development to increase cost efficiency of production

Nominated by: OAO Severneftegazprom.
Authors: V.V. Dmitruk V.V. Vorobyev, I.R. Dubnitsky, A.A. Kasyanenko, A.A. Legay, E.P. Mironov, A.A. Chernyshev, V.V. Cherepanov, A.I. Babak, A.V. Krasovsky.

The paper describes the results of implementing a set of adjusted design and engineering solutions meant to increase the efficiency of gas production from the Senonian-Turonian hard-to-recover reserves of the Yuzhno-Russkoye natural gas and condensate field under the established infrastructure and equipment of Cenomanian production field.

For the first time, the extended well test of well design with an upward borehole profile for the Turonian natural gas production was proposed, proved and carried out; such a design allows optimal operating practices, productivity and ultimate gas recovery increase. The developed design involves only domestic equipment and components.

Developing a set of domestically-manufactured refining catalysts to produce high-quality motor fuels

Nominatedby: PAO Gazprom Neft
Authors: O.S. Vedernikov, A.V. Andreev, D.O. Kondrashev, V.D. Miroshkina, I.D. Reznichenko, S.Y. Guryevskikh, D.V. Khrapov, V.P. Doronin, O.V. Klimov, A.G. Popov.
Under import phase-out policy, the authors solved the task of improving the production efficiency of basic secondary oil refining processes, increasing refinery yield and light oil products output, including high-quality Euro-5 motor fuels, through the introduction of innovative catalysts and their production technologies.

In the course of project development, a broad range of questions was decided, including: the creation of process design solutions package, the selection of chelants for hydrotreating catalyst reduction of at least 95%, the development of the technology for hydrotreating catalyst reactivation, resulting in 100% dead-catalyst reduction and reentering the production cycle.

The developed catalysts are produced for the conditions of the Omsk and Moscow refineries and introduced to the process of these plants.

Natural gas odorant waste disposal system

Nominatedby: OOO Gazprom transgaz Samara.
Authors: V.A. Subbotin, V.A. Grabovets, D.A. Neretin, K.Y. Shabanov, R.Y. Distanov, S.V. Konyaev, O.I. Bogdanov, D.E. Bykov, A.A. Pimenov

In this project, the authors figured out how to enhance odorant waste disposal processes. A new environmentally friendly technology for highly toxic waste teratment was developed; it is aimed at the integrated treatment of previously accumulated and newly generated waste from natural gas odorization process.

The method of reducing odorant waste toxicity by exhaustive ozone oxidation of organosulphur compounds to sulphosalts was developed; a mobile automated natural gas odorant waste treatment unit with positive findings of State environmental and industrial safety expert reviews was put into commercial operation. The features of the unit are mobility, autonomy, high performance, low operating costs, while processed waste is IV–V classes of hazard and can be used as secondary raw material.

Developing and utilizing Katburr polycationic drilling muds to improve well construction efficiency in challenging mining and geological conditions

Nominatedby: OOO Gazprom VNIIGAZ

Authors: A.G Potapov, A.M. Gaydarov, M.M-P. Gaidarov, R.A. Zhirnov, A.V. Sutyrin, A.A. Hubbatov, R.S. Ilalov, D.G. Solnyshkin, D.V. Ponomarenko, D.V. Lyugai.

The paper contains the study results on polycationic drilling fluids composition optimization and utilization efficiency enhancement during well construction, the use of such drilling fluids will significantly reduce the risks of complications and accidents, shorten construction time up to 30%, reduce recyclable waste drilling fluids.

Gas-oil heat exchanger as an energy-efficient solution for natural gas transmission

Nominatedby: OOO Gazprom transgaz Ukhta.

Authors: V.G. Nikitin, S.V. Adamenko, E.G. Vasilyev, A.S. Kaydash, E.A. Terentyev, V.A. Seredyenok, Y.V. Belousov, N.N. Vereshchagin

The authors addressed the problem of GPU energy efficiency through the recovery of the recyclable excess heat of the lube oil from a gas turbine drive and a lubricant injector when fuel gas heating in gas-oil heat exchangers instead of air-cooled oil devices and thanks to the associated natural gas and electricity savings.

International Cooperation

International environmental and energy efficiency cooperation is an integral part of Gazprom's sustainable development activities.

Within the framework of science and technology cooperation (STC) of PJSC Gazprom with foreign partners in 2018, a number of meetings aimed at carrying out joint relevant environmental and energy efficiency research.

May 2018, a meeting of the Joint Coordinating Committee of the 2016–2020 Sci-tech Cooperation and Partnership Program between PJSC Gazprom and OMV Aktiengesellschaft was held in St. Petersburg, Russia. In 2017, companies' representatives conducted laboratory tests of a biological product BIOROS at the facility of OMV Austria Exploration & Production GmbH. In 2018, successful tests to determine the soil hydrocarbon treatment efficiency of this bioproduct in Russia, on the premises of the head science center of PJSC Gazprom — Gazprom VNIIGAZ, were carried out.

The representatives of PJSC Gazprom and the OMV Aktiengesellschaft were engaged in a technical dialogue. In November 2018 in Novy Urengoy, Russia, they discussed various methodological issues of BAT implementation, including the method for determining operating standards of environmental impact, obtaining complex environmental permits, developing environmental progress programs, providing the sources of environmental impact with automatic control equipment.

Biotechnologies utilization for the restoration of natural environments is of great interest to a number of companies around the world. So, as part of STC between PJSC Gazprom and CNPC, proposals and management time plan have been prepared for 2018–2020 on projects: Hydrocarbon Pollution Environmental Treatment Service through Chemical and Biotechnological Methods and Action Plan Development to Minimize GHG Emissions during Natural Gas Production, Transportation and Storage.

On meeting of the Working Group on Sc-Tech Cooperation of PJSC Gazprom and CNPC in Hangzhou, China, October 2018 a report on Biological Product Utilization for Oil Pollution Treatment — Best Practices for CNPC Facilities was presented. The meeting also discussed the prospects of full-scale testing of the biological product developed by OOO Gazprom VNIIGAZ at one of the facilities of Huabei oil and gas company (PetroChina).

Hydrogen theme is now becoming more and more popular. Thus, Gazprom presented a methane-hydrogen development scenario in the Green Gas for Germany symposium, hosted by the Zukunft ERDGAS in June 2018 in Berlin. Within the framework of the public discussion on "Future climate and energy policy — a Strategy for long-term EU greenhouse gas emissions reduction" PJSC Gazprom presented the document named PATHWAYS TO 2050: OPPORTUNITIES FOR THE EU which proposes the 3-stage scenario of green low-carbon EU economy development in order to reach the goals of the Paris Agreement.

As part of the STC between PJSC Gazprom and N.V. Nederlandse Gasunie, a Working Group Meeting on strategic cooperation on Decarbonizing the natural gas chain using hydrogen and other innovations was arranged. Hydrogen production, transportation and storage were discussed; a prospective promising option for hydrogen production from natural gas with zero dioxide carbon emissions was considered.

In September 2018 in Düsseldorf, Germany, the Coordinating Council on Sci-Tech Cooperation Program between PJSC Gazprom and Uniper SE was brought tohether. The present hydrogen experience of the companies was discussed. On the basis of developments with a beneficial effect, a schedule for further collaborative work was established.

In 2018, within the framework of the STC Program of PJSC Gazprom and VNG Gasspeicher GmbH the technical dialogue on Environmental Aspects of Natural Gas-to-Hydrogen Technology was started.

PJSC Gazprom promotes globally sustainable energy development on a regular basis. In 2018, in order to provide the information support of this activity, the Company took part in a number of events. Natural gas application for decarbonizing the economy was discussed at the meeting of the United Nations Economic Commission for Europe's (UNECE) Group of Experts on Gas (Geneva, Switzerland, 20–22 March 2018); at the World Energy Council — Global Gas Centre Meeting Natural Gas as a Key to Decarbonisation (Berlin, Germany, March 2018), at the EU-Russia Gas Advisory Council's Work Stream on Internal Market Issues, at the meetings of the International Business Congress committees.

Given the international attention to possible gas leaks, PJSC Gazprom routinely reports on its methane emission reduction activities and best practices. During the meeting of the Coordinating Council on Sci-Tech Cooperation between PJSC Gazprom and Gasunie the report on The Accounting and Control Methane Emission — Gazprom Practices was presented. In August 2018, in St. Petersburg, Russia, at the STC subgroup meeting of PJSC Gazprom and KOGAS the report The Innovative Natural Gas Transmission Energy Efficiency Enhancement Technologies Utilization was presented; the time plan of technical dialogue on Energy Saving and Energy Efficiency within the framework of the 2018–2020

STC Program of PJSC Gazprom and KOGAS was worked out. Sharing experience with European partners, PJSC Gazprom presented its practices at a methane emission workshop of the Florence School of Regulation in Florence, Italy, 9–11 October 2018.

The Methane's Role in Climate Change project of the International Business Congress with the participation of PJSC Gazprom and foreign partners was completed. Based on expert estimates, anthropogenic methane climate impact is negligible: for example, methane emissions from the world-wide oil and gas industry is 0.1% of global GHG emissions. Isotopic analysis proved that the main cause of atmospheric methane concentration rise is biogenic methane, namely, the emissions from rice fields, farm animals (cows), waste. The natural gas of Russian fields is excluded from the causes of atmospheric methane concentration growth[1].

[1] http://www.international-bc-online.org/wp-content/uploads/2018/01/24-Role-of-methane.pdf

Information Disclosure

Information disclosure is one of the pillar environmental efficiency principles of the Gazprom Group companies. The main criteria for the implementation of information transparency principle are: reliability and integrity, regularity and timely presentation, and availability to national authorities, shareholders and investors, the public, media and other interested parties.

Information on the Gazprom Group environmental aspects is available at the official website of PJSC Gazprom (www.gazprom.ru) in the Environment, Media, Shareholders and Investors sections. Sections of environment protection and energy saving are provided in the Annual Environmental Report and the Annual Report of PJSC Gazprom, and in Corporate edition Gazprom in Figures Factbook.

Information on the current and proposed Gazprom environmental and energy efficiency activities is constantly published in corporate The Gazprom magazine and The Gas Industry Magazine, newspapers and other periodicals of the Gazprom Group subsidiaries, special industrial publications.

As a part of the Cooperation Agreement with Roshydromet, Gazprom submits data for the inventories of anthropogenic emissions from sources and GHG removal by absorbers, and also for National Communications submitted by the Russian Federation to UN FCCC bodies. The reports disclose data on GHG emissions up to 2030 and on emissions reduction activities. Participation of PJSC Gazprom in the international project CDP (formerly the Carbon Disclosure Project) aimed at GHG emissions disclosure is an important indicator of success in the work to improve the transparency of the Company's activities and one of the factors of its investment attractiveness increase.

Since 1995, Environmental Report of the Company has been issued annually. Since 2010, a Report of PJSC Gazprom on sustainable development activities has been issued regularly, its Environmental Impact and Resources Management sections give detailed information on the strategy and tactics of rational nature use, environment protection, climate change and interaction with stakeholders.

PJSC Gazprom is among the leading indices Responsibility & Transparency and Sustainable Development Thrust of the Russian Union of Industrialists and Entrepreneurs. The project is recognized as a tool for benchmarking the Russian companies and included in the international database indexes and rankings in the field of sustainable development — The Reporting Exchange. The results of the 2018 index underwent an independent audit by the FBK company.

Following the information transparency principle, the Gazprom Group companies publish Environmental Policy texts, environmental news, environmental and sustainability reports, plans of activities to preserve biological diversity, environmental monitoring reports, environmental impact assesments (EIAs), data of public hearings of projects, OSRPs and other materials.

Related environmental benefits of natural gas paid great attention to the preparation of an interview with the leaders PJSC Gazprom, as well as opinion articles for foreign publications. In particular, in 2018 OOO Gazprom export has published a special brochure on natural gas utilization as a motor fuel[1]. Another report devoted to the possibility of achieving the EU climate targets with the help of natural gas was published in a special issue of Blue Fuel information edition[2].

Annually the Group's subsidiaries prepare and submit reports on the parameters of production activity impact on the environment, implemented activities and volume of their financing, adverse environmental impact charges to the state executive authorities and state statistic bodies of the Russian Federation.

Public discussions for the majority of the investment activity objects of PJSC Gazprom are compulsory according to the Russian laws; however the statutory requirements to the procedure of such discussions are not available. To fill this legal gap, a document of the corporate standardization system is in force in PJSC Gazprom since 2014 that contains recommendations for provision of public discussions and public hearings for materials of assessment of the impact on the environment for the planned economic activities.

Dedication of the Gazprom Group companies to information transparency principle is demonstrated by annual meetings with central and regional mass media representatives where issues of rational use of natural resources, environment protection and energy saving are discussed.

Gazprom monitors mass media to analyze public opinion on its environment protection activities and consider it in its future planning and timely making of management decisions. In 2018, 7,327 positive articles were published in mass media and Internet on the subject of environmental aspects of the Gazprom Group business.

The Group companies are involved in the annual Russian and international rankings of environmental responsibility, disclosing information about its activities. Efficiency of corporate policy in this area is confirmed by independent experts. Thus, over the past seven years, PJSC Gazprom has been a constant leader in the Energy sector of the Russian investment CDP partnership ranking.

Gazprom's work in the field of improvement of environmental situation in the regions of Gazprom presence won significant number of awards, diplomas, letters of gratitude from Federal, regional and local authorities, educational institutions and public organizations.

[1] http://www.gazpromexport.com/files/Gas_Motor_Fuel_2018_EN.pdf385.pdf
[2] http://www.gazpromexport.com/files/BLUE_FUEL_49325.pdf.

Voluntary Environmental Responsibility

Developing voluntary environmental liability mechanisms, PJSC Gazprom for several years implements large-scale plans for additional environmental measures in the area of its operations. In order to facilitate the execution of Presidential Decree No 583 of 6 December, 2017 On Holding the Year of Volunteers in the Russian Federation, PJSC Gazprom has planned, organized and successfully held activities dedicated to the Year of Volunteers. The activities included sponsoring and participating in environmental competitions, seminars and meetings, taking part in volunteer clean-ups, in ecological campaigns. Implementation of these measures is aimed at the development of environmental culture, education and awareness, as well as Gazprom's self-presentation as an environmentally and socially responsible company.

Under of the Year of Volunteers, the national contest "The Best Eco Volunteer Squad" sponsored, organized by the Ministry of Natural Resources and Environment of the Russian Federation, the Vernadsky Nongovernmental Ecological Foundation, the National Society for the Conservation of Nature and other environmental NGOs was held. The contest was in order to identify and promote the best environmental practices and volunteer initiatives. 1470 applications were submitted under 6 nominations from all regions of the country. The winners in three out of the six categories were eco-volunteer squads from the subsidiaries of PJSC Gazprom (OOO Gazprom transgaz Moscow, OOO Gazprom transgaz Stavropol and OOO Gazprom transgaz Ukhta).

Recognition of eco-volunteers at the federal level shows the impact of implemented environmental strategy of PJSC Gazprom, aimed at maintaining a balance between production development and environmental well-being.

All of the Group's companies, following the established tradition, in conjunction with the Vernadsky Nongovernmental Ecological Foundation took part in the Russian Ecological Volunteer Clean-up "Green Spring — 2018".

As part of the clean-up campaign, OOO Gazprom transgaz Tomsk initiated 81 event, which covered the coastal and Siberian forests, Altai reserves, the banks of rivers and lakes, the island of Sakhalin, the regions of Power of Siberia project. About 1,700 people took part in the campaign. As a result, 102 ha cleaned of debris; 214 tonnes of debris collected; planted 16,225 seedlings.

More than 2,600 employees of OOO Gazprom transgaz Stavropol in the Astrakhan and Rostov regions, the Stavropol region, Kalmykia, North Ossetia — Alania, Kabardino-Balkaria and Karachay-Cherkessia, took part in the campaign. Natural gas industry workers cleaned-up the cities parks and gardens, facilities, playgrounds and recreational areas in the sponsored educational institutions, and the water areas of seven water bodies in the region. The clean-up was carried out on the banks of the Novotroitsk reservoir, the Terek, Serebryanaya Volozhka and Medvedka Rivers. Much attention was paid to urban greening and landscaping: together with the pupils, students and locals gas workers planted 160 pine trees, 250 shrubs, 20 new flower beds.

OOO Gazprom transgaz Stavropol was organized for its employees an excursion to the unique historical and natural site of the Stavropol Territory — State Nature Reserve Strizhament. In addition, work for the rehabilitation and improvement of 50 monuments and memorials to the WWII soldiers carried out.

More than 2.5 thousand employees of OOO Gazprom dobycha Astrakhan took action under the Green Spring — 2018 both at the production facilities and in the areas within the scope of company's social responsibility: the employees of the company rehabilitated sponsored orphanages, boarding schools and kindergartens. Work was carried out on the territory of the regional center and in the Krasnoyarsk and Volga regions. 65 facilities of industrial and social infrastructure were put in order; 620 small architectural forms were restored and repaired; about 200 tonnes of garbage were removed to the municipal solid waste landfill.

OOO Gazprom proyektirovaniye participated in the National ecological campaign. Workers of Moscow, St. Petersburg, Makhachkala, Tyumen and other branches were removing debris that had accumulated over the winter, put in order the territory adjacent to industrial facilities, planted flowers and trees.

About 100 employees of OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk and their family members worked in the recreation park of Yuzhno-Sakhalinsk, cleared debris and fallen trees along the railway territory, along the Health Trail, and along the coast line of Lake Verkhnee.

Gas workers of OOO Gazprom transgaz Tchaikovsky in the framework of the event held a series of campaigns in Tchaikovsky. Primorsky Boulevard of the city where the main office of the company is situated, the Energy area near the stadium and the area of P.I. Tchaikovsky square were put order. The campaign continued in all the municipalities of the Perm Region and the Udmurt Republic, where the branches of the gas transportation company are situated.

In 2018, PJSC Gazprom has actively participated in the international competition Ecological Culture. Peace and Conciliation established by the Vernadsky Nongovernmental

Ecological Foundation, GREENLIGHT Interregional Public Organization, GREENLIFE Interregional environmental NGO. Its purpose is to identify and promote the implemented projects aimed at the development of ecological thinking and outlook among the various target groups; informing on the matters of environmental protection, environmental safety and development of ecological culture; restoration and promotion of health through the improvement of environmental quality; implementation and development of innovative technologies in environmental protection.

On the Day of the ecologist in the Presidential Administration at the initiative of the Vernadsky Nongovernmental Ecological Foundation there was held a solemn meeting at which the participants of the National Environmental Clean-up Campaign Green Spring — 2018 were awarded, as well as the winners of the international competition Ecological Culture. Peace and harmony were determined. Diplomas for active participation in Green Spring — 2018 eco-campaign were awarded to nine subsidiaries of PJSC Gazprom: OOO Gazprom transgaz Moscow, OOO Gazprom transgaz Saint Petersburg, OOO Gazprom transgaz Ukhta, OAO Gazprom kosmicheskiye sistemy, OOO Gazprom energo, OOO Gazprom transgaz Stavropol, OOO Gazprom transgaz Tomsk, OAO Gazprom transgaz Belarus, and OOO Gazprom transgaz Tchaikovsky.

Winners of the international competition for environmental projects were identified in seven categories. In Environmental education and training category the winner was OOO Gazprom dobycha Urengoy, in Media and ecological culture category the first place was awarded to OOO Gazprom dobycha Nadym, and in Social initiatives aimed at environmental culture development the best participant was OOO Gazprom transgaz Tomsk. In Preservation of natural systems and biodiversity nomination well-deserved reward was received by the employees of the Center of ecological safety, energy efficiency, occupational safety and health of OOO Gazprom VNIIGAZ. A worthy place of a prize winner in Ecological culture in industry and power engineering nomination has been taken by OOO Gazprom transgaz Nizhny Novgorod.

In September, across the country there was held ecological campaign Green Russia — 2018 which already became a tradition; its purpose is to draw attention to environmental problems, improve the environment and increase ecological culture of the population.

More than 2000 employees of OOO Gazprom transgaz Nizhny Novgorod supported this action. In all the regions of the company's business, gas industry workers carried out cleaning of territories adjacent to GTS facilities, of coastal areas of rivers and lakes, of parks and gardens. As a result the area of more than 75 ha was cleaned; more than 124 tonnes of waste was removed to a specialized landfill.

Employees of branches of OOO Gazprom transgaz Tomsk gathered about 300 kg of garbage in the forest next to the Aldan River during the campaign. Environmental activities were also held on the shores of Lake Baikal, in the Altai Mountains, on the ways to the volcanoes of Kamchatka, in the Khabarovsk region — Amur tiger habitat, and other protected areas of the country.

During eco-campaign Green Russia — 2018 OOO Gazprom dobycha Orenburg carried out cleaning of the interior and surrounding area of production facilities, gas workers cleaned up the park and public garden in Rostoshi district, at the shores of Chernaya river and at three natural water sources in the Orenburg and Perevolotsky Regions. There was held a clean-up campaign in the territory of the sponsored educational institutions, and sport complexes. In total the campaign was attended by about 2,200 employees; an area of 78 ha was cleaned; more than 80 tonnes of garbage removed; nearly 1.5 thousand trees and shrubs planted; about 90 flower beds established.

Employees of 16 branches of OOO Gazprom dobycha Urengoy actively participated in cleaning kindergartens of Preschool Facilities Directorate. It has also been put in order the territory at gas field number 1 in the Urengoy Gas Production Directorate, and on the territory of the central city hospital of Novy Urengoy trees were planted.

In May, the Vernadsky Nongovernmental Ecological Foundation and subsidiaries of PJSC Gazprom took part in the National campaign Let's bike it. This campaign is held under the auspices of the Ministry of Transport of the Russian Federation, and Bike Culture Development Project "Let's bike it!".

The campaign was supported by OOO Gazprom transgaz Yekaterinburg, OOO Gazprom transgaz Krasnodar, OOO Gazprom transgaz Moscow, OOO Gazprom transgaz Samara, OOO Gazprom transgaz Saratov, OOO Gazprom transgaz Stavropol, OOO Gazprom transgaz Tomsk, OOO Gazprom transgaz Ukhta, OOO Gazprom transgaz Tchaikovsky, OOO Gazprom transgaz Yugorsk, OOO Gazprom komplektatsiya, OOO Gazprom gazomotornoye Toplivo, and AO Gazprom promgaz.

On the day of the campaign the employees abandoned their private vehicles to draw public attention to the conservation of nature through the use of ecological modes of transport.

Besides, the campaign Let's bike it is an excellent tool for strengthening the corporate culture that allows companies to demonstrate environmental responsibility and modern approach to work.

OOO Gazprom transgaz Tchaikovsky was recognized the best organizer of the campaign among the subsidiaries and organizations of the Group.

National festival of energy saving #VmesteYarche was held from August to October in order to develop a culture of careful attitude to nature and the promotion of energy-efficient technologies.

Within the framework of the festival, branches of OOO Gazprom transgaz Tomsk in fourteen regions of presence organized excursions for pupils and students, held open lessons, conducted quizzes on the theme of sustainable use of natural resources and the application of energy efficient technologies in production and business activities of the company. A total of 37 events, which was attended by about 2,000 people, took part. For active participation and creative approach to the realization of the festival events the administration of the Tomsk region send letters of gratitude to the subsidiary companies.

During the energy saving festival, the employees of OOO Gazprom transgaz Ukhta held open lessons for pupils

and students devoted to topic Methane is a fuel of the future, held the traditional Hand over battery — save the hedgehog event. Children in kindergartens had the possibility to talk about energy saving at home; children's matinee Introduction to EnergyFriends was organized. An important area was the popularization of fuel and energy complex (FEC) professions, which opened to the younger generation the opportunities for self-realization. Excursions to the production facilities for students held in each region where the company carries out its business; one of the most popular was a series of excursions to industrial sites of Ukhta branch offices. In total, the administration and branch offices carried out more than 100 campaigns that support the theme of energy saving and promote FEC professions.

OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk organized master classes on making souvenirs from secondary energy resources for students.

Gas workers of OOO Gazprom transgaz Tchaikovsky in the city of Tchaikovsky prepared an interactive platform for students, which were provided with information on energy saving technologies used in gas transportation company, as well as on the equipment, operated using GMF.

OOO Gazprom dobycha Noyabrsk organized a cognitive quiz on energy saving theme for primary school pupils of Noyabrsk. Old lighting fixtures in schools were replaced with energy-efficient sources. In addition, about 70 energy-saving light sources of different types were additionally transferred to different schools. They were all gathered during the campaign held at the company's offices.

The branch of OOO Gazprom transgaz Stavropol in the Stavropol Territory, Astrakhan and North Ossetia — Alania held open lessons in schools, where children learned about the history of the use of incandescent light bulbs and energy saving technologies used in energy companies. In kindergartens company employees held classes on the subject of careful attitude to natural resources. The structural units of the OOO Gazprom transgaz Stavropol distributed promotional materials about energy saving regulations and made themed posters.

On one of the main pedestrian streets of Saratov, OOO Gazprom transgaz Saratov organized Boulevard of modern energy-efficient technologies, where leading Saratov enterprises were able to demonstrate their achievements in energy efficiency. During the event, employees of the company told the residents about the latest energy-saving technologies, which are used in the gas transportation companies, as well as shared experiences on saving energy in everyday life.

Only during the first half of 2018, energy-saving technologies employed by OOO Gazprom transgaz Saratov allowed to save more than 22 mmcm of gas and over 23 mmkWh of electricity.

National Festival of energy saving #VmesteYarche in Volgograd was held at Victory Park territory. OOO Gazprom transgaz Volgograd prepared a rich, interactive program that introduced the guests of the festival with its activities, energy-saving technologies and energy-efficient equipment used in the enterprise, with all the campaigns under energy saving program which is already being implemented by the company for ten years. Also, contests, games, quests, and other recreational activities were organized.

Glossary of Main Terms and Abbreviations

Name	Definition
Adverse environmental impact	Impact of economic and other activity, the consequences of which lead to adverse changes in environmental quality
APG (Associated petroleum gas)	Mixture of gases and vaporous hydrocarbon and non-hydrocarbon components emitted from oil wells and in-place oil in the process of its separation
BAT	Best Available Technology
Biodiversity (biological diversity)	Diversity of living organisms in all spheres including onshore, marine and other water ecosystems and ecological complexes forming them
BREF	Iinformation Technical Reference Books
CEP	Complex Environmental Permints
CNG	Compressed Natural Gas
CNG FS	Compressed natural gas filling station
CS	Compressed Station
CS mobil	Mobile Compressed Station
Ecological monitoring (environmental monitoring)	Comprehensive system of environment monitoring, evaluation and forecast of environmental changes under the impact of natural and man-caused factors
Energy saving	Implementation of legal, management, scientific, production, technical and economic measures aimed at efficient (rational) use of energy resources and involvement of renewable energy sources into economic turnover. Energy saving is an important task for natural resources preservation
Environment	System of nature components, natural, natural and man-made, as well as man-made objects
Environmental audit	Independent comprehensive documented assessment of compliance of an economic or other entity with requirements, including standards and regulatory documents, in the environmental protection sphere, requirements of international standards and preparation of recommendations for such activity improvement
Environmental damage	Negative change in environment caused by pollution which resulted in degradation of natural ecosystems and depletion of natural resources
EIA (Environmental impact assessment)	Type of activity aimed at detection, analysis and accounting of direct, indirect and other environmental impact consequences of planned economic and other activity to make a decision on possibility or impossibility of its implementation
Environmental management	Part of the general corporate management system with a clear organization structure and aimed at reaching the objectives indicated in the environmental policy by means of environmental programs implementation
EMS	Environmental management system
Environmental monitoring (ecological monitoring)	Comprehensive system of environment monitoring, evaluation and forecast of environmental changes under the impact of natural and man-caused factors
Environmental safety	State of protection of the environment and vital interests of humans from possible adverse impact of economic and other activity, natural and industrial emergencies, and their consequences
Environmental surveillance	System of measures aimed at prevention, detection and elimination of legislation violation in the environmental protection sphere, provision of fulfillment by entities of economic or other activity of the requirements, including norms and regulatory documents, in the environmental protection sphere
Environmental quality	Environmental condition characterized by physical, chemical, biological and other parameters and/or their combination
Environmental protection	Activity aimed at preservation and recovery of the environment, rational use and reproduction of natural resources, prevention of the adverse environmental impact of economic and other activity and liquidation of its consequences (hereinafter environment protection activity)
FER	Fuel and energy resources
GCF	Gas condensate field
GDS	Gas distribution station
Global warming potential (GWP)	Value characterizing heating effect of a greenhouse gas compared to the effect of carbon dioxide molecule
GNG	Greenhouse gas
GPU	Gas pumping unit
Greenhouse gases (GHG)	Gases that presumably cause the global greenhouse effect. The main greenhouse gases in the sequence of their estimated impact on the Earth's heat balance include water steam, carbon dioxide, methane, ozone, sulphurylfluoride, halocarbons and nitrogen oxide
IMS	Information Management System
LNG	Liquefied natural gas
LPUMG	Line production department of main gas pipelines

Name	Definition
Natural complex	Complex of natural objects functionally and naturally related to each other, united by geographic and other corresponding characteristics
Natural object	Natural environmental system, natural landscape and their components, which preserved their natural properties
Natural object	Natural environmental system, natural landscape and their components, which preserved their natural propertie
Natural resources	Environmental components, natural, natural and man-made objects which are or can be involved in economic or other activities as energy sources, manufacturing and consumption as well as have consumer value
NGV	Natural gas vehicle (NGV) is an alternative fuel vehicle that uses compressed natural gas or liquefied natural gas as a cleaner alternative to other fossil fuels
OEC	Operation environmental control
OEM	Operation environmental monitoring
OGCF	Oil, gas & condensate field
Pollutant	Substance or a mixture of substances that occur in amounts and/or concentrations exceeding specified limits for exposure to chemicals, radiation sources, other substances and microorganisms, and affect the environment negatively
R&D	Research and development
Roshydromet	Russian Federal Service for Hydrometeorology and Environmental Monitoring
SPNA	Specially protected natural areas
STC	Scientific and technical cooperation
UAS	Unmanned aircraft system
UGS	Underground gas storage facility

Russian Business Structures

Name	Definition
AO	Joint Stock Company
OAO	Open Joint Stock Company
OOO	Limited Liability Company
PAO	Public Joint Stock Company
ZAO	Closed Joint Stock Company

Measurement of Units

Unit	Definition
cm	cubic meter
Gcal	billion calories
ha	hectare (ten thousand square meters)
mm	million
mcm	thousand cubic meters
mcmd	thousand cubic meters per day
mmcm	million cubic meters
bcm	billion cubic meters
t	tonne
kilotonne	thousand tonnes
t c.e.	tonne of coal equivalent
W	watt
Wh	watt hour
kW	thousand watts
MW	million watts

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Appendix

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Independent Practitioner's Limited Assurance Report relating to the information on greenhouse gas emissions from the main activities of PJSC Gazprom (production, transportation, processing and underground gas storage) in 2018

To the Management of PJSC Gazprom

Introduction

We were engaged by the Management of PJSC Gazprom (hereinafter – the "Management") to undertake a limited assurance engagement relating to the information on greenhouse gas emissions from the main activities of PJSC Gazprom (production, transportation, processing and underground gas storage) in 2018 (hereinafter – the "information on GHG emissions from the main activities") with a conclusion providing limited assurance that nothing has come to our attention that causes us to believe that the Management Statement that the information on GHG emissions from the main activities is prepared, in all material respects, in accordance with the applicable criteria (set out below in section "Applicable Criteria" of this report) and is free from material misstatement, is not fairly stated.

The information on GHG emissions from the main activities is presented in the table "Dynamics of greenhouse gas emissions from main activities of PJSC Gazprom, 2014–2018, mm tonnes of CO_2-equivalent", table "Methane emissions from main activities of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent", table "Indirect energy GHG emissions from main activities of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent" in section "Greenhouse gas emissions" of the PJSC Gazprom Environmental Report 2018 (hereinafter – the "Report"). Our conclusion does not apply to any other information provided in the Report.

Management's Responsibility

Management is responsible for the preparation of the information on GHG emissions from the main activities in accordance with the applicable criteria (set out below in section "Applicable Criteria" of this report) and for the information contained therein.

This responsibility includes designing, implementing and maintaining the system of internal control relevant to the preparation of the information on GHG emissions from the main activities that is free from material misstatement, whether due to fraud or error. This responsibility also includes: selecting the applicable criteria, selecting and applying relevant GHG quantification methodologies and GHG reporting policies, preventing and detecting fraud, identification of and compliance with legal requirements applicable to

Examined entity: PJSC Gazprom

Entered in the Unified State Register of Legal Entities, 1027700070518

Practitioner: JSC "KPMG", a company incorporated under the Laws of the Russian Federation, a member firm of the KPMG network of independent firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

Entered in the Unified State Register of Legal Entities, № 1027700125628.

Member of the Self-Regulating Organization of Auditors Russian Union of Auditors and has Primary Registration Number of the Entry in the State Register of Auditors and Audit Firms 11603053203.

PJSC Gazprom, developing assumptions and estimates, which are reasonable in the current circumstances, maintaining sufficient documentation with regard to the information on GHG emissions from the main activities.

Our Responsibilities and Applicable Standards

Our responsibility is to express a limited assurance conclusion on the Management Statement relating to the information on GHG emissions from the main activities based on the procedures we have performed and the evidence obtained. We conducted our limited assurance engagement in accordance with International Standard on Assurance Engagements 3410 *Assurance Engagements on Greenhouse Gas Statements*, issued by the International Auditing and Assurance Standards Board. That Standard requires that we plan and perform our procedures to obtain a meaningful level of assurance about whether the Management Statement that the information on GHG emissions from the main activities has been prepared, in all material respects, in accordance with the applicable criteria (set out in section "Applicable Criteria" of this report) and is free from material misstatement, is fairly stated.

Our Independence and Quality Control

We have complied with the independence and ethical requirements established by the *Rules on Independence of Auditors and Audit Firms* and the *Code of Professional Ethics for Auditors* approved by the Audit Council of the Ministry of Finance of the Russian Federation and by the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants, which are based on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

We apply the *International Standard on Quality Control* 1 and apply accordingly a system of quality control that includes documented policies and procedures providing compliance with ethical principles, requirements of professional standards and applicable legislation.

Procedures Performed

A limited assurance engagement undertaken in accordance with ISAE 3410 involves assessing the suitability in the circumstances of PJSC Gazprom's use of the applicable criteria (set out below in section "Applicable Criteria" of this report) as the basis for the preparation of the information on GHG emissions from the main activities, assessing the risks of material misstatement of the above mentioned information whether due to fraud or error, responding to the assessed risks as required in the specific circumstances, and evaluating the overall presentation of the information on GHG emissions from the main activities. The nature, timing and extent of procedures selected is a matter of our professional judgment, including the assessment of the risk of material misstatement in the preparation of the information on GHG emissions from the main activities, whether due to fraud or error, our understanding of the activities of PJSC Gazprom, as well as other circumstances of the engagement.

In making this risk assessment, we considered the internal control relevant to the preparation of the information on GHG emissions from the main activities, in order to design procedures that are appropriate in the circumstances, but not for the purposes of expressing a conclusion as to the effectiveness of the internal control.

Our engagement also included: assessing the appropriateness of the particular GHG emissions included in the information on GHG emissions from the main activities; the

suitability of the applicable criteria (set out below in section "Applicable Criteria" of this report) used in preparing the information on GHG emissions from the main activities in the circumstances of the engagement; evaluating the appropriateness of the GHG quantification methods, policies and procedures used in the preparation of the information on GHG emissions from the main activities and the reasonableness of estimates made by Management.

The procedures we performed were based on our professional judgment and included inquiries, observation of the processes performed, inspection of documents, analytical procedures, assessment of the appropriateness of the GHG quantification methods, as well as reconciliation of information and data with the respective underlying records.

The procedures we developed based on the risk assessment included, but were not limited to, the following:

- Assessment of compliance with applicable criteria (presented in the "Applicable criteria" section of this report) of the information on GHG emissions from the main activities;
- Assessment of the reasonableness and applicability of key assumptions;
- Inquiries to gain an understanding of the conditions affecting the information on GHG emissions from the main activities;
- Interviewing representatives of the Management and responsible employees of PJSC Gazprom regarding the internal procedures regulating the collection of data used in the preparation of the information on GHG emissions from the main activities;
- Inquiries and analysis of information to assess the completeness of identifying the emission sources, data collection methods, assessment of input data and relevant assumptions applicable to the conditions of the engagement;
- Corroboration of the data used in the preparation of the information on GHG emissions from the main activities with data from available specialized and non-specialized sources, for the purpose of assessment of its completeness, accuracy and consistency;
- Recalculation of quantitative data and inspection of underlying documentation.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Accordingly, we do not express a reasonable assurance opinion about whether the information on GHG emissions from the main activities is prepared, in all material respects, in accordance with the applicable criteria (set out below in section "Applicable Criteria" of this report).

Applicable Criteria

Applicable criteria comprise relevant requirements, contained in the following documents:

- International Standard ISO 14064-1-2006[1] (GOST R ISO 14064-1-2007[2]): Greenhouse gases – Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals;
- Methodological Guidance on the Quantification of Greenhouse Gas Emissions by Entities Engaging in Business and Other Activities in the Russian Federation (approved by Order No. 300 of the Ministry of Natural Resources and the Environment of Russia dated 30 June 2015)[3]
- Methodological Guidance on the Quantification of Energy Indirect Greenhouse Gas Emissions (approved by Order No. 330 of the Ministry of Natural Resources and the Environment of Russia dated 29 June 2017[4].

Management Statement

Management states that the following information on GHG emissions from the main activities included in section "Greenhouse gas emissions" of the attached PJSC Gazprom Environmental Report for 2018 presented in the tables

"Dynamics of greenhouse gas emissions from main activities of PJSC Gazprom, 2014–2018, mm tonnes of CO_2-equivalent"

— Production	**14.39** million tonnes of CO_2-equivalent
— Transportation	**97.52** million tonnes of CO_2-equivalent
— Processing	**5.71** million tonnes of CO_2-equivalent
— Underground gas storage	**1.44** million tonnes of CO_2-equivalent

"Methane emissions from main activities of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent"

— Production	**1.24** million tonnes of CO_2-equivalent
— Transportation	**30.74** million tonnes of CO_2-equivalent
— Processing	**0.03** million tonnes of CO_2-equivalent
— Underground gas storage	**0.47** million tonnes of CO_2-equivalent

"Indirect energy GHG emissions from main activities of PJSC Gazprom, 2018, mm tonnes of CO_2-equivalent"

— Production	**0.51** million tonnes of CO_2-equivalent
— Transportation	**4.62** million tonnes of CO_2-equivalent
— Processing	**2.98** million tonnes of CO_2-equivalent
— Underground gas storage	**0.10** million tonnes of CO_2-equivalent

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[1] https://www.iso.org/standard/38381.html

[2] http://docs.cntd.ru/document/gost-r-iso-14064-1-2007

[3] http://docs.cntd.ru/document/420287801

[4] http://docs.cntd.ru/document/456079014

was prepared, in all material respects, in accordance with the applicable criteria (set out in section "Applicable Criteria" of this report) and is free from material misstatement.

Inherent Limitations

GHG quantification is subject to inherent uncertainty because of the incomplete scientific knowledge used to determine emission factors and the values needed to combine emissions of different gases.

Conclusion

Our conclusion has been formed on the basis of, and is subject to, the matters outlined in this report. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Based on the procedures that we have performed and the evidence that we have obtained, nothing has come to our attention that causes us to believe that the Management Statement that the information on GHG emissions from the main activities has been prepared, in all material respects, in accordance with the applicable criteria (set out in section "Applicable Criteria" of this report) and is free from material misstatement, is not fairly stated.

Restriction of Use of Our Report

Our limited assurance report relating to the information on GHG emissions from the main activities in 2018 has been prepared for the Management solely for the purposes of providing such information by PJSC Gazprom in the Report and does not imply its use for any other purposes or in any other context.

Misiura Egor Ivanovich

Director JSC "KPMG"

Moscow, Russia

16th May 2019

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