Growth at Scale

Gazprom Environmental Report 2020

Gazprom Environmental Report 2020

Message by Mr. Aksyutin

Dear readers!

I am pleased to welcome you from the pages of our annual Environmental Report.

The year 2020 demonstrated Gazprom's ability to overcome new obstacles, behave in a sustainable manner and progress in alignment with energy stability principles through fulfilling its environmental obligations.

Use of natural gas is an effective, simple and rational way to preserve favorable environment.

We are upgrading energy performance of our activities incrementally. Measures taken in 2020 helped to save approximately 4 million t c.e., and 3.3 billion cubic meters of the main resource – natural gas – for own technological needs, including prevention of over 1.7 billion cubic meters of gas venting into the atmosphere. Consequently, PJSC Gazprom provided 22% decrease in methane emissions, as compared to 2019. Today, our gas supplies have the lowest carbon footprint along the whole production chain, which is in line with the best global practices.

The Gazprom Group is consistently advancing its ecological performance. As opposed to the previous reporting period, the Gazprom Group reduced water consumption by 17.5%, pollutant emissions by 14.6%, greenhouse gas emissions by 11%, waste generation by 3.2%. The year 2020 saw achievement of all set Corporate Environmental Goals. Signing of 2021-2025 Gas Supply and Gasification Expansion Programs with 67 constituent entities of the Russian Federation marked significant contribution of PJSC Gazprom into achievement of Sustainable Development Goals.

During the last five years, we invested over RUB 120 bln in environment protection. In 2020, Gazprom initiated and implemented more than 2,200 voluntary nature conservation measures in Russia and abroad, including tree planting, settlements improvement, landscaping, and rehabilitation of water bodies.

The Gazprom Group companies have been routinely ranked high in environmental ratings. In 2020, PJSC Gazprom and PJSC Gazprom Neft were acknowledged the best Russian oil and gas companies by the international climate CDP scoring. The Company takes actions in the hydrogen economy to strengthen capacity of natural gas in order to accomplish the Paris Agreement on climate change and improve its competitiveness on the global markets.

Preservation of the favorable environment for today's and future generations is a top priority for Gazprom, which keeps guard over energy security at the forefront of the current-day challenges.

Oleg E. Aksyutin
Deputy Chairman of the Management Committee –
Head of Department,
Head of PJSC Gazprom Coordination Committee
for Sustainable Resource Management

Introduction

The present Environmental Report (henceforth — the Report) has been prepared in accordance with PJSC Gazprom's Management Committee Resolution on Organization and Holding of the Annual General PJSC Gazprom's Shareholders Meeting.

The Report uses annual statistical reporting data on environmental protection (EP) and energy efficiency collected by the corporate information & management system along with other content from nature protection reports of PJSC Gazprom's subsidiaries and organizations, corporate websites, Russian and international publications by the Group's companies.

The Report highlights EP and energy efficiency activities of the Gazprom Group companies in 2020, including actual impact on air, water and land resources, waste management, greenhouse gas (GHG) emissions, and measures undertaken to mitigate such an impact. The Report specifies the issues of EP management and financing arrangements, research and technical upgrade of the industrial complex aimed at enhancing environmental safety of the Gazprom Group's facilities.

Data are provided in general for the Gazprom Group, PJSC Gazprom (including five-year retrospective data) and for some companies from the Group that significantly contribute to reviewed aspects of activities.

The terms PJSC Gazprom and the Company used in the Report refer to the parent company of the Gazprom Group, Public Joint Stock Company Gazprom and its 100% owned subsidiaries and organizations involved in hydrocarbons exploration, production, transmission, underground storage, processing and maintenance of the 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 nedra
OOO Gazprom transgaz Volgograd
OOO Gazprom transgaz Ekaterinburg
OOO Gazprom transgaz Kazan
OOO Gazprom transgaz Krasnodar
OOO Gazprom transgaz Makhachkala
OOO Gazprom transgaz Moscow
OOO Gazprom transgaz Nizhny Novgorod
OOO Gazprom transgaz Samara
OOO Gazprom transgaz Saint-Petersburg
OOO Gazprom transgaz Saratov
OOO Gazprom transgaz Stavropol
OOO Gazprom transgaz Surgut
OOO Gazprom transgaz Tomsk
OOO Gazprom transgaz Ufa
OOO Gazprom transgaz Ukhta
OOO Gazprom transgaz Tchaikovsky
OOO Gazprom transgaz Yugorsk
OOO Gazprom transgaz Grozny
OOO Gazprom UGS
OOO Gazprom pererabotka
OOO Novy Urengoy gas chemical complex
OOO Gazprom energo
OOO Gazprom tsentrremont
OOO Gazprom geotekhnologii
OOO Gazprom gazomotornoye toplivo
OOO Gazprom avia Aviation Company
OOO Gazpromtrans
OOO Gazprom flot
OOO Gazprom invest
OOO Gazprom sotsinvest
OAO Gazpromtrubinvest

The terms Gazprom Neft Group and Gazprom Neft refer to PAO Gazprom Neft and its subsidiaries.

The term Gazprom neftekhim Salavat refers to OOO Gazprom neftekhim Salavat and its subsidiaries.

The term Gazprom energoholding refers to OOO Gazprom energoholding and its subsidiaries (PAO Mosenergo, PAO MOEK, PAO OGK-2, PAO TGK-1, AO Gazprom teploenergo).

The Gazprom Group, Gazprom or the Group stand for PJSC Gazprom (with all listed above 100% owned subsidiaries and organizations) and the following companies:

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

as well as PJSC Gazprom's subsidiaries operating abroad:
OAO Gazprom transgaz Belarus
ZAO Gazprom Armenia
OsOO Gazprom Kyrgyzstan
Gazprom EP International B.V.

The Gazprom Group's gas business companies comprise PJSC Gazprom (and all its 100% owned subsidiaries and organizations involved in hydrocarbons production, transmission, underground storage and processing, as well as UGSS maintenance), OOO Gazprom mezhregiongaz, Vostokgazprom Group (AO Gazprom dobycha Tomsk), AO Daltransgaz, Sakhalin Energy Investment Company Ltd, OAO Severneftegazprom, ZAO Purgaz, PAO Spetsgazavtotrans.

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

Environmental 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 environment for future generations.

PJSC Gazprom's Environmental Policy approved by PJSC Gazprom Management Committee's Decree No. 21 as of 25 May 2015 is a fundamental document of the Environmental Management System (EMS).

In 1995, PJSC Gazprom adopted its Environmental Policy and became the first Russian oil and gas company to declare voluntary environmental responsibility.

The Company's Environmental Policy features current environmental protection, energy efficiency and climate impact mitigation trends. The Environmental Policy stipulates obligations and instruments for ensuring environmental safety, specifically during development of hydrocarbon fields on the continental shelf and in the Arctic zone of the Russian Federation, and mitigating negative environmental impact risks, including highly vulnerable natural sites and sites of primary protection and preservation concern. Internal staff and external stakeholders, first of all contractors and outside suppliers, are informed on PJSC Gazprom's Environmental Policy provisions.

Since 2011, PJSC Gazprom has adopted a certified EMS designed to implement the Environmental Policy, set and pursue environmental goals, manage PJSC Gazprom's environmental aspects, fulfill assumed obligations, and address risks and opportunities. Re-certification audit conducted in December 2020 acknowledged PJSC Gazprom's EMS conformance to ISO 14001:2015. The issued certificate of conformity is valid up to December 2023.

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The Gazprom Management Committee is the top governing body in the Environmental Management System.

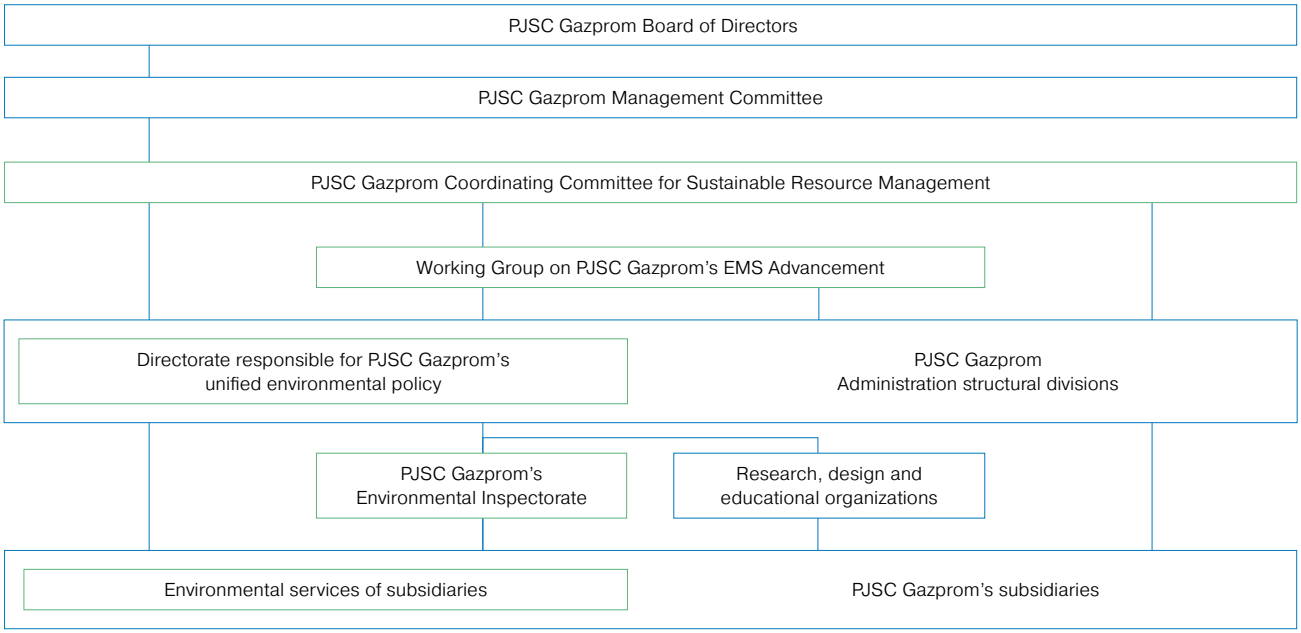
PJSC Gazprom established the Coordinating Committee for Sustainable Resource Management with intention to advance corporate management system in energy efficiency, environmental protection and sustainable development.

The Committee comprises the majority of the Management Committee members and the heads of PJSC Gazprom's Administration structural divisions.

Teamwork of PJSC Gazprom's subsidiaries and organizations on environmental protection activities, implementation of Coordinating Committee's and PJSC Gazprom's executive resolutions is arranged by the Directorate that is in charge of the unified environmental policy and arrangements aimed at improvement of Gazprom's Group energy efficiency.

A permanent Working Group on PJSC Gazprom's EMS advancement has been established to administer comprehensive approach and coordinate the work of PJSC Gazprom's divisions.

The structure of PJSC Gazprom's Environmental Management System



Scope of PJSC Gazprom's EMS application is specified in the Company's standard STO Gazprom 12-0-022-2017 Environmental Management System. Requirements and application guide. It is applied to management of subsidiaries that perform key activities, including:

- natural gas and gas condensate production (on the continental shelf as well)
- gas and gas condensate processing
- gas and gas condensate transportation
- underground gas storage
- geological exploration (GE)
- well construction, stimulation and repair, including offshore
- construction and operation of offshore drilling rigs, dedicated fleet and other floating equipment
- development and operation of offshore fields, onshore supply bases and port infrastructure
- power and water supply and operation of UGSS power equipment
- investment project management for UGSS facilities construction

PJSC Gazprom's EMS applies to structural divisions of Administration, 37 subsidiaries with 100% ownership involved in key activities, and PJSC Gazprom's Environmental Inspectorate.

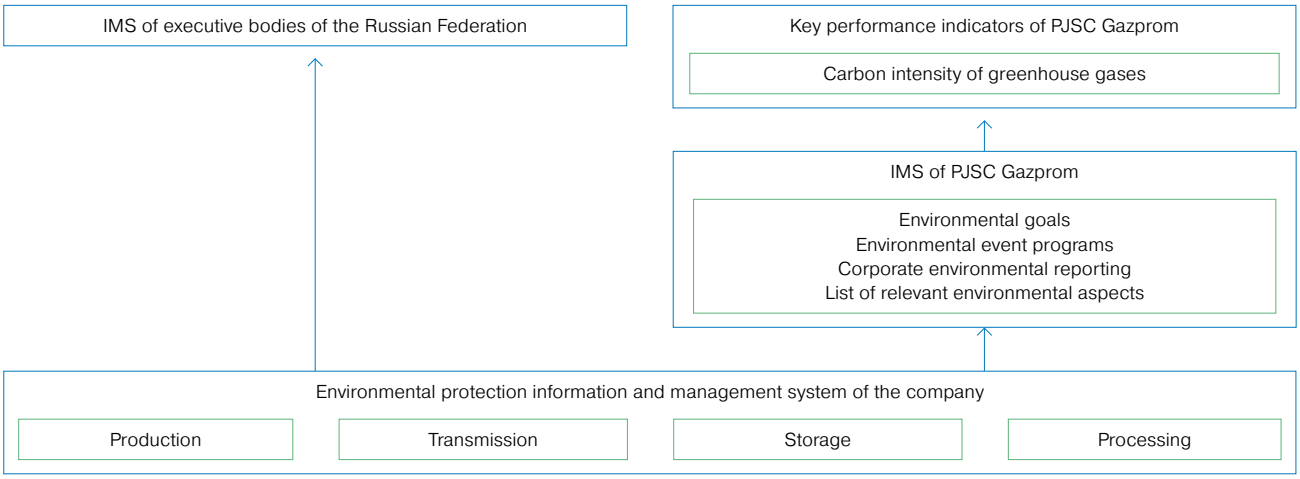
The Gazprom Group companies outside the boundaries of EMS application have successfully adopted and put into operation EMSs, the majority of which is certified for conformance to ISO 14001:2015 requirements. Unique EMS of those companies takes into account specific features of their activities.

The corporate environmental impact assessment and environmental control (audit) are effectively employed at PJSC Gazprom as voluntary environmental responsibility instruments. Environmentally-oriented studies, front-end engineering and design performed by R&D organizations by the order of Gazprom are an integral part of the management system.

For the first time ever in Russia, PJSC Gazprom actualized the single software suit to improve EMS and boost executive decision-making efficiency. The suit comprises the whole sequence of environment protection activities at vertically-integrated company from collection and processing of industry facilities data to preparation of summary report forms submitted to corporate and state systems. The software suit has been developed on the basis of the Russian 1C within the scope of information management system development for all key activities of PJSC Gazprom.

In 2020, the Company's information & management system Environmental Management was put into commercial operation in 22 subsidiaries of PJSC Gazprom in charge for production, transmission, underground storage and processing of natural gas. This measure allowed for minimizing costs for collection, processing and storage of data, EMS maintenance, speeding up report making and monitoring of PJSC Gazprom's environmental key performance indicators.

PJSC Gazprom Information and Management System Environmental Management



Environmental training

Continuous advancement of environmental knowledge and corporate culture are prerequisites for strong environmental management.

Since 1995, Gazprom Corporate Institute has been the leading educational establishment for continuous vocational education of PJSC Gazprom's personnel largely contributing into the Company's development. A multi-level corporate training system of the Institute encompasses all groups of personnel from young professionals to top management pool.

In 2020, the Corporate Institute carried out several educational projects to advance environmental education.

Managers and new employees of PJSC Gazprom obtained basic knowledge on the environmental management system and corporate environmental policy during the introductory training. Managers and experts of environmental services at subsidiaries completed training under the following programs:

— Development and implementation of the environmental management system based on ISO 14001:2015 requirements at gas industry enterprises, internal audit
— Protection of atmospheric air
— Professional work in the system "Ecology. 1C-KSU. Environmental protection"
— Environmental risk management in oil and gas industry
— Relevant requirements and environmental safety issues for Gazprom's Group companies
— The best available techniques and integrated environmental permits

The following courses on environmental protection have been delivered to personnel within the scope of professional development programs:

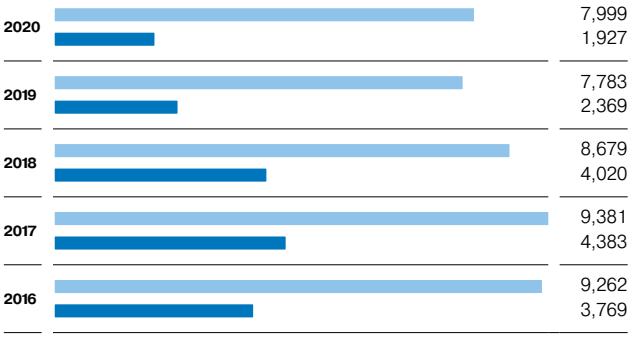
— Basic principles for environmental protection during offshore oil and gas field development under the Offshore Drilling and Operation of Oil and Gas Wells Program
— Environmental protection for construction project designers under Front-End Engineering and Design for the Capital Structures Skill Development Program
— Environmental management in PJSC Gazprom under PJSC Gazprom – the large industrial and financial complex professional development program
— Specifics of design documentation environmental review under professional training program of PJSC Gazprom's Chief Project Engineer School
— Environmental review under Gas Industry Projects Review professional training program

Throughout the year a considerable number of the Gazprom Group employees have completed the following training courses with the help of online learning technologies:

— Environmental protection in PJSC Gazprom
— Environmental management in PJSC Gazprom

In 2020, Gazprom's Corporate Institute and other educational institutions provided training and skill upgrade for 7,999 employees (1,927 of them in the EMS): 5,890 in PJSC Gazprom and its subsidiaries (1,882 of them in the EMS), 885 in Gazprom Neft Group (32 of them in the EMS), 472 in Gazprom energoholding.

Environmental training of the Gazprom Group personnel, 2016–2020, prs.



43,104 employees completed environmental training in the Gazprom Group in 2016–2020.

Contest of environmental services and ecologists of PJSC Gazprom subsidiaries

Every year, PJSC Gazprom (according to the Order No. 113/A as of 30 April 2008) holds a Contest among environmental services and ecologists of subsidiaries.

OOO Gazprom transgaz Yugorsk (A.G. Kulyashov, head of the department) won the 2020 Contest among environmental services following the results of the works carried out in 2019.

The following specialists were declared winners of The Best Gazprom Ecologist Contest:

— E.M. Kuskova – the leading engineer of the Environmental Protection and Energy Saving Department at OOO Gazprom transgaz Yugorsk
— G.A. Sokolova – the leading engineer of the Environmental Protection and Energy Saving Department at OOO Gazprom transgaz Ukhta
— L.V. Sharikhina – head of the Environmental Protection and Resource Saving Laboratory at the Corporate R&D Center for Environmental Safety and Energy Efficiency at OOO Gazprom VNIIGAZ

Environmental goals and programs

The Gazprom EMS sets environmental goals, develops and implements nature conservation measures on the basis of annually estimated crucial environmental aspects.

The following environmental aspects have been recognized as relevant and crucial for PJSC Gazprom: methane emissions during repair of gas trunklines (GTL), nitrogen oxides emissions during operation of compressor stations (CS), wastewater discharges and waste disposal, as well as environmental aspects related to implementation of investment projects.

PJSC Gazprom Corporate Environmental Goals for 2020-2022 achieved in 2020

№	Corporate environmental goal	Organizations covered by EMS	Benchmark value (2018)	Value 2020	Progress
1.	Reduction in GHG emissions during natural gas transmission, t CO_2e / bln m^3·km	All natural gas transmission subsidiaries	55.30	48.67	Achieved
2.	Reduction in nitrogen oxides emissions into the atmosphere during natural gas transmission, t / mln m^3	All natural gas transmission subsidiaries	4.23	4.07	Achieved
3.	Reduction in limit-exceeding discharge of pollutants into surface water bodies, %	All subsidiaries	5.29	0.34	Achieved
4.	Reduction in landfill share from the total share of circulating waste, %	All subsidiaries	38.28	15.22	Achieved
5.	Reduction in the share of subsidiaries that surpassed 5% payment for limit-exceeding environmental impact, %	All subsidiaries	35	5.41	Achieved

2020 saw achievement of all target values set by PJSC Gazprom Corporate Environmental Goals for 2020–2022 through implementation of measures envisaged by PJSC Gazprom's 2020–2024 Comprehensive Environmental Program. The Program stipulates a set of corporate measures to further enhance efficiency of environmental protection management, ensure ecological safety of activities, rational use of natural resources and energy saving in compliance with the state priority for innovative ecological development.

Environmental financing

In 2020, total expenditures of the Gazprom Group for environmental protection in the Russian Federation decreased by 7.7% as compared to 2019 due to reduction in investment expenditures.

Changes in the amount of Gazprom's Group investments into the capital stock made in environmental protection and rational use of natural resources as compared to 2019 can be explained by scheduled finish of construction works and optimization of construction expenditures.

Dynamics of the Gazprom Group expenditures for EP, 2016–2020, bln RUB

Fixed capital investments in EP and rational use of natural resources, 2016–2020, mln RUB

	2016	2017	2018	2019	2020
The Gazprom Group	**22,541.85**	**35,584.53**	**29,188.61**	**20,421.32**	**13,987.15**
Gas business companies	2,542.10	4,450.87	5,612.57	5,732.34	3,607.24
Including PJSC Gazprom	2,270.89	2,862.86	5,283.52	5,119.59	1,646.16
Gazprom Neft Group	14,275.03	27,101.67	19,028.63	13,015.56	7,796.72
Gazprom energoholding	368.31	579.20	1,374.55	305.69	729.41
Gazprom neftekhim Salavat	5,356.41	3,452.79	3,172.86	1,367.73	1,853.78

In 2020, investments of gas business companies decreased by 37% due to actual accomplishment of construction works and equipment installation at PJSC Gazprom's and OOO Gazprom mezhregiongaz facilities in accordance with the schedule, as well as due to changes in reclaimed lands acceptance procedure in compliance with the Government's Decree No.800 as of 10 July 2018 "On lands reclamation".

Gazprom Neft Group cut investments in EP and rational use of natural resources by 40%, which is due to cost optimization for construction of gas turbine power plant and assembling of the comprehensive gas treatment unit (CGTU) at Gazpromneft-Yamal facilities, and in-field flowlines and water pipelines of Gazpromneft-Noyabrskneftegaz covered by the upgrading program.

In the reporting year, the majority of Gazprom Neft investments was channeled in the atmospheric air protection (50%) under Gas Program for the Comprehensive Development at the Remote Field Group Project. Over 40% fixed capital investments were made in protection and rational use of water resources, in particular completion of BOV-7 circulation water system construction at Moscow Petroleum Refinery (PR), and construction of waste treatment facilities at Orenburg PR.

In 2020, Moscow PR cut to a fourth water consumption and the volume of waste waters, which was facilitated by the use of Biosphera innovative biological treatment facilities. Biosphera technologies developed by the Russian scientists guarantee up to 99.9% water treatment and ensure its repeated use in production. Construction of such a facility at Omsk PR is planned to be completed in 2021. Aggregate Gazprom Neft investments in these projects total over RUB 28 bln.

In 2020, investments were made into:

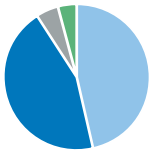
- protection and rational use of water resources — RUB 6,556.49 mln., or 47% of Group's investments, of which RUB 6,196.0 mln for construction of wastewater treatment facilities and circulation water systems
- air protection – RUB 6,153.70 mln (44%), including increase of APG use
- protection and rational use of lands – RUB 658.01 mln (5%), including land remediation – RUB 452.99 mln
- other environmental issues – RUB 618.95 mln (4%), including RUB 133.97 mln – fishery protection and reproduction, RUB 60.60 mln – waste recycling, treatment and disposal facilities and sites, RUB 26.70 mln – protection and rational use of forests, others – RUB 397.68 mln

In 2016–2020, the Gazprom Group invested RUB 121.7 bln into EP and rational use of natural resources.

In the reporting year, the Gazprom Group commissioned: 44 wastewater treatment facilities and structures with a total capacity of 17.0 thousand m^3/day; one unit for entrapment and neutralization of contaminants from off-gases with a capacity of 0.85 thousand m^3/hour, one circulation water system with a capacity of 240 thousand m^3/day; 7 units for waste neutralization and treatment with a capacity of 2.17 thousand t/year.

Structure of the Gazprom Group investments in EP and rational use of natural resources, 2020, %

Protection and rational use of water resourses	47
Air protection	44
Protection and rational use of lands	5
Protection and rational use of forests, fishery protection and reproduction, facilities and sites for waste treatment, neutralization and disposal, and other	4

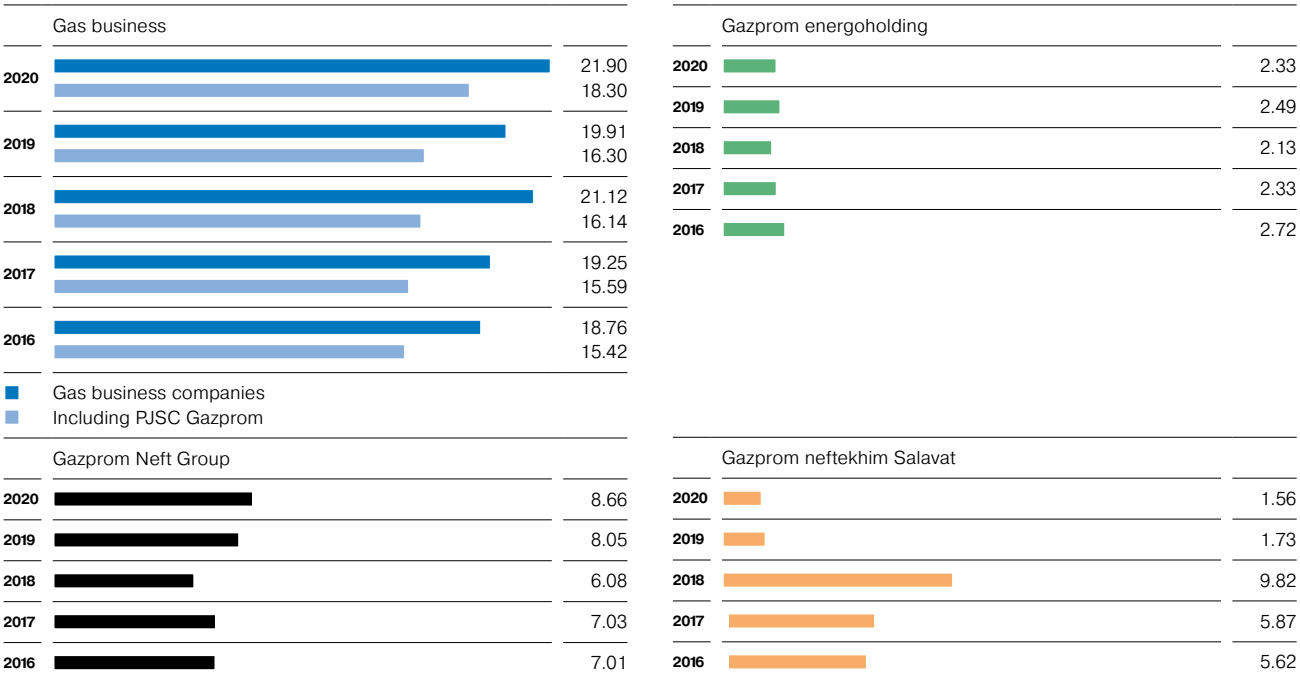


In 2020, current environmental protection expenditures of the Gazprom Group increased by 7%. It was due to escalation of nature protection service charges related to safe handling of drilling cuttings. Gas transmission subsidiaries as well saw significant rise in nature conservation service charges for air protection and prevention of climate change due to gas pumping by mobile compressor stations (MCS) to reduce pollutant emissions into the atmosphere.

Current EP expenditures, 2016–2020, mln RUB

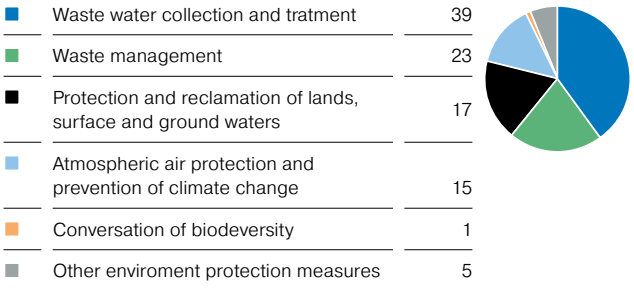
	2016	2017	2018	2019	2020
The Gazprom Group	**34,103.25**	**34,467.98**	**39,154.34**	**32,180.11**	**34,440.66**
Gas business companies	18,757.29	19,246.65	21,124.78	19,909.65	21,899.51
Including PJSC Gazprom	15,423.62	15,595.46	16,137.67	16,300.29	18,303.85
Gazprom Neft Group	7,005.29	7,027.52	6,080.42	8,053.81	8,655.44
Gazprom energoholding	2,717.38	2,325.85	2,132.36	2,486.13	2,329.58
Gazprom neftekhim Salavat	5,623.29	5,867.97	9,816.77	1,730.52	1,556.13
Including current (operating) EP expenditures					
The Gazprom Group	**17,189.74**	**18,219.75**	**22,638.04**	**14,964.57**	**13,979.38**
Gas business companies	9,539.58	10,083.97	10,527.75	10,431.86	10,472.04
Including PJSC Gazprom	9,273.12	9,707.42	10,104.97	9,933.54	9,906.52
Gazprom Neft Group	2,190.53	2,520.95	2,527.70	3,088.78	2,262.02
Gazprom energoholding	457.90	515.12	613.87	656.20	633.56
Gazprom neftekhim Salavat	5,001.73	5,099.71	8,968.72	787.73	611.76
Including current expenditures for EP services					
The Gazprom Group	**14,725.57**	**14,495.59**	**14,584.14**	**15,601.86**	**18,980.31**
Gas business companies	7,735.50	7,854.85	9,226.03	8,530.24	10,701.90
Including PJSC Gazprom	4,690.93	4,592.33	4,662.63	5,420.37	7,678.02
Gazprom Neft Group	4,685.08	4,387.15	3,225.50	4,673.04	5,984.36
Gazprom energoholding	1,843.82	1,683.04	1,378.41	1,606.82	1,508.39
Gazprom neftekhim Salavat	461.17	570.55	754.20	791.76	785.66
Including current expenditures for overhaul repair of basic production assets (EP aspects)					
The Gazprom Group	**2,187.94**	**1,752.64**	**1,932.16**	**1,613.68**	**1,480.97**
Gas business companies	1,482.21	1,307.83	1,371.01	947.55	725.57
Including PJSC Gazprom	1,459.57	1,295.71	1,370.07	946.38	719.31
Gazprom Neft Group	129.68	119.42	327.22	291.99	409.06
Gazprom energoholding	415.66	127.69	140.08	223.11	187.63
Gazprom neftekhim Salavat	160.38	197.70	93.85	151.03	158.71

Dynamics of current EP expenditures in the Gazprom Group, 2016–2020, bln RUB



Wastewater collection and treatment costs routinely prevail in the structure of the Gazprom Group current expenditures. In 2020, these costs amounted to RUB 13.36 bln, or 39%. The Gazprom Group spent RUB 5.67 bln on protection and reclamation of lands, surface and ground waters; RUB 5.25 bln on air protection and prevention of climate change; RUB 8.05 bln on waste treatment; RUB 0.37 bln on conservation of biodiversity and protection of natural areas. Expenditures on other environmental protection issues, such as noise, vibration and other physical impacts, radiation safety, research and development activities aimed at mitigation of negative impact on the environment, etc. totaled RUB 1.74 bln.

Structure of the Gazprom Group current environmental expenditures, 2020, %



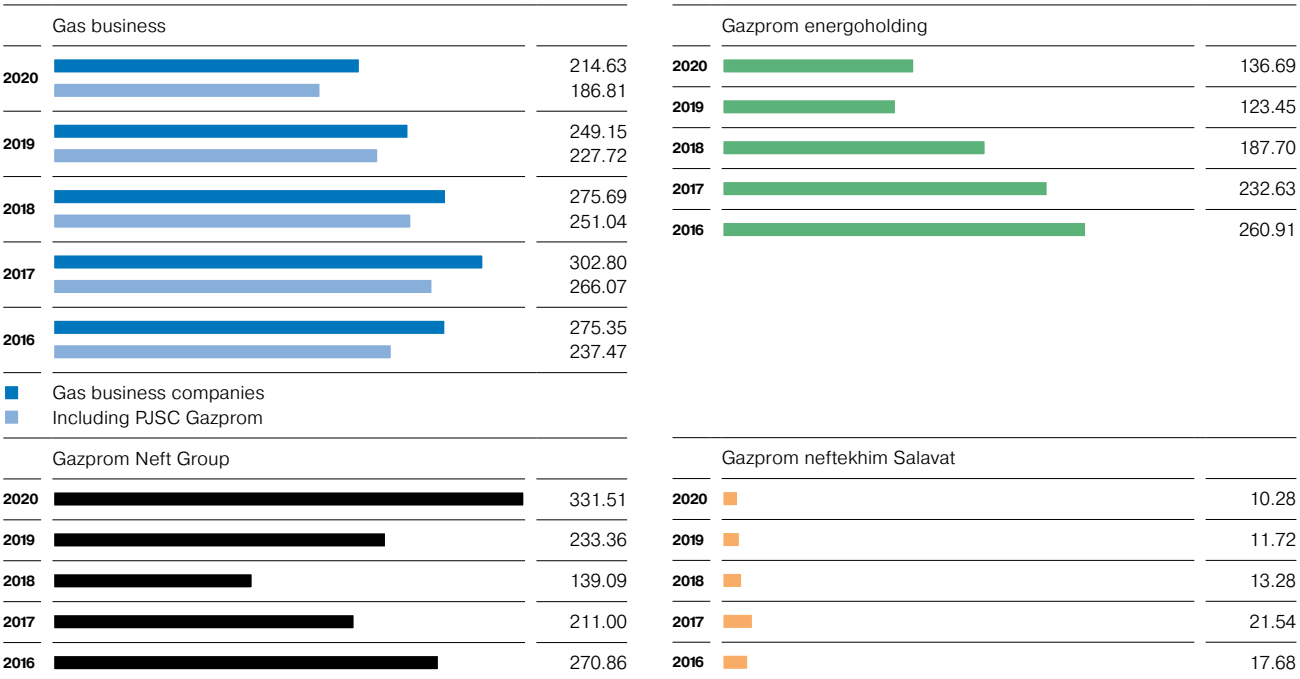
Environmental impact fee

In 2020, the Gazprom Group paid RUB 693.11 mln environmental impact fee to budgets of different levels.

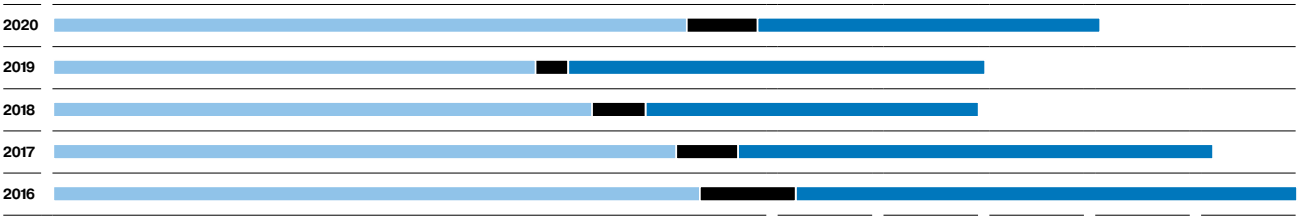
Environmental impact fee, 2016–2020, mln RUB

	2016	2017	2018	2019	2020
The Gazprom Group	**824.80**	**767.97**	**615.76**	**617.68**	**693.11**
Gas business companies	275.35	302.80	275.69	249.15	214.63
Including PJSC Gazprom	237.47	266.07	251.04	227.72	186.81
Gazprom Neft Group	270.86	211.00	139.09	233.36	331.51
Gazprom energoholding	260.91	232.63	187.70	123.45	136.69
Gazprom neftekhim Salavat	17.68	21.54	13.28	11.72	10.28

Environmental impact fee dynamics, the Gazprom Group, 2016–2020, mln RUB



Dynamics of the Gazprom Group environmental fees by types of negative impact on the environment, 2016–2020, mln RUB



	2016	2017	2018	2019	2020
Emission of pollutants into the atmosphere	427.38	412.39	356.94	318.78	419.35
Discharge of pollutants in water bodies	63.72	40.23	35.36	22.49	46.58
Industrial and consumption waste disposal	333.70	315.36	223.46	276.41	227.18

Fees for emission of pollutants into the atmosphere (61%), and for disposal of industrial and consumption waste (33%) prevailed in the structure of environmental impact fees in 2020.

Environmental limit-exceeding impact fee for the Gazprom Group in general amounted to 38%, in PJSC Gazprom — less than 5%, in Gazprom Neft Group — 62%, Gazprom energoholding — 33%, Gazprom neftekhim Salavat — 0.02%.

Increase in environmental fees in 2020 as compared to 2019 is mainly due to legislation amendments that came into force on the 1st of January 2020, and are related to application of the surcharge rates, as well as to untimely development of regulatory documentation, and permits and is not associated with additional environmental impact.

In general, 2016–2020 five-year period marked 21% environmental fee drop due to systematic environmental protection activities of PJSC Gazprom.

Environmental impact indicators

Atmospheric air impact

In 2020, gross pollutant emissions from stationary sources of the Gazprom Group totaled 2,445.66 thousand tons, that is by 14.6% lower than in 2019.

The Gazprom Group dynamics of gross pollutant emissions, 2016–2020, thousand tons

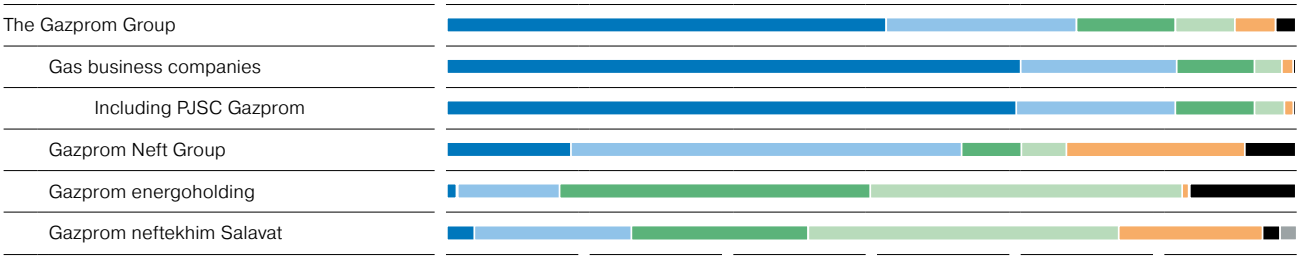
Share of the Gazprom Group companies in gross air emissions, 2020, %

Off-gas decontamination units captured and neutralized 1,214.22 thousand tons of pollutant emissions: 1,092.55 thousand tons at Gazprom energoholding, 112.26 thousand tons at PJSC Gazprom; 9.41 thousand tons at the other Group's companies.

Solid particles, predominantly solid fuel ash of power facilities, constitute 90% of the total weight of captured and neutralized pollutants, while 10% goes for gaseous and liquid substances (91% of which is sulphur dioxide).

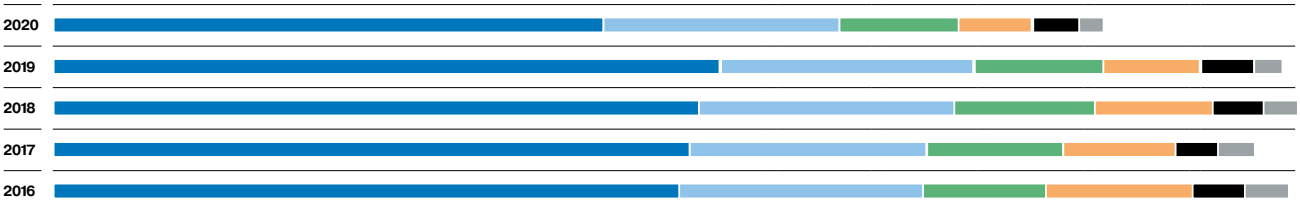
The structure of the Gazprom Group emissions is determined by specifics of operating activities of PJSC Gazprom and other gas business companies. Main pollutants in Gazprom's gross emissions comprise hydrocarbons (including methane), carbon oxide, nitrogen oxides, sulphur dioxide. Emissions of solid particles come mostly from the Gazprom energy sector, while volatile organic compounds are commonly associated with Gazprom Neft Group and gas business companies.

Component structure of pollutant emissions in the Gazprom Group, 2020, thousand tons, %



	Gazprom Group	Gas business companies	Including PJSC Gazprom	Gazprom Neft Group	Gazprom energoholding	Gazprom neftekhim Salavat
Hydrocarbons (including methane)	1,266.42	1,207.35	1,108.84	57.48	0.52	1.07
Carbon oxide	550.66	327.80	311.53	185.82	30.86	6.18
Nitrogen oxides	284.22	164.24	155.60	25.77	87.33	6.88
Sulphur dioxide	171.97	55.87	55.83	17.64	86.17	12.29
Volatile organic compounds	117.22	24.37	17.27	86.99	0.27	5.60
Solid particles	53.57	3.95	2.77	17.99	31.03	0.60
Other gaseous and liquid substances	1.60	0.70	0.45	0.19	0.04	0.67

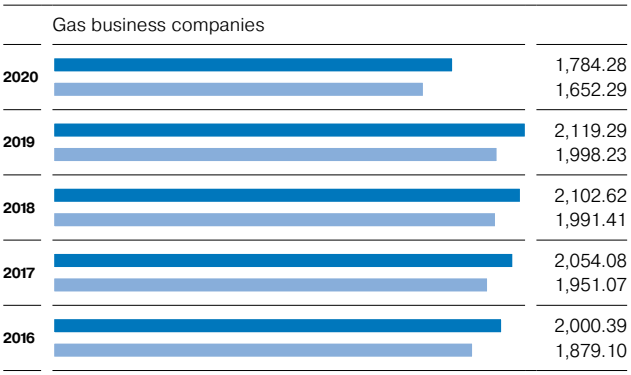
Dynamics of the main pollutant emissions from Gazprom Group stationary sources, 2016–2020, thousand tons

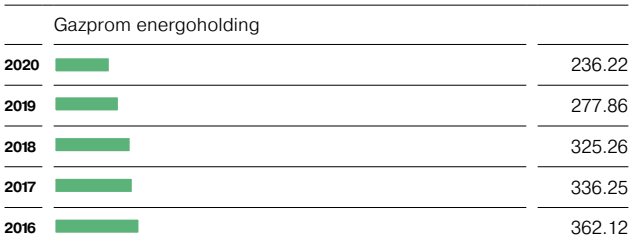


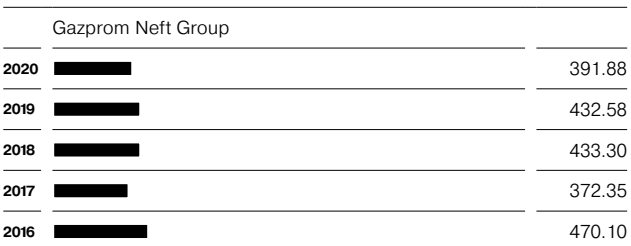
	2016	2017	2018	2019	2020
Hydrocarbons (including methane)	1,462.35	1,495.67	1,497.78	1,542.64	1,266.42
Carbon oxide	550.48	529.92	594.10	596.42	550.66
Nitrogen oxides	288.46	313.57	328.62	307.71	284.22
Sulphur dioxide	346.09	262.66	276.16	221.46	171.97
Volatile organic compounds	123.04	109.85	116.23	124.76	117.22
Other substances*	98.04	84.30	81.13	69.71	55.17

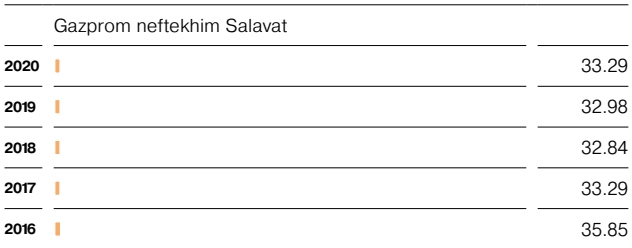
* Other substances comprise: solid particles, other gaseous and liquid substances.

Dynamics of gross emissions in the Gazprom Group, 2016–2020, thousand tons









9% gross emissions reduction in Gazprom Neft Group as compared to the previous reporting period is driven by the measures taken to increase APG use under the scope of the Gas Program. Gazprom energoholding reduced gross emissions by 15% due to fuel balance alternations, namely reduction in the share of coal, and increase in the natural gas share.

Pollutant emissions from stationary sources of the Group's gas business companies totaled 1,784.28 thousand tons that is 16% lower as compared to 2019. PJSC Gazprom's share in the general volume of gas business emissions totaled 93%, and determined the common indicators trend.

Dynamics of gross emissions by the types of PJSC Gazprom basic activities, 2016–2020, thousand tons

	2016	2017	2018	2019	2020
PJSC Gazprom	**1,879.10**	**1,951.07**	**1,991.41**	**1,998.23**	**1,652.29**
Production	126.75	135.30	135.35	146.58	150.56
Transmission	1,564.34	1,648.55	1,683.16	1,677.52	1,334.96
Underground gas storage	20.57	22.34	23.69	21.17	21.92
Processing	160.14	137.18	141.45	144.62	136.97
Other types of activities	7.30	7.70	7.76	8.34	7.88

In 2020, PJSC Gazprom's total emissions amounted to 1,652.29 thousand tons that is 17.3% lower as compared to 2019. The main reason for that is implementation of PJSC Gazprom's energy saving and energy efficiency improvement Program, and atmospheric air protection measures stipulated by PJSC Gazprom's 2020–2024 Comprehensive Environmental Program.

Subsidiary companies of Gazprom hold a large number of environmental campaigns aimed at emissions reduction. Gas transmission companies considerably increased the scope of works related to gas pumping by MCS, they apply hot tapping technologies, and bypass of gas from pipelines under repair to adjacent sections. Gas producing subsidiaries carry out well logging without releasing natural gas into the atmosphere, introduce the use of multi-component surfactants that improve conditions for removing formation fluid from bottomhole, and thus reduce gas emissions.

Utilization of associated petroleum gas

Gazprom activities aimed at reduction (stop) of APG flaring play significant role in decreasing emissions of pollutants and GHG, and efficient use of resources.

Prevention of APG flaring is a burning issue for oil and gas industry in the context of global trends of economy switching to low-carbon and energy efficient development scenario with due account of economic losses and environmental risks.

APG investment projects are aimed at achievement of minimum 95% APG used at the Gazprom Group fields according to the requirements of the Russian Government Decree No. 1148 as of 8 November 2012.

In 2020, APG effective use factor at the fields of PJSC Gazprom's gas producing subsidiaries (including AO Gazprom dobycha Tomsk) totaled 98.2%, Gazprom Neft Group — 91.1%, Sakhalin Energy — 97.2%.

In 2020, APG effective use factor at PJSC Gazprom totaled 98.2%

As for Gazprom Neft Group, the actual value in 2020 is 91.1%, which is 2.1% higher, than in 2019. The real growth in APG production volumes amounted to 1.3 bln m^3 (+8%). The growth pattern of APG effective use can be explained by commissioning of facilities under the Gas Program, as well as organizational and technical measures undertaken at assets with developed gas infrastructure. The most relevant projects that helped to enhance APG effective use are as follows:

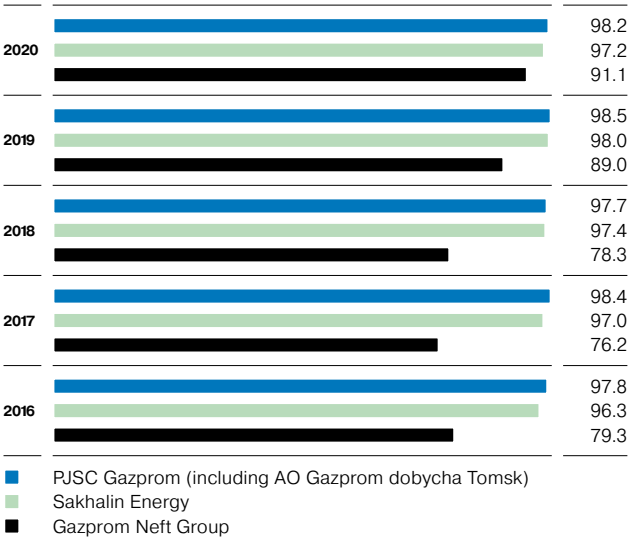
— operation of CS with comprehensive gas treatment unit (CGTU) on the Novoportovskoye oil gas condensate field (OGCF) — utilization growth from 91.1% to 96.8%
— operation of upgraded low pressure compressors (Z-201/202) at TL-4 in the Eastern area of the Orenburg OGCF — utilization growth from 92.0% to 95.4%
— operation of booster compression station (BCS) with gas-air duct on the Urmanskoye field — from 34.5% to 86.8%

Implemented project portfolio of the Gazprom Neft Group Gas Program enables to maintain APG effective use uptrend. Competent material and equipment management, launching of new infrastructure facilities are the key growth drivers.

Investment projects completed during the last 10 years facilitated development of different trends of gas utilization by Gazprom Neft Group. These trends comprise transmission and delivery of APG to gas processing plants and the Unified Gas Supply System of Russia, processing, generation of heat and power energy for own needs, injection into the gas cap to maintain formation pressure.

In 2020, to address rational subsoil use issues, AO Messoyakhaneftegaz implemented associated petroleum gas utilization project: advanced APG treatment, transmission and storage infrastructure was developed and launched on the Vostochno-Messoyakhskoye and Zapadno-Messoyakhskoye fields. This project is unique for the Russian oil producing industry, as for the first time in Russia associated petroleum gas produced with oil on the same field is injected into undeveloped gas formations of the other area.

APG utilization dynamics throughout the Gazprom Group companies, 2016–2020, %



Water use

The Gazprom Group companies are committed to mitigate negative water impact by reducing water consumption for production needs and wastewater discharge to surface water bodies.

In 2020, the Gazprom Group companies withdrew (took) 3,236.63 mln m^3 of water for supply purposes that is 17.5% lower than in 2019.

Sewage disposal in 2020 decreased by 19.1% and totaled 2,742.73 mln m^3.

As compared to 2019, water discharge to surface water bodies decreased by 19.5% and amounted to 2,610.78 mln m^3. Water disposal to irrigation sewage and absorption fields made 6.69 mln m^3, to holding basins — 0.43 mln m^3, to underground horizons — 43.37 mln m^3 of which 36.47 mln m^3 to maintain formation pressure. Disposal to public and other systems totaled 80.53 mln m^3.

Water recycling systems used 11,071.61 mln m^3.

Water use rates in the Gazprom Group, 2016–2020, mln m^3

	2016	2017	2018	2019	2020
Total water intake	**4,538.21**	**4,523.45**	**4,280.21**	**3,921.41**	**3,236.63**
Including water from natural sources	4,301.46	4,283.52	4,065.34	3,571.28	2,905.78
Used for own needs	**4,449.27**	**4,421.11**	**4,180.89**	**3,863.11**	**3,175.81**
Including production needs	4,192.10	4,164.84	3,947.36	3,678.12	3,008.63
Water disposal to surface water bodies	**3,855.45**	**3,905.26**	**3,658.44**	**3,241.79**	**2,610.78**
Including clean and treated as per standards	3,691.24	3,781.68	3,579.48	3,152.71	2,533.70

In 2016-2020, the Gazprom Group reduced:
— water consumption for production needs by 28%;
— water intake from natural resources by 32%.

Gazprom Group water consumption structure by source types, 2020, mln m^3, %

	Gazprom Group	Gas business companies	Including PJSC Gazprom	Gazprom Neft Group	Gazprom energoholding	Gazprom neftekhim Salavat
Surface sources	2,824.11	59.70	31.22	32.24	2,698.72	33.45
Underground sources	81.67	29.18	24.84	27.19	24.69	0.61
Domestic water supply facilities	137.96	6.10	5.04	2.89	125.34	3.63
Other water supply facilities	192.89	11.10	10.62	113.66	66.53	1.60

The share of natural sources in the Gazprom Group's water intake volume comprises 90% of which 97.2% is accounted for surface water bodies, and 2.8% — for underground sources. The Gazprom Group's water consumption structure depends on specifics of operation activities and location of facilities.

In 2016–2020, the Gazprom Group discharged 32% less wastewaters to surface water bodies. Clean without treatment and treated as per standards wastewaters accounted for 97.0% in the total volume of the Group's discharge.

Disposal to surface water bodies in the Gazprom Group, 2016–2020, mln m³

	2016	2017	2018	2019	2020
Gazprom Group	3,855.45	3,905.26	3,658.44	3,241.79	2,610.78
Gas business companies	35.10	33.87	31.80	41.83	45.90
Including PJSC Gazprom	11.69	10.74	9.78	18.89	23.08
Gazprom Neft Group	0.11	0.12	0.11	0.09	0.07
Gazprom energoholding	3,781.85	3,832.00	3,587.15	3,161.88	2,525.10
Gazprom neftekhim Salavat	38.39	39.26	39.38	37.99	39.71

Gazprom energoholding covers 90% of the total water consumption, and 97% of the total water disposal to surface water bodies of the Gazprom Group. The Gazprom Group's gas business share in overall water consumption volume is not very high, and amounts to 1.8%, including 0.9% of PJSC Gazprom's share.

In 2016–2020, the Gazprom Group reduced wastewater discharge to surface water bodies by 32%.

Dynamics of water disposal to surface water bodies at PJSC Gazprom by types of activities, 2016–2020, mln m³

	2016	2017	2018	2019	2020
PJSC Gazprom	**11.69**	**10.74**	**9.78**	**18.89**	**23.08**
Production	1.61	0.37	0.59	1.35	3.22
Transmission	6.89	6.73	5.53	5.47	5.20
Underground gas storage	0.15	0.14	0.14	0.11	0.10
Processing	0.14	0.10	0.24	0.23	0.24
Other activities	2.89	3.40	3.28	11.73	14.32

Increase in wastewater disposal to surface water bodies by PJSC Gazprom companies is mainly associated with discharge of wastewaters in the course of the Kaliningradskoye UGS construction.

The Gazprom Group conducted a large number of environmental campaigns aimed at improvement of water use efficiency for production and household needs, and increasing the treatment level of disposed wastewaters.

In 2020, the Gazprom Group commissioned 44 wastewater treatment facilities with a total capacity of 17.0 thousand m^3/day (17 facilities at Gazprom Neft, 1 – Gazprom energoholding, and 26 – gas business companies). From the total number of treatment facilities commissioned in 2020, 26 units with a capacity of 13.2 thousand m^3/day were put into operation at PJSC Gazprom.

Waste management

In 2020, the Gazprom Group companies generated 3,229.83 thousand tons of waste that is 3.2% lower, as compared to 2019. The reduction is thanks to switching from coal to natural gas in the fuel balance of Gazprom energoholding, which finally resulted in the V hazard class bottom ash waste decrease by 20%.

Waste generation dymanics in the Gazprom Group, 2016–2020, thousand tons

2020	3,229.83
2019	3,337.08
2018	3,555.09
2017	4,130.29
2016	4,289.81

The majority of Gazprom Group waste products (92.4%) is categorized as low hazardous and almost nonhazardous (IV, V hazard classes).

In 2016–2020, the Gazprom Group reduced waste generation by 25%.

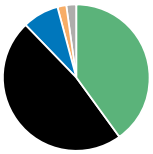
The main volume of Gazprom Group waste is represented by bottom-ash from Gazprom energoholding (solid coal combustion by-products at heat power plants), drilling waste and oil sludge generated mainly at oil and gas production and refining facilities.

Gazprom Group waste structure by types, 2020, %

Bottom ash waste	37
Drilling waste	34
Oil sludge	9
Other waste types	20

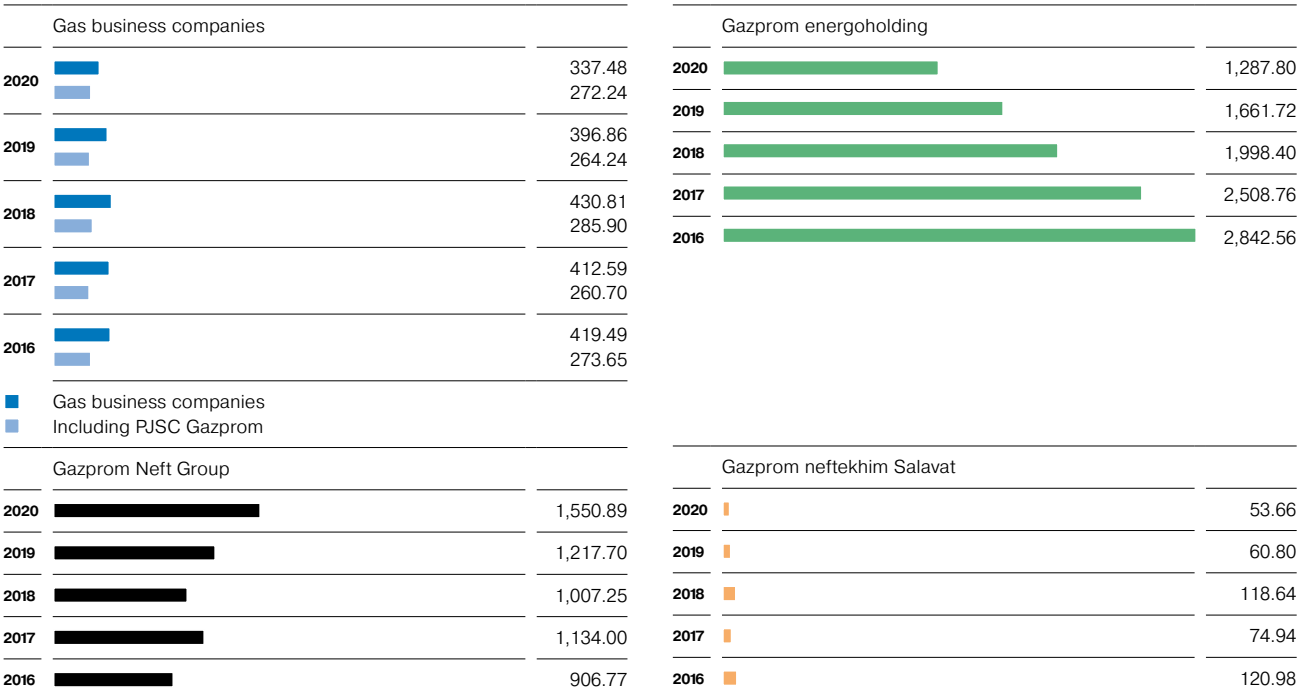
Share of the Gazprom Group companies in waste generation, 2020, %

Gazprom energoholding	40
Gazprom Neft Group	48
PJSC Gazprom	8
Gazprom neftekhim Salavat	2
Other gas business companies	2

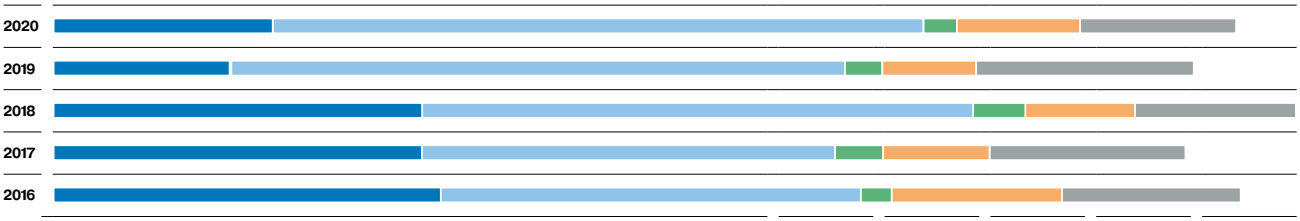


The year 2020 saw launching of 7 waste treatment and recovery units in Gazprom Neft Group's facilities with a total capacity of 2.17 thousand tons per year.

Dynamics of waste generation in the Gazprom Group companies, 2016–2020, thousand tons



Waste generation dynamics by PJSC Gazprom's types of activities, 2016–2020, thousand tons



	2016	2017	2018	2019	2020
Production	89.37	85.18	84.27	39.97	50.26
Transmission	95.78	94.15	126.98	142.30	149.73
Underground gas storage	7.10	10.45	11.54	8.22	7.08
Processing	40.20	25.42	25.91	22.72	28.43
Other types of activities	41.20	45.50	37.20	51.03	36.74

As compared to 2019, the volume of waste generated by PJSC Gazprom in 2020 increased by 3% and totaled 272.24 thousand tons. Gas producing subsidiaries demonstrated 26% increase in the volume of generated waste mostly due to well construction and overhaul repair works. Gas transmission subsidiaries of PJSC Gazprom gave 5% more waste because of repair works at the linear sections (LS) of trunklines. Processing companies as well experienced waste generation growth due to equipment dismantling.

Structure of production and consumption waste management at PJSC Gazprom, 2020, %

Managed, recovered and treated at the company	18
Transferred to third-party organizations for management, recovery and treatment	39
Transferred to third-party organizations for storage and landfilling	12
Disposed at operated landfill sites	4
Waste remaining at the company by the end of the reporting year, including storage sites	27

In 2020, 486.40 thousand tons of waste were managed by PJSC Gazprom subsidiaries (with account of 113.34 thousand tons available at the beginning of the year, 272.24 thousand tons generated during the year and 100.82 thousand tons that came from other companies).

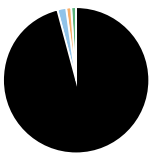
From that volume, 276.02 thousand tons were managed, recovered and treated by in-house capacities and transferred to third-party organizations for management, recovery and treatment, and 79.88 thousand tons were disposed at own landfill sites and transferred to third-party organizations for safe disposal.

The Gazprom Group companies place high emphasis to environmentally friendly management of oil-contaminated waste.

In the reporting year, the volume of oil-contaminated waste at the Group's facilities has increased by 42%, as compared to 2019 and totaled 306.58 thousand tons, 96% of which was in Gazprom Neft Group mainly due to decommissioning of offsite facilities of the Omsk oil refinery.

Share of the Gazprom Group companies in oil contaminated waste generation, 2020, %

Gazprom Neft Group	96
Gas business companies	2
Gazprom neftekhim Salavat	1
Gazprom energoholding	1



In 2020, 399.66 thousand tons of oil-contaminated waste were managed by the Gazprom Group (with account of 90.94 thousand tons available at the beginning of the year, 306.58 thousand tons generated during the year, and 2.14 thousand tons that came from other companies). Of that volume 253.87 thousand tons were transferred to special organizations for recovery and treatment, and 74.68 thousand tons – for safe disposal.

Structure of oil-contaminated waste management in the Gazprom Group, 2020, %

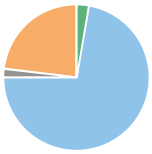
Transferred to other organizations for recovery and treatment	63
Transferred to other organizations for disposal	19
Waste remaining at the company by the end of the reporting year, including storage sites	18

Environmentally safe recovery of drilling waste during well construction and operation is one of the main goals of Gazprom Group's oil and gas producing companies.

In 2020, 1,354.9 thousand tons of drilling cuttings were subject to waste management (with account of 241.9 thousand tons available at the beginning of the year, 1,106.2 thousand tons generated during the year, and 6.8 thousand tons that came from other companies). 42.0 thousand tons of which were recovered at the Company, 37.5 thousand tons were disposed at own landfill sites, and 971.1 were transferred to special licensed organizations for recovery and treatment.

Structure of drilling waste management in the Gazprom Group, 2020, %

Recovered at the Company	3
Transfered to other organizations for processing recovery and treatment	72
Disposed at own landfill sites or storiges	2
Waste remaining at the company by the end of the reporting year, including storage sites	23



One of the main requirements for technological process of well construction is the prevention of negative environmental impact of drilling waste, especially under severe natural and climatic conditions of the Far North. Design solutions that can minimize impact on ecosystems in the process of drilling are being actively adopted. During well construction, green drilling mud formulae are being developed and used as well as pitless drilling. The practice of drilling waste recovery technologies to produce mineral construction materials for further use in field development is widely introduced.

Land use

Geological exploration, construction, repair works, operation of wells, pipelines and other facilities performed by the Gazprom Group impact vegetation and soil cover.

Gazprom pays constant attention to preservation and restoration of disturbed land. Technical and biological reclamation aimed at recovery of productivity and economic value of disturbed land, as well as conservation of landscape are carried out. The Gazprom Group performs comprehensive measures to improve reliability of pipeline systems that have a positive effect on preservation of natural environment components.

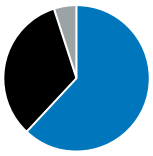
Indicators of land protection activities of the Gazprom Group, 2016–2020, ha

	2016	2017	2018	2019	2020
Disturbed lands per year	27,027.45	42,162.29	25,786.97	22,885.37	23,837.88
Including contaminated areas	71.31	87.33	111.26	73.16	79.41
Disturbed land reclaimed per year	42,450.24	19,600.05	15,767.52	17,670.50	15,836.39
Including contaminated areas	94.08	89.10	96.13	65.69	65.77

During the reporting year, the Gazprom Group companies disturbed 23.84 thousand ha of land, which is 4% higher than in the previous year, of which PJSC Gazprom takes the share of 14.86 thousand ha, Gazprom Neft Group — 7.79 thousand ha, and other Group's companies — 1.19 thousand ha. Disturbed land area increase in 2020 is mainly associated with seismic and GE works at PJSC Gazprom's facilities.

Share of the Gazprom Group companies in disturbed lands indices during the year, 2020, %

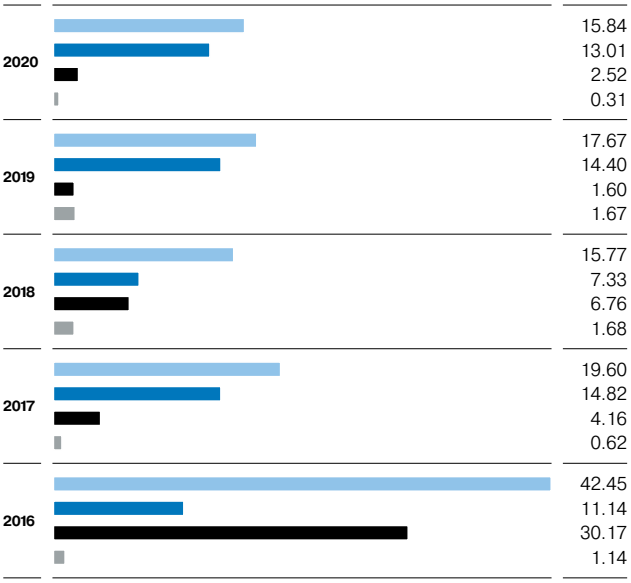
PJSC Gazprom	62
Gazprom Neft Group	33
Other companies of the Group	5



Land resources are treated and reclaimed by the Group to the extent required and on schedule. Lands, where works have been totally completed, and which were disturbed or contaminated during the previous years, were reclaimed. The reporting year saw reclamation of 15.8 thousand ha of land, including 13.0 thousand ha reclaimed by PJSC Gazprom, 2.5 thousand ha reclaimed by Gazprom Neft Group, and 0.3 thousand ha reclaimed by other Group companies.

10% decrease in the volume of lands reclaimed in 2020 is due to uncompleted construction works on lands leased during the previous periods.

Dynamics of disturbed land reclamation in the Gazprom Group companies, 2016–2020, thousand ha



Necessary land quality restoration measures have been undertaken by Gazprom Neft Group on the area of 65.77 ha contaminated during the year.

Applied reclamation methods are aimed to prevent negative erosion processes development, stabilize landscapes and restore soil and vegetation cover. Technologies use accessible materials, including secondary (for example, treated drilling waste), geotextile, plant growth stimulants. Specially selected strains of soil microorganisms allow strengthening of topsoil, including embankment slopes, fastening and intensifying root formation and growth of plants.

The Gazprom Group companies take every precaution to prevent pollutant penetration into the soil, surface and ground waters, avoid erosion and other types of soil degradation. Environmental regulation compliance audit of reclaimed soils (including soil, geobotanical, agrochemical and other studies) is done within environmental monitoring and control programs during construction and reconstruction of the Gazprom Group facilities.

Prevention of accidents

Every year, the Gazprom Group companies take measures to prevent accidents to increase equipment reliability and mitigate accident risk at the operated facilities of the Gazprom Group. They comprise technical diagnostics of pipelines, injection of corrosion inhibitors; timely repair and maintenance works; flood and erosion protection measures; regular inspection of plugged and abandoned wells; regular inspection of LS of GTL and offshoot pipelines to detect cracks and gas leaks, including the use of laser radars; supply of necessary equipment and hydrocarbon spill response tools.

In 2020, there were 6 environmental accidents at the Gazprom Group companies at GTL facilities: in OOO Gazprom transgaz Yugorsk — four accidents, in OOO Gazprom transgaz Chaikovsky and OOO Gazprom transgaz Nizhniy Novgorod — each one accident. Propagation of stress corrosion cracks and mechanical impact from excavation equipment were the main reason of accidents at operated facilities.

Accidents culminated in 15.5 mln m^3 natural gas losses in the Gazprom Group that is equivalent to RUB 59.6 mln in environmental damages.

The reporting year evidenced 765 ruptures of oil pipelines at Gazprom Neft Group. The volume of oil and petroleum products spilled due to pipeline ruptures amounted to 158 tons. Pipeline ruptures in Gazprom Neft Group occurred on the LS of infield pipelines. Internal corrosion defects caused by transmission of corrosive media are the main reason for ruptures on oil and gas fields.

Environmental accidents were not registered at facilities of other Gazprom Group companies.

International activities

Republic of Armenia

ZAO Gazprom Armenia is a 100% subsidiary of PJSC Gazprom engaged in transportation, storage, processing, distribution and selling of natural gas, electrical power generation and trade in the Republic of Armenia. In 2017, ZAO Gazprom Armenia successfully introduced EMS that complies with ISO 14001:2015 requirements. In 2020, ZAO Gazprom Armenia joined EMS of PJSC Gazprom.

In 2020, gross pollutant emissions totaled 46.27 thousand tons, i.e. 25.8% lower than in the previous year. Reduction in gross emissions is due to environmental measures aimed at improving reliability and safety of process facilities, and therefore decrease in natural gas losses. GHG from gas business and power facilities decreased and amounted to 1.63 mln tons of CO_2e that is 16.8% lower than in 2019.

Water disposal into surface water bodies in 2020 amounted to 148.00 thousand m^3. 100% of this volume are effluents treated to standard quality.

During the year, 0.223 thousand tons of waste was produced, 97% of which belongs to hazard class IV. Waste generation growth 98 tons is due to reconstruction of the heating unit at the Razdan-5 HPS and replacement of pipeline fittings.

Environmental fee increase by 16% in 2020 is a result of emissions and waste disposal fee growth from infrastructure facilities commissioned in the second half of 2019.

State environmental control bodies did not inspect during the reporting year.

ZAO Gazprom Armenia basic environmental indicators, 2016–2020

Indicators	2016	2017	2018	2019	2020
Gross emissions, thousand tons	83.80	88.61	69.48	62.36	46.27
GHG emissions, mln tons CO_2e*	2.44	2.61	2.46	1.96	1.63
Water discharge into surface water bodies, thousand m^3	122.00	115.00	146.00	140.00	148.00
Including clean and treated as per standards	122.00	115.00	146.00	140.00	148.00
Produced waste, thousand tons	0.19	0.12	0.12	0.12	0.22
Disturbed land by the end of the year, ha	0	0	0	0	0
Environmental fee, thousand RUB	449.85	592.42	1,109.56	953.74	1,104.30
Share of payments within established rates in the total payment amount, %	99.99	100	100	100	100

* GHG emissions were calculated in compliance with the Methodological Guidance on the Quantification of Greenhouse Gas Emissions by Entities engaging in Business and other Activities in the Russian Federation approved by the Ministry of Natural Resources and Environment of the Russian Federation as of 30 June 2015 No. 300.

Republic of Belarus

OAO Gazprom transgaz Belarus is a 100% subsidiary of PJSC Gazprom that is engaged in transmission and underground storage of natural gas in the Republic of Belarus. The company is included in PJSC Gazprom EMS application scope.

Gross pollutant emissions amounted to 25.14 thousand tons that is 13.7% higher than in 2019 due to increase in the repair works on the LS.

Disposal of wastewaters into surface water bodies amounted to 131.24 thousand m^3 that is 4.6% higher as compared to 2019. All effluents by 100% pertain to the category treated as per standards.

During the year, OAO Gazprom transgaz Belarus generated 12.34 thousand tons of waste. Significant expansion of repair works on LS of GTL resulted in more than double growth in waste generation.

Environmental fee within the scope of set limits totaled RUB 17.40 mln, which is 18% less than in 2019. There were no limit-exceeding impacts.

OAO Gazprom transgaz Belarus basic environmental indicators, 2016–2020

Indicators	2016	2017	2018	2019	2020
Gross emissions, thousand tons	23.78	26.98	23.17	22.11	25.14
GHG emissions, mln tons CO_2e*	0.30	0.38	0.32	0.32	0.45
Water discharge into surface water bodies, thousand m^3	97.48	142.94	131.69	125.43	131.24
Including clean and treated as per standards	97.48	142.94	131.69	125.43	131.24
Produced waste, thousand tons	4.13	5.96	4.92	5.61	12.34
Disturbed land by the end of the year, ha	0	0	0	0.87	0
Environmental fee, thousand RUB	22,116.42	24,608.43	22,664.04	21,315.97	17,401.03
Share of payments within established rates in the total payment amount, %	100	100	100	100	100

* GHG emissions were calculated in compliance with requirements of the Technical Code of Common Practice "Environmental protection and management of natural resources. Climate. Emissions and absorption of greenhouse gases. Rules for emissions calculation by means of energy-saving measures, renewable energy sources" approved by Decree of the Ministry of Natural Resources and Environmental Protection of the Republic of Belarus as of 5 September 2011 No. 13-T On approval and enforcement of technical statutory and regulatory enactments and making amendments in technical statutory and regulatory enactment.

In 2020, regulatory bodies of the Republic of Belarus did not make inspections at OAO Gazprom transgaz Belarus facilities.

In December 2020, certification body (Republican Unitary Enterprise Belorussian State Institute of Metrology) performed compliance audit in the company. The audit confirmed OAO Gazprom transgaz Belarus EMS conformance to requirements of STB ISO 14001:2017 state standard of the Republic of Belarus.

Kyrgyz Republic

OsOO Gazprom Kyrgyzstan is a 100% owned subsidiary of PJSC Gazprom engaged in natural gas transmission, storage, distribution and trade in the Kyrgyz Republic.

OsOO Gazprom Kyrgyzstan applies EMS that complies with ISO 14001:2015 requirements. In 2020, the Company joined PJSC Gazprom's EMS.

In 2020, gross pollutant emissions decreased by 43% and comprised 1.66 thousand tons, GHG — 0.04 mln tons of CO_2e.

The waste generation volume dropped by 85% and amounted to 0.27 thousand tons as a result of completion of construction and repair works in 2019.

Environmental fee stayed within set standards and totaled RUB 50.6 thousand.

In 2020, state environmental regulatory bodies of the Kyrgyz Republic did not make inspections at OsOO Gazprom Kyrgyzstan facilities, no penalties were imposed.

OsOO Gazprom Kyrgyzstan basic environmental indicators, 2016–2020

Indicators	2016	2017	2018	2019	2020
Gross emissions, thousand tons	13.52*	1.49	3.82	2.93	1.66
GHG emissions, mln tons CO_2e **	0.33	0.04	0.09	0.07	0.04
Water discharge into surface water bodies, thousand m^3	0	0	0	0	0
Including clean and treated as per standards	0	0	0	0	0
Produced waste, thousand tons	0.14	0.16	0.18	1.78	0.27
Disturbed land by the end of the year, ha	0	0	0	0	0
Environmental fee, thousand RUB	61.75	63.84	66.50	93.30	50.60
Share of payments within established rates in the total payment amount, %	100	100	100	100	100

* With account of process losses of natural gas

** GHG emissions were calculated in compliance with the Methodological Guidance on the Quantification of Greenhouse Gas Emissions by Entities engaging in Business and other Activities in the Russian Federation approved by the Ministry of Natural Resources and Environment of the Russian Federation as of 30 June 2015 No. 300.

Non-CIS countries

Gazprom's Group companies fulfil foreign and international obligations. GHG emissions are monitored on a constant basis.

In 2020, GHG emissions from subsidiaries and affiliates of OOO Gazprom export totaled:

— Astora GmbH — 15,552.6 t CO_2e
— Wingas GmbH — 13,550 t CO_2e
— Moravia Gas Storage a.s. — 2,736 t CO_2e
— RAG Austria AG — 857.06 t CO_2e

Gazprom EP International B.V. is a global operator of PJSC Gazprom's international projects on hydrocarbon fields prospecting, exploration and development. Recognizing its high responsibility towards partners and communities in the countries of operation, Gazprom EP International B.V. strives for preserving environment in every possible way by following the highest environmental standards and introducing technological and scientific innovations aimed at environmental impact mitigation.

Currently the company is operating in fifteen countries across three continents facilitating economic growth and strengthening energy potential of its partners by rendering high-quality services: geological exploration, drilling, pipeline and CS construction, etc.

In all regions of presence, the company aligns with environmental safety strategy that addresses all aspects of environmental protection, including minimization of negative impact on ecosystems, resource saving and prevention of negative production factors impact on the health of the local population.

Basic principles of this strategy are as follows:

— carrying out engineering and ecological surveys within the scope of the works program to get information about the state of the regional ecosystem
— comprehensive planning of the project life cycle considering environmental safety and ecosystems rehabilitation upon works completion
— energy performance and fulfilment of environmental regulations of the applicable law taking into account requirements of all interested parties of the project
— sustainable development and technologies — constant investments into more safe and green exploration and production methods

The company plans and takes environmental protection measures on an annual basis, including:

— analysis of the legislation of the company's countries of operation, and compilation of environmental legislation registers applicable to the company's activities
— identification, registration and analysis of environmental aspects of the company's activities with ranking and development of measures to mitigate and/or liquidate negative impact on ecosystems considering the life cycle
— informing and training of personnel
— execution of scheduled events with results-checking by internal audits of the comprehensive management system and regular system's review by the company's Management

In 2020, Lloyds Register conducted supervision audit of Gazprom EP International B.V. for compliance with the ISO management system requirements. Auditors confirmed that the company meets requirements of ISO 14001:2015 Environmental Management System.

Preventing negative impact on the environment

Environmental assessment of projects

In compliance with requirements of the Russian and international legislation, the Gazprom Group companies perform environmental impact assessment of planned business operations at all investment project life-cycle stages from investment idea to construction projects.

Since 1994, PJSC Gazprom has been carrying out corporate expert review of design documents on a proactive basis before submitting them to state expert review and environmental review.

Corporate expert review comprises comprehensive assessment of documentation conformance to requirements of the Russian Federation legislation, international norms and rules, PJSC Gazprom's guidelines and regulations on environmental protection, energy saving and enhancement of energy efficiency.

Corporate expert review is aimed at improvement of documentation quality related to making timely nature protection and energy efficient decisions to address environmental risk mitigation in the course of project implementation.

In 2020, corporate environmental expert review examined 423 construction and reconstruction facilities.

Preliminary design and project documentation of the following large process facilities was reviewed:

- Development of the Kovyktinskoye gas condensate field. Stage 4. Priority facilities
- The Power of Siberia gas trunkline, Section Kovykta-Chayanda
- Expansion of UGSS to ensure gas feeding into the South Stream gas pipeline. Stage 2.4
- The Power of Siberia gas trunkline. Stage 5.1 Compressor station CS-1 Saldykelskaya, Stage 5.5. Compressor station CS-5 Nagornaya, Stage 5.7. Compressor station CS-7 Sivakinskaya, Stage 5.4 Compressor station CS-4 Nimnyrskaya
- Development of the Yuzhno-Kirinskoye field (1 stage) under the scope of Development of the Yuzhno-Kirinskoye field construction project
- Reconstruction of Kokhtla-Yarve-Leningrad GTL, 1 and 2 strings. Stage 2. Supply network to reconnect consumers of Seltso GDS
- The system of Ukhta-Torzhok gas trunklines. III string (Yamal)
- Reconstruction of Schors-Gomel gas pipeline with gas pipeline branches and Zyabrovka, Terekhovka, Budische GDS
- Sakhalin-Khabarovsk-Vladivostok gas trunkline. Stage 2. Sakhalin GCS. Stage 3. Sakhalin GCS;
- Investment feasibility study of gas supply options for heat-generating facilities and future consumers in Murmansk considering liquefied natural gas

In 2020, for the first time ever, state environmental review hearings and preparation to them were held with the help of remote communication tools to prevent the spread of a new coronavirus infection (COVID-19).

Environmental risk insurance

Environmental insurance provides risk coverage for damage to the environment, life, health and property of third parties in the course of onshore and offshore exploration, drilling, production, transportation, processing, and storage of hydrocarbons, operation of hazardous facilities, construction and other related operations, including those performed on the Arctic shelf.

In 2020, PJSC Gazprom and AO SOGAZ resigned contract on liability insurance for damage to the environment (environmental risks), life, health and property of third parties in respect to PJSC Gazprom's and its subsidiaries' activities. Extent and conditions of insurance coverage remained unchanged.

Insurance coverage territory is the Russian Federation and continental shelf of the Russian Federation.

Insurance contract is voluntary and complements compulsory civil liability insurance contracts of the hazardous facility owner (according to the Federal law No. 225-FZ as of 27 July 2010). Voluntary insurance covers liability that is not insured by compulsory civil liability contracts for damage caused by accident at a hazardous facility, as well as liability for damage that goes beyond liability limits under compulsory insurance contracts, and/or if liability limit under compulsory insurance contract is over.

AO SOGAZ payments in the reporting year amounted to RUB 3.99 mln, including RUB 2.97 mln for damage of the previous years.

Operational environmental control and monitoring

Operational environmental control (OEC) is organized in all the Gazprom Group companies and is aimed at fulfillment of environmental protection legislation, compliance with specified environmental standards, rational use of natural resources and mitigation of environmental impact. At PJSC Gazprom's facilities environmental control is implemented in alignment with STO Gazprom 12-2.1-024-2019 Regulatory Environmental Protection Documents. Gas Supply System. Operational Environmental Control. Basic Requirements.

Environmental control is a crucial legal step intended to ensure rational use of natural resources and environmental protection from harmful impact. It is implemented at all stages of business activities of PJSC Gazprom subsidiaries, organizations and contractors.

PJSC Gazprom has a corporate Environmental Inspection that not only controls compliance of subsidiaries and contractors with requirements of EP legislation and corporate environmental and energy saving rules, but also carries out internal EMS audits of PJSC Gazprom subsidiaries.

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

In 2020, PJSC Gazprom Environmental Inspection conducted 390 environmental legislation compliance verifications. Due to COVID-19 limitations, some inspections and internal audits were carried out online in alignment with an authorized procedure.

PJSC Gazprom Environmental Inspection carried out 202 scheduled checks in 41 Gazprom's production subsidiaries and organizations, including 166 EMS audits. Specialists of PJSC Gazprom Environmental Inspection Service checked 8 gas producing companies, 19 gas transmission companies (among them OAO Gazprom transgaz Belarus, OOO Gazprom transgaz Grozny), 14 branch offices of OOO Gazprom UGS, 3 natural gas processing plants, 7 branch offices of OOO Gazprom energo, and 11 other subsidiaries (ZAO Gazprom Armenia, OsOO Gazprom Kyrgyzstan, OOO Gazprom nedra, OOO Gazprom neftekhim Salavat, Gazprom gazomotornoye toplivo, etc). The audit plan was 100% fulfilled.

At construction and reconstruction facilities, as well as at the facilities of customers and general contractors, such as OOO Gazprom invest, OOO Gazprom dobycha Noyabrsk, OOO Gazprom pererabotka Blagoveschensk, AO Gazstroyprom, OOO Stroigazmontazh, OOO GazEnergoServis and other, 38 environmental legislation compliance verifications have been performed.

In 2020, PJSC Gazprom Environmental Inspection accomplished 8 technical audits of PJSC Gazprom's subsidiaries and organizations: OOO Gazpromneft-Prirazlomnaya, OOO Gazpromneft-Marine Bunker, OOO Novorossiyskiy Nefteperevalochnyy Kompleks, AO Moskovskiy gazopererabatyvajuschiy Zavod, OOO Gazprom geotekhnologii, OOO Gazprom Nedra, OOO Gazprom avia Aviation Company, OOO Gazprom neftekhim Salavat (OOO Akril Salavat). Three companies were checked upon the results of technical audits carried out in OOO Gazprom neftekhim Salavat (Administration of the company and Monomer plant).

Furthermore, 130 checks have been performed in PJSC Gazprom's subsidiaries to reveal how applications for complex environmental permits are prepared and organized (for I category facilities that have negative environmental impact (NEI), including investment construction objects), as well as to estimate timing and validity of environmental impact declarations (for II category NEI facilities), reporting on emissions, pollutant discharge, consumption and production waste (for I – III NEI facilities) in 8 gas producing and 17 gas transmission subsidiaries, as well as in OOO Gazprom UGS, OOO Gazprom pererabotka, OOO Gazprom energo, OOO Gazprom avia AC, OOO Gazprom neftekhim Salavat, OOO Gazprom podzemremont Urengoy, OOO Gazpromtrans.

Furthermore, PJSC Gazprom Environmental Inspection participated in 9 checks of hazardous industrial facilities of reservoir parks at the following PJSC Gazprom's subsidiaries: OOO Gazprom dobycha Nadym, OOO Gazprom dobycha Urengoy, OOO Gazprom dobycha Yamburg, OOO Gazprom dobycha Noyabrsk, OOO Gazprom transgaz Yugorsk, OOO Gazpromtrans, OOO Gazprom avia AC.

The management teams of the checked companies were informed on the results of inspection along with recommendations on improving environmental activities, corrective actions and prevention of violations. Remedy non-compliance factor (within the prescribed time limit) totaled 97%.

Gazprom has developed and successfully operates the OEM system that comprises stationary and mobile eco-laboratories, meteorological and hydrological stations, automated control stations, and observation wells. This enables to monitor atmospheric pollutant emissions from controlled emission sources; quality of atmospheric air in populated areas and at the border of sanitary protection zones; noise impact; radiation background; quality of surface and ground waters, bottom sediments; quality of utility and drinking water supply sources; state of geological environment, soil and snow cover; solid waste and waste waters. The system monitors environmental parameters, analyzes obtained results and develops measures to minimize negative impact on the environment.

The created OEM system provides quick acquisition of valid data on environmental conditions of the Company's facilities and in their impact zone, timely analysis of the current ecological situation in the process of industrial and business operations, planning of environmental protection measures, control of their implementation and making effective environment protection decisions.

In some cases, the Gazprom Group's OEM is integrated into regional systems of environmental monitoring.

October 2020 saw completion of the environmental monitoring season of the water body and its water protection area at the territory of the Kirinskoye gas producing division by OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk. A special-purpose third-party organization — OOO Lomonosov MSU Marine Research Center — was engaged in water body monitoring. Monitoring did not reveal exceedance of the permitted water body impact level, and thus it was concluded that the existing equipment operation mode of the Kirinskoye GCF onshore production facility did not exert significant impact on the quality of water of the natural site.

From the very beginning of the Amursky GPP construction project, CLATI specialists of in the Amur region have been carrying out operational environmental monitoring on a regular basis. The state of the atmospheric air, soil, river waters, bottom sediments, fisheries, settlings, plants is controlled at the main sites of Amursky GPP, and at the housing border. From the start of regular observations, environmental safety of Amursky GPP construction was confirmed by the results of over 2000 samplings. Operational environmental monitoring carried out in 2020 acknowledged compliance of Amursky GPP with the Russian and international environmental standards.

In 2020, to exchange information on the state of the atmospheric air in the populated areas located in OOO Gazprom dobycha Orenburg affected zone, data from the company's automated gas contamination control stations (AGCCS) were transferred to the Unified Environmental Monitoring System of the Orenburg region, as well as data from stationary environmental monitoring stations of OOO Gazpromneft-Orenburg situated in 10 localities of the Orenburg region.

Over ten years there has been a constant interaction with the heads of municipality administrations and residents of the Orenburgsky and Perevolotsky districts of the Orenburg region located in the affected zone of the Orenburg gas producing complex upon the following issues:

— reporting to the Ministry of Natural Resources, Ecology and Property Relations of the Orenburg Region, territorial authorities of the Federal Supervisory Natural Resources Management Service (Rosprirodnadzor), and heads of municipality administrations on planned preventive maintenance at OOO Gazprom dobycha Orenburg facilities
— sending information letters on concentrations of pollutants in the air according to AGCCS data to administrations of 24 populated areas, heads of Orenburgsky and Perevolotsky districts of the Orenburg region on a monthly basis
— cooperation with heads of municipality administrations and authorized representatives of residents to administer claims and complaints on air pollution

In 2020, Gazpromneft-Sakhalin experts presented to Russian and foreign acoustics and marine biology scientists new environmental control method — active acoustic monitoring. The presentation has been delivered within the work scope of the International Union for Conservation of Nature, where the company highlighted results of environmental monitoring of grey whales in the Sea of Okhotsk. Active acoustics has advantages over traditional surveys, as it can be used under poor visibility conditions and in situations when animals do not vocalize or do it rarely. To prevent an impact of industrial noises on animals during GE, specialists of Gazprom Neft studied the water area by fishing echo sounder installed outboard before

activation of seismic sources. Echo sounder helped to register 4 encounters with large cetaceans and to deactivate sound sources in a timely manner. Noise impact on the animals was totally prevented.

Since 2002, Grey Whales Monitoring Program has been also underway in Sakhalin Energy. In the mid 80s of the last century around two dozens of grey whales that according to the scientists' point of view pertain to endangered Okhotsk-Korean (West) population were detected. Today by virtue of impact mitigation measures there are around 500 species.

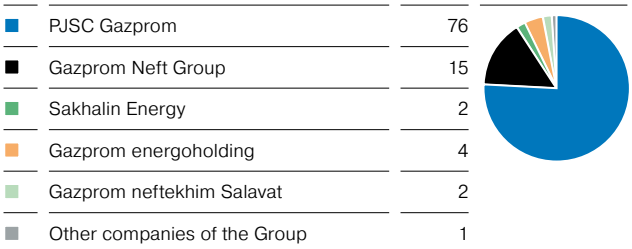
A set of measures it taken to protect endangered species and ensure safe execution of works, including organization of corridors, ship speed restrictions, determination of safe distances to marine mammals, and compulsory availability of observers onboard to mitigate collision risks.

If SPNA or special environmental status sites are located in the affected zone of business activities, the Gazprom Group is obliged to include monitoring over their state into OEM programs.

In 2016–2020, the Gazprom Group invested RUB 12.8 bln into operational environmental monitoring.

The Gazprom Group expenditures on operational environmental monitoring and control, 2016–2020, mln RUB

Structure of operational environmental monitoring and control expenditures in the Gazprom Group, 2020, %



State environmental supervision

In 2020, state supervisory bodies conducted 531 environmental compliance verifications for the Gazprom Group facilities, which resulted in 548 violations revealed. Upon the results of 306 verifications, violations were not revealed.

Out of 548 revealed violations, 48 violations (9%) have been cancelled through legal proceedings, 204 violations (37%) have been corrected at a given time, correction deadline for 217 violations has not expired in 2020. The year saw correction of 293 violations, including 89 remedied upon the results of inspections of previous years.

From the total number of identified violations, 272 (50%) did not constitute threat to the environment and did not carry penalties for legal entities.

Penalties paid in the reporting year totaled RUB 12.38 mln, including RUB 3.63 mln as a result of previous years inspections. Penalty payments were as follows: Gazprom Neft Group — RUB 6.56 mln; PJSC Gazprom — RUB 3.79 mln; Gazprom energoholding — RUB 0.84 mln; AO Gazprom dobycha Tomsk — RUB 0.66 mln; Sakhalin Energy — RUB 0.20 mln, OOO Gazprom mezhregiongaz — RUB 0.25 mln; OOO Gazprom neftekhim Salavat — RUB 0.08 mln.

In 2020, compensation payments for damage to the environment by the Gazprom Group amounted to RUB 203.30 mln (of which PJSC Gazprom — RUB 5.39 mln), including RUB 123.42 mln paid for damage incurred in previous reporting periods (of which PJSC Gazprom — RUB 4.28 mln).

Improving energy efficiency and energy saving

The Company's development strategy is focused on the enhancement of efficiency and investment potential in alignment with the priorities of the State Energy Policy and Gazprom's Corporate Energy Saving and Energy Efficiency Improvement Policy as well as established targets and goals. As envisaged in the Corporate Energy Saving and Energy Efficiency Improvement Policy approved by PJSC Gazprom Decree No. 39 as of 11 October 2018 activities aimed at improving the energy efficiency of operation processes, reducing GHG emissions and the carbon intensity of products were conducted.

In 2020, PJSC Gazprom has demonstrated that its energy management activities met the requirements of the international standard ISO 50001:2018 (Certificate No. IND/20/9040/EN/U as of 04 June 2020). Bureau Veritas as an independent international certification body acknowledged PJSC Gazprom's Energy Management System (EnMS) compliance with ISO 50001:2018.

Declared scope of certification of PJSC Gazprom's EnMS covers the following business activities:

— production and treatment of natural gas and gas condensate
— natural gas transportation
— electricity, heat, water supply and operation of energy equipment of the UGSS facilities
— underground gas storage

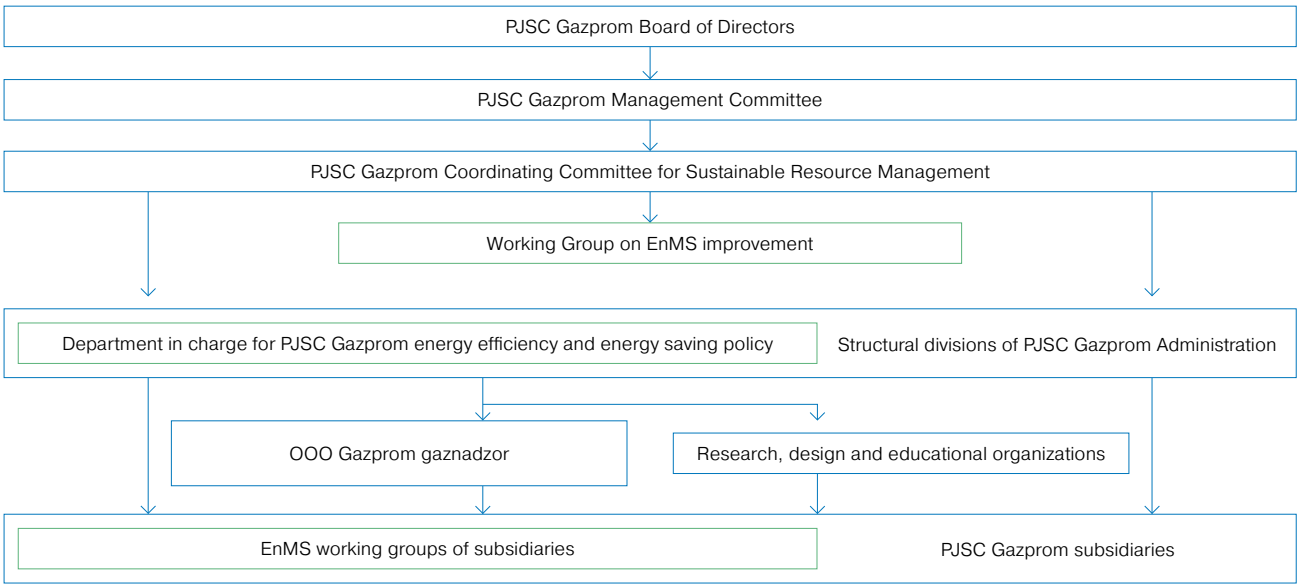
In the reporting year, the Gazprom EnMS included 26 subsidiaries and structure divisions of PJSC Gazprom Administration pursuant to the approved certification scope. In the short-term it is planned to expand PJSC Gazprom EnMS scope and boundaries to encompass the Company's key activity – natural gas and gas condensate processing.

PJSC Gazprom EnMS is certified in compliance with ISO 50001:2018 Energy Management Systems – Requirements with Guidance for Use.

PJSC Gazprom EnMS is focused on utmost effective use of energy resources, improvement of energy efficiency and competitiveness of the Company on the domestic and global energy markets, reduction in GHG emissions and the carbon intensity of end products.

PJSC Gazprom EnMS incorporates every single Company's level responsible for decision-making directly or indirectly influencing the rate of energy resources consumption.

PJSC Gazprom energy management system organization chart



Energy saving and energy efficiency improvement program

In 2011-2020, saving of fuel and energy resources (FER) in PJSC Gazprom totaled 30.3 mln tons c.e., including: natural gas — 25.7 bln m^3, electric power — 2.9 bln kWh, heat power— 2.3 mln Gcal. Cumulative FER saving cost effect amounted to RUB 91.8 bln. Achievement of target FER saving values and production energy efficiency improvement envisaged by PJSC Gazprom Energy Saving and Energy Efficiency Improvement Concept for 2011-2020 (reviewed by the Board of Directors, Resolution No. 1795 as of 19 April 2011) clearly demonstrates the Company's progress.

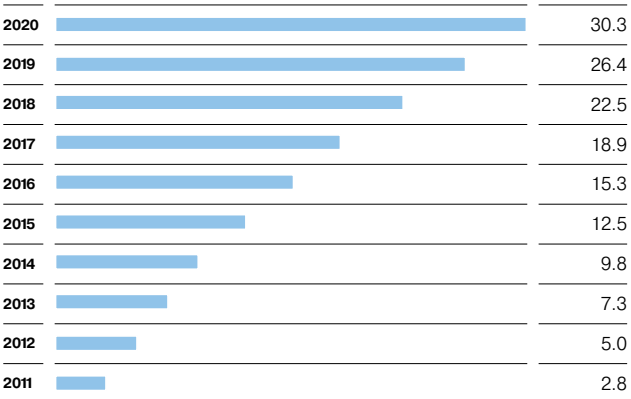
The year 2020 saw accomplishment of all basic energy saving activities prescribed by the Energy Saving Program and achievement of the following saved volumes: natural gas — 3.27 bln m^3, as well as electric power — 305.86 mln kWh, and heat power — 251.92 thousand Gcal. Total volume of saved FER amounted to 3.92 mln tons c.e. that in the aggregate exceeded expected energy effect from the Energy Saving Program implementation. Achievement of the target FER saving values in the pandemic period reflects systematic approach towards organization of energy efficiency improvement processes at all Company's management levels and underlines strong involvement of personal in energy saving measures.

Outcomes of PJSC Gazprom Saving and Energy Efficiency Improvement Program 2020

	Saving		
Type of activity	**Natural gas, mln m^3**	**Electrical power, mln kWh**	**Heat power, thousand Gcal**
Gas, condensate, oil production	414.44	29.87	9.13
Gas transmission	2,776.44	188.98	35.51
Underground gas storage	15.15	1.96	0.00
Gas, condensate, oil processing	32.70	60.45	203.83
Gas distribution	34.30	9.37	2.84
Minor types of activities	0.73	15.21	0.62
Total	3,273.77	305.86	251.92
Total, thousand tce	3,781.20	99.40	35.99

Energy saving measures taken in 2020 helped to reduce FER volume consumed by PJSC Gazprom for own process needs. The reporting period marked the lowest specific consumption of energy resources for own process needs in 2011–2020 — 24.86 kg c.e./mln m^3·km. This indicated over 27.2% decrease as compared to 2011, which is consistent with rates determined by the resolution of PJSC Gazprom's Board of Directors No. 1553 as of 23 March 2010.

Progressive fer saving in 2011–2020, mln tons c.e.

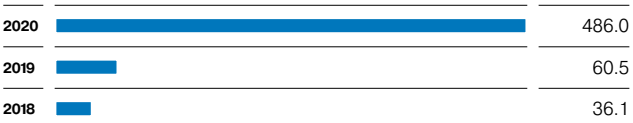


Natural gas and gas condensate transmission sector is a leader in terms of energy resources consumption with a share of about 82% of the total volume of consumed FER. In all the Company's business activities natural gas constitutes over 90% of the total FER consumption volume. This circumstance unlocks considerable potential for application of innovative solutions and technologies to save energy resources. Using MCS during repair on GTL is a good example of implementing a pilot natural gas saving project. The project allows for mitigating negative impact on the environment and saving natural resources to the maximum ecological effect.

Reduction in natural gas specific consumption for own process needs during transmission in 2011–2020.
— Target value — not less than 11.4%.
— Actual achieved reduction — 27.2%.

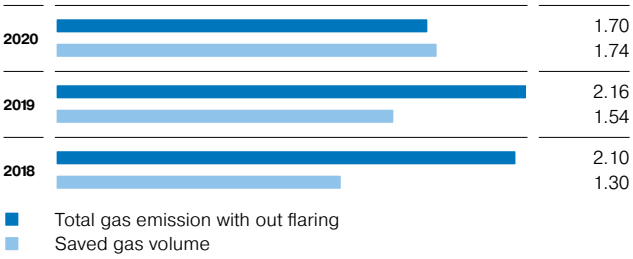
MCS project is carried out by a special-purpose company OOO Gazprom MCS and is aimed at mitigation of environmental risks and improvement of the Company's energy efficiency. The project's participants include 13 PJSC Gazprom's gas transmission subsidiaries. According to the plans, the year 2021 will see full equipping of the MCS fleet. After supply of the 9th and the 10th MCS, natural gas saving will reach full design capacity. This will give 700 mln m^3 of annual natural gas saving volume.

Natural gas saved due to MCS, 2018–2020, mln m^3



In 2020, application of innovative natural gas saving technologies by gas transmission subsidiaries helped to prevent blowing of 486 mln m^3. In general, measures envisaged by the Energy Saving Program conserved over 1.7 bln m^3 of natural gas.

Natural gas saving at UGSS facilities, 2018–2020, bln m^3



Measures taken by gas producing subsidiaries to reduce gas losses during well operation and repair contribute significantly into gas saving during repair.

Within the scope of innovative activities, it is planned to come to a final stage of the large-scale electrical power generation project at Dobryanka-2 GDS of OOO Gazprom transgaz Chaikovsky with the use of ETDA-8000 turbo-expander based on utilization of potential energy from natural gas pressure.

The year 2021 will see a set of industrial tests of a new system of ejectors to conserve gas in case of mode changes at CS in OOO Gazprom transgaz Kazan.

In 2020, natural gas saving volume totaled 1.74 bln m^3.

The Company continued to expand application of the best energy efficient equipment: air cooling exchangers, concentric tubing system at field wells, assembled lube gas oil modules and gas oil heat exchangers at PJSC Gazprom compressor stations, energy efficient lighting facilities and lighting control systems.

To finance effective and innovative projects, subsidiaries made a decision to attract additional investments on the basis of energy service contract mechanisms that will help to significantly improve workflow energy efficiency.

Internal audit

In 2020, due to COVID-19 restrictions internal audit programs required adjustments during the reporting period. The Company agreed to carry out ISO 50001:2018 online compliance audit for the following subsidiaries: OOO Gazprom dobycha Krasnodar, OOO Gazprom transgaz Kazan, OOO Gazprom transgaz Nizhniy Novgorod, OOO Gazprom transgaz Samara, OOO Gazprom transgaz Ekaterinburg. No significant non-compliances were revealed.

Based on the findings of the performed analysis it was concluded to proceed with training of PJSC Gazprom's EnMS internal auditors. The training procedure for internal auditors was developed.

Correction action plans were formulated upon the results of the internal audits. It was concluded that the EnMS of PJSC Gazprom and its subsidiaries complies with ISO 50001:2018 requirements.

Training

Personnel proficiency in energy performance improvement is a firm basis for implementation of PJSC Gazprom Energy Saving and Energy Efficiency Policy.

In 2020, COVID-2019 required to convert a large amount of training programs to the online format, as the Company's personnel worked remotely. Heads and specialists of subsidiaries advanced professional competences within the scope of PJSC Gazprom's corporate continuous professional training system and individual development plans.

Public activities

Science and Technology Government Award is given to scientists and specialists for research and development merits, which yield new technologies, equipment, tools, mechanisms and inventions applied in practice, or open new possibilities to the industry.

Development and introduction of the modular compressor unit (MCU) intended for gas pressure increase in the gas-gathering system of oil gas condensate fields gained Science and Technology Government Award according to the Resolution of M.V. Mishustin, Chairman of the Government of the Russian Federation. The authors group comprised the following specialists: A.N. Efimov, Deputy General Director for Prospective Development of OOO Gazprom dobycha Yamburg, O.A. Nikolaev, General Director of OOO Gazprom dobycha Orenburg, in 2015–2020 — Chief Engineer, First Deputy General Director of Gazprom dobycha Yamburg, and representatives of Research & Development and Design Institute of Centrifugal and Rotor Compressors named after V.B. Shnepp, HMS Group Management Company, PJSC Gazprom.

MCU helps to produce low-pressure gas and extend lifetime of the Yamburgskoye OGCF at the final development stage. It took almost one year for MCU to pass acceptance tests, as producers and designers upgraded it according to comments and recommendations of Gazprom dobycha Yamburg.

#VmesteYarche

Every year PJSC Gazprom's subsidiaries take active part in different public events focused on promotion of careful and rational use of energy resources. In 2020, OOO Gazprom dobycha Krasnodar together with the internet-journal Afisha Krasnodara organized a series of online events within the All-Russian Energy Saving and Ecology Festival #VmesteYarche. The partners created Doodle-video ecological animations.

Organizers showed how everyone can reduce their environmental footprint and preserve environment through very simple steps. The story lines highlighted the use of non-disposable dishware, rational water consumption, use of alternative fuel, disposal of non-rechargeable batteries and household energy saving.

OOO Gazprom dobycha Urengoy made a demonstration lesson "Mother Earth" at the Novy Urengoy school. Representatives of the gas producing company delivered a presentation to the students of PVEI Gazprom Tekhnikum Novy Urengoy about energy efficient technologies used in the company.

PJSC Gazprom's subsidiaries developed and implemented over 200 events to support #VmesteYarche Festival.

Contests of the Ministry of Energy

Specialists of OOO Gazprom transgaz Ukhta became awardees of the Scientific and Innovative Development Contest organized with the support of the Ministry of Energy of Russia. This contest is held on an annual basis under the auspices of the Minenergo of Russia within the innovative development of fuel, energy and producing complex and human resources professional growth program. The Company received the 1st Award of the Contest for the project "Lube oil heat exchanger — energy effective solution for gas transmission" authored by V.G. Nikitin, V.A. Seredenok, A.S. Kaydash, E.A. Terentyev, Yu.V. Belousov.

N.K. Baybakov Public Award

Joint session of the Association Management Board "Energy and Civil Society" and the Central Commission determined the winner of N.K. Baybakov Public Award 2020: authoring teams of OOO Gazprom dobycha Urengoy, OOO Gazprom transgaz Chaikovsky and OOO Gazprom dobycha Yamburg were marked for considerable achievements in energy and society sustainable development.

Regional contests

OOO Gazprom dobycha Orenburg became the winner of the Economy Leader 2020 Regional Contest in the nomination "Energy Efficiency Leader". The company accomplished introduction of ISO 50001:2018 Energy Management Systems.

OOO Gazprom dobycha Noyabrsk won the Gold Support Regional Contest for the third time, which proves efficiency of energy supply and saving measures used by the company.

The Gazprom Group companies

PJSC Gazprom Neft

Energy efficiency improvement of production processes is one of the top priorities in advancing operational performance of PJSC Gazprom Neft. Energy management policy of PJSC Gazprom Neft was approved in 2013. It focuses on reduction in energy intensity of production processes, mitigation of the environmental impact and decrease in consumption of energy resources by the company's business.

PJSC Gazprom Neft energy management system complies with ISO 50001:2018 requirements and is integrated into the corporate management system. Introduction of the modern management tools enables PJSC Gazprom Neft to use the best global and domestic FER consumption management practices.

The outcomes of the energy saving and energy efficiency program implementation are as follows: for logistics, processing and marketing Block – 2.8 mln GJ of energy

resources saved; for exploration and production Block – 1 mln GJ of electrical power saved.

The company is successful in carrying out pilot projects on alternative energy sources and oil refineries digitalization. Accomplished pilot project at Omsk PR on the use of advanced two-sided heterostructure solar modules in 2020 provided additional electric energy generation, enhanced energy efficiency and ecological performance of the company due to engagement of spare process sites. Considering insolation of Omsk, estimated annual electric energy generation can total 1.2 mln kWh, which will help to avoid over 6,300 tons of emitted CO_2 per year.

Similar projects are run at Gazpromneft filling stations (FS) network. For example, the Yaroslavsk region demonstrated the first FS on solar cells. During the day time, solar power station with 5 kW capacity is used as the main electric power source and covers up to 5% of FS annual operation demands. Advanced energy effective technologies applied at FS and equipment upgrading on over 600 company's FS increased energy saving values up to 50%. Recuperation in the FS ventilation system preserves from 60% to 95% of heat and enables repeated use of power in the process flow. Pilot engineering systems automation project at Gazpromneft FS network confirmed up to 29% energy saving efficiency. The system analyzes the current temperature and the number of visitors in FS buildings, and selects the optimum conditioning, ventilation or heating parameters. This solution is included into standard design of Gazpromneft stations.

Digital substantiation project is introduced at Gazpromneft Moscow PR. It was the next step in creating power facilities digital management system for the Russian PRs owned by Gazprom Neft Group. The future system will raise operation efficiency, safety and reliability of the process equipment of the Moscow PR. Software & hardware digital substantiation suite has already proved its efficiency at Omsk PR.

Gazprom energoholding

Gazprom energoholding is the largest Russian owner of electrical power assets (generation of electrical and heat energy). Gazprom energoholding comprises over 80 power stations with installed capacity of around 39 GW (electrical) and 71.2 thousand Gkcal/hr (heat), which is around 17% of installed capacity of the Russian electrical power industry. The top priority goal for OOO Gazprom energoholding is to set up energy saving technologies, develop and apply technologies based on the principles of rational energy resources use. Energy saving and energy efficiency enhancement programs are underway in all Gazprom energoholding companies. They pull efforts on the route towards key sustainable development goals.

In 2020, cumulative energy consumption in Gazprom energoholding for own needs totaled 2.76 mln tons c.e. Volume of energy consumption from renewable energy sources (RES) amounted to 4 thousand tons c.e.

Specific fuel equivalent consumption (SFEC) changes resulted in energy saving due to increase in the share of combined heat and power generation and optimization of the equipment set. Measures specified in energy saving programs are aimed at FER consumption decrease, namely fuel, electrical power, heat, and water.

Cumulative energy consumption reduction due to direct energy saving initiatives implemented in Gazprom energoholding in 2018–2020 surpassed 122 mln GJ.

Gazprom energoholding energy saving and energy efficiency improvement programs 2020 ensured conservation of energy resources amounting to a total of RUB 6,580.7 mln.

Results of the implementation of Energy Saving and Energy Efficiency Improvement Programs at Gazprom Energoholding in 2020

	Fuel saving, thousand tons c.e.		Electrical power saving, mln kWh	Heat power saving, thousand Gcal
	Total	Incl. gas		
Total	1,167.06	1,254.00	649.62	353.68
Total, mln GJ	34.19	33.81	2.34	1.48

Gazprom neftekhim Salavat

OOO Gazprom neftekhim Salavat is one of the leading petrochemical facilities in Russia. The company performs a full hydrocarbon feedstock processing cycle and produces over 100 items with 50% share of large tonnage products, such as motor gasolines, diesel fuel, oil residue, petroleum bitumen for road building, polystyrene, high pressure polyethylene, ammonium, carbamide, etc.
In 2020, cumulative energy consumed by OOO Gazprom neftekhim Salavat totaled 84.03 mln GJ. Heat energy is the main energy resource of the company. Currently, the company is experiencing introduction of ZuluGIS geoinformation system. The purpose of this newly-designed product is debugging, mode simulation, evaluation of efficiency and taking measures to upgrade and develop heat supply system of OOO Gazprom neftekhim Salavat. ZuluGIS requires collection, analysis and processing of the large amount of data on the heat supply system. This software will improve heat supply efficiency of OOO Gazprom neftekhim Salavat and consumers, and reduce consumption of energy resources.

Shop floor energy saving and energy efficiency improvement programs provided the following outcomes.

Results of energy saving and energy efficiency improvement programs implemented at OOO Gazprom neftekhim Salavat in 2017–2020

Parameter	2017	2018	2019	2020
Natural gas saved, mln m^3	49.935	43.783	43.511	n/d[1]
Electrical energy saved, mln kWh	0.880	0.440	1.311	8.849
Heat energy saved, thousand Gcal	21.503	49.675	35.559	16.229
Total, thousand tons c.e.	61.033	57.809	55.761	5.194
Total, mln GJ	1.789	1.694	1.634	0.152

[1] Natural gas saving measures are at the completion stage. Their accomplishment is scheduled for 2021.

Role of natural gas in low-carbon development

Environmental impact of gas infrastructure development

Gazprom follows the global trend towards low-carbon development by carrying out projects focused on increase in efficiency of natural gas use and diversifying its application areas, including creation of effective technologies and search for new marketplaces in Russia and abroad.

Development of gas infrastructure in Russian regions is a strategic focus area for Gazprom that helps to improve living standards, raises atmospheric air quality and reduces GHG emissions.

2020 saw completion of the latest Gazprom's 5-year Program on Gas Infrastructure and Gas Supply Development in the Regions of the Russian Federation. From 2016 untill 2020, gasification level in Russia has grown from 66.2% to 70.1%. Gasification growth rate in rural areas was 2.6 times higher, as compared to towns.

PJSC Gazprom's Gas Infrastructure and Gas Supply Development Programs for 2021–2025 will be performed in 67 regions of the Russian Federation. The number of new facilities supplied with natural gas and gasified populated areas will considerably increase. According to expectations, gasification level of townships and villages will reach 67.8%. In compliance with the 2035 Energy Strategy of Russia, by 2024 gasification level of regions can total 74.7%, by 2035 — 82.9%.

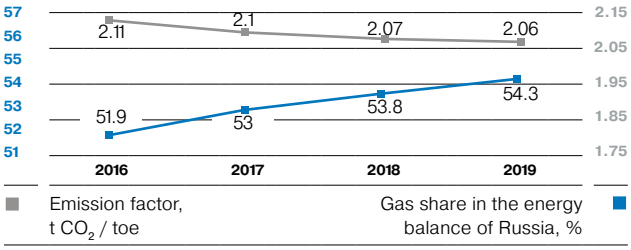
As reported by the International Energy Agency, the share of gas in the energy balance of Russia amounts to 54% (in electrical power generation — 49%), which is one of the highest values in the world and provides lower carbon intensity, compared to other big countries-producers of CO_2 (USA, Germany, Japan, China, India, etc). To compare: in the USA the share of gas in electrical energy production equals to 38%, in the European Union — 20%, in China and India — 3% and 4% correspondingly.

As stated by Minenergo of Russia, carbon intensity of the Russian electrical energy currently totals 350 g CO_2e / kWh, which is lower than in Europe — 376 g CO_2e / kWh. As per estimates of the Ministry of Economic Development and Trade of the Russian Federation, this value regarding heat-and-power supply is approximately 15% lower than worldwide average[2].

Thanks to to implementation of the Gasification Program in 2020 as estimated by PAO Gazprom promgaz, GHG emissions by consumers reduced by 207.6 thousand tons CO_2e, pollutants – by 13.6 thousand t. The potential to reduce GHG emissions due to the gasification facilities introduced in 2020 is 1,718.6 thousand tons of CO_2e, pollutants - 89.2 thousand t[3].

There is a positive correlation between natural gas share increase in the energy balance and decrease in emission factor in Russia's fuel and energy sector.

Correlation between natural gas share in the energy balance of Russia and carbon intensity of the russian FES



Source: International Energy Agency

PJSC Gazprom supplies its consumers with low carbon energy and has the lowest carbon footprint of its supply routes along the whole production chain. Pipeline natural gas supplies via new routes (Nord Stream, TurkStream) are characterized by lower emissions, as compared to existing natural gas supplies to Europe (according to Thinkstep, 2020). Besides, there are plans to reduce GHG emissions in gas bussines by 11.2% as compared to 2018 base level.

Switching transport sector to natural gas

The expansion of natural gas use as a motor fuel is Gazprom's large-scale project. Transport is one of the main sources of pollutant emissions. Motor vehicles take 40% of the total volume of pollutant emissions into the atmosphere (80–90% in metropolises) and about 10% of GHG emissions.

Today, natural gas with methane as its major component (92–98%) is the most promising alternative fuel. Natural gas can be used as a motor fuel both in compressed, and in liquefied form. Switching transport to natural gas as a motor fuel has certain positive effects, it will not only reduce negative impact on the environment, but extend the life of engines and vehicles, reduce prime-cost of transportation, and improve the energy performance of the transport system.

[2] https://minenergo.gov.ru/node/18809

[3] Broad estimates of GHG and pollutants emissions reductions according to the data of regional gas distribution companies – OOO Gazprom mezhregiongaz and OOO Gazprom investgazifikatsiya - on the volumes of natural gas sold to end consumers in 2020 for the specified gasification facilities, taking into account consumers analysis

In line with the Russia's 2035 Energy Strategy, consumption of gas as a motor fuel (GMF) will rise four times by 2024 and will total 2.7 bln m^3, by 2035 — it will grow 15–19 times and will total 10–13 bln m^3.

In 2020, Russia started to fulfill a subprogram "Development of gas motor fuel market" within the scope of the State Program "Development of energy industry". The Program forecasts increase in the number of stationary gas filling infrastructure facilities up to 1273 units by 2024, and natural gas powered fleet by not less than 40 thousand new units with a total of 307.5 thousand.

Currently, PJSC Gazprom in collaboration with administrations of constituent entities of the Russian Federation carries out pilot projects on accelerated development of gas filling station network in Belgorodskaya, Kaliningradskaya, Leningradskaya, Rostovskaya regions and in Saint-Petersburg. Apart from construction of new natural gas filling stations, the projects focus on NGV fleet growth and creation of service centers for re-equipment and maintenance of such vehicles. State support is of essential importance to boost GMF market growth in Russia.

During 2020, gas motor infrastructure extended its boundaries for over 30 new facilities located in 16 constituent entities of the Russian Federation from Kaliningrad to Sakhalin. OOO Gazprom gazomotornoye toplivo reported on 530 CNG filling stations by the end of 2020 in Russia, of which 353 were owned by Gazprom. In 2020, over 1 bln m^3 of natural gas as a motor fuel was traded through the Gazprom Group facilities, which is more than the cumulative trading through the whole Russian GMF market in 2019.

Expansion of the state program on financing transport conversion to methane is an additional considerable impetus. Any car owner, whether a physical person, representative of small or medium business, or sole entrepreneur, can re-equip its transport at the two third of the re-equipment price, and compensate one third by OOO Gazprom gazomotornoye toplivo marketing programs.

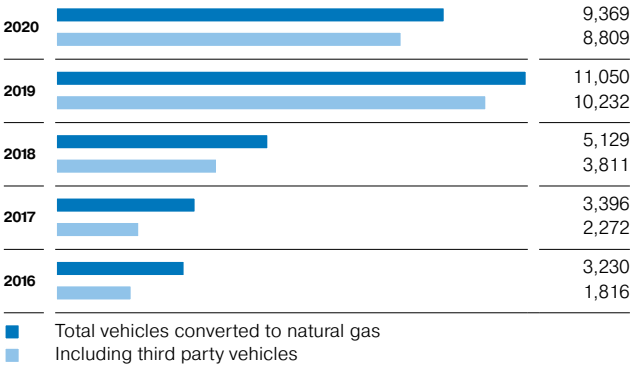
In 2020, the Company built over 30 new gas refueling facilities: modern CNG filling stations, gas-filling modules at existing filling stations, and sites for the allocation of mobile NGV refuelers.

The Gazprom Group continues to convert its own fleet to natural gas. Within the scope of Gazprom's Program on Expansion of Natural Gas Use as a Motor Fuel at its own fleet, in 2020, subsidiaries involved in mainstream business activities of PJSC Gazprom (exclusive of OsOO Gazprom Kyrgyzstan, ZAO Gazprom Armenia, OAO Gazprom transgaz Belarus) purchased 863 NGVs and 8 mobile gas filling infrastructure units (mobile CNG station, mobile NGV refueler).

The share of methane-fueled vehicles in the Gazprom Group is almost 60% of the total fleet, which already provides appreciable outcomes: over 127 thousand tons of pollutant emissions reduction, and around RUB 6 bln fuel-saving effect.

In 2020, subsidiaries involved in non-mainstream business activities of PJSC Gazprom (OOO Gazprom mezhregiongaz) purchased 369 NGVs, and converted 382 vehicles. Within the scope of Gazprom's 2020–2022 Program on Expansion of Natural Gas Use as a Motor Fuel at its own fleet, the share of NGVs in the Gazprom Group companies is planned to increase up to 70%. Gazprom is also developing the network of CNG filling stations, and coordinates the work of the interested participants of domestic gas motor fuel market.

Conversion of vehicles to natural gas in the Gazprom Group, 2016–2020, units/year



Switching transport to natural gas fuel significantly reduces emissions both in the fuel use phase and along the entire fuel production chain. GHG emitted during production of compressed natural gas (from production to refueling) are 4 times lower, than from conventional petroleum engine fuels. The GHG emission reduction potential is estimated at 65 mln tons of CO_2 annually in case 50% of vehicles are converted to natural gas in the Russian Federation.

The year 2020 saw conversion of 8,799 vehicles to GMF under the scope of ongoing marketing programs of OOO Gazprom gazomotornoye toplivo.

Use of liquefied natural gas (LNG) in railway and water transport is an important activity of Gazprom. The Company launched construction of the filling point for gas locomotives at station Voynovka of the Sverdlovsk railway. There are plans to set up such facilities on the railway Obskaya — Bovanenkovo — Karskaya. In 2020, the first Russian gas-powered tourist water bus "Chaika-LNG" was floated out in the Volga river in Zelenodolsk. Plans for bunkering projects are also underway.

In accordance with the Action Plan (Roadmap) on the development of low-tonnage liquefied natural gas and gas motor fuel market in Russia up to 2025 approved by the government of the Russian Federation, cumulative installed capacity of the current low-tonnage LNG production facilities will grow from 21.7 t/hr in 2020 to 83.3 t/hr in 2025, and the number of LNG filling infrastructure facilities from 10 in 2020 to 81 in 2025.

Trademark the Blue Corridor Rally was held online in 2020. This time the project focused on the discussion of advantages of low-carbon, liquid and gaseous fuels with

politicians. Existing EU emissions regulations for new light-duty and commercial vehicles give preferences to e-vehicles as an "ideal solution" for achievement of climate goals. Use of natural gas as GMF enables to quickly reduce CO_2 emissions from cars considering the whole process chain and to take rightful place in the future green transport industry.

Hydrogen economy

An opportunity for "energy" application of hydrogen is related to zero direct emissions of pollutants and carbon dioxide into the atmosphere under the rising trend towards decarbonization of the global economy. Hydrogen can become a new energy carrier to address climate tasks, generation, accumulation, storage and supply of power.

Hydrogen production is not a unique activity for Gazprom. The Gazprom Group companies annually produce over 350 thousand tons of hydrogen-containing gas, which is used to obtain motor fuels of emission class 5, to produce ammonium and other output, and in some cases — for own process needs.

Now, PJSC Gazprom is implementing projects that focus on the development of innovative hydrogen production technologies out of natural gas with zero CO_2 emissions on the basis of methane plasma pyrolysis, methane pyrolysis in a molten metal, as well as production and use of methane-hydrogen mixtures for own power needs. The studies on the best hydrogen transportation options are underway. The Company looks into possibilities to apply carbon dioxide capture technologies for conventional methods of hydrogen production from natural gas.

PJSC Gazprom's view that premises on the advantages of using natural gas to produce hydrogen was submitted to the European Commission in July 2020 under the EU Hydrogen Strategy development.

PJSC Gazprom maintains technical hydrogen dialogues on a constant basis with BASF/Wintershall Dea GmbH, N.V. Nederlandse Gasunie, VNG Gasspeicher GmbH, Uniper SE, OMV Aktiengesellschaft, CNPC, KOGAS, Royal Dutch Shell, Linde AG and Agency for Natural Resources and Energy of Japan.

Together with German companies, Gazprom participates in the international sci-tech project on evaluation of the possibility for safe storage of methane-hydrogen mixtures in UGS.

Considering the fact that it is better to produce hydrogen and methane-hydrogen mixtures at consumers (due to their different requirements for mixtures), PJSC Gazprom in collaboration with foreign companies carries out research to prepare feasibility study for hydrogen production from natural gas with zero CO_2 emissions.

In the mid-term perspective, PJSC Gazprom will take part in implementation of crucial pilot projects attractive for the Company under the Action Plan "2024 Development of Hydrogen Economy in the Russian Federation".

In 2020, the Company made a decision to create a special-purpose company OOO Gazprom Hydrogen to set up and perform innovative pilot projects related to the development of low-carbon technologies associated with production, storage, transmission and use of methane-hydrogen mixtures and hydrogen produced from natural gas, and to develop solutions for their use for PJSC Gazprom's own process needs.

Low-carbon development: assessing risks and opportunities

On a voluntary basis Gazprom puts into practice recommendations of Task Force on Climate-related Financial Disclosures (TCFD) in order to keep interested parties informed on the environmental aspects of corporate activities. Within this initiative Gazprom performs identification and evaluation of climate risks, including those related to transition to low-carbon development scenario (transition risks) and risks related to physical changes in the environment due to climate changes (physical risks).

Results of PJSC Gazprom's low-carbon development are annually assessed by CDP experts. In 2020, PJSC Gazprom and PJSC Gazprom Neft were acknowledged the best Russian oil and gas companies according to CDP climate scoring.

Thus CDP admits that Gazprom discloses climate data necessary for investors, puts into practice corporate management, planning and handling of issues related to climate change mitigation, takes coordinated climate protection actions.

Currently, the Company develops PJSC Gazprom's sustainable development scenarios up to 2050 with due account of global economy's low-carbon trends. This project encompasses comprehensive analysis of the global power economy development prospects, the low-carbon economy management up to 2050 for different scenarios, as well as strategizing for adaptation of global energy companies to low-carbon economy trend. The project should end up with PJSC Gazprom's 2050 Climate

Roadmap, along with respective climate goals. Production and use of hydrogen and methane-hydrogen mixtures to diversify and increase efficiency of natural gas is one of low-carbon development paths taken by PJSC Gazprom. As part of the medium-term planning, the Gazprom Group has set specific GHG emissions reduction targets.

The Gazprom Group set the following GHG emission factor reduction values under medium-term planning conditions

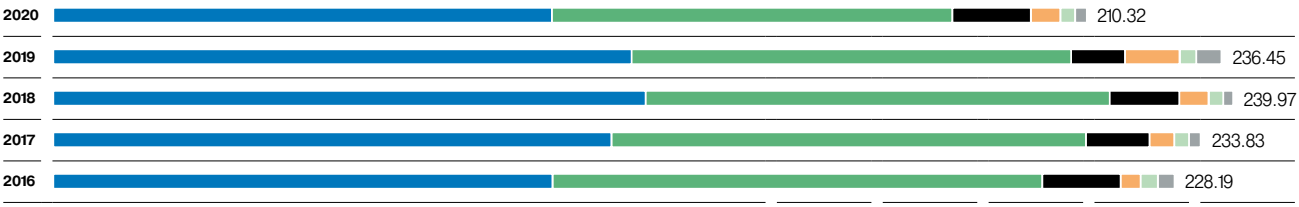
	Planning horizon	Reduction in GHG emission factor in CO_2e, % (as compared to 2018)
PJSC Gazprom	2031	11.2%
OOO Gazprom energoholding	2031	10.5%
PJSC Gazprom Neft	2025	18.9%

Greenhouse gas emissions

All companies of the Gazprom Group apply a uniform control and accounting procedure for GHG emissions. Quantitative assessment of GHG emissions is done in accordance with Methodological Guidance on the Quantification of Greenhouse Gas Emissions by Entities engaged in Business and other Activities in the Russian Federation approved by the Order No. 300 of the Ministry of Natural Resources and Environment of the Russian Federation as of 30 June 2015.

In 2020, GHG emissions (Scope 1) of the Gazprom Group totaled 210.32 mln tons CO_2e, i.e. decreased by 11% as compared to 2019.

Gazprom Group GHG emissions, 2016–2020, mln tons CO_2e



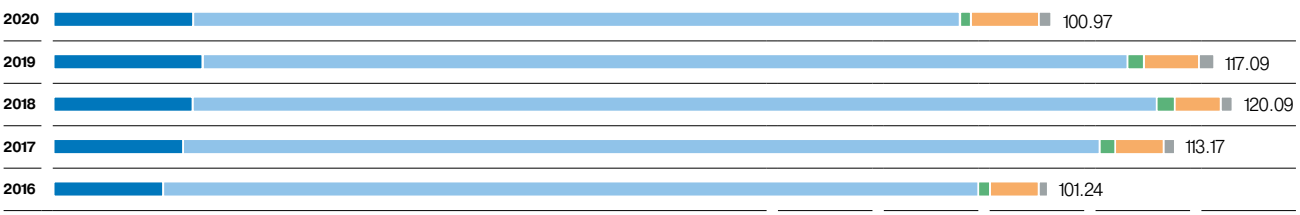
	2016	2017	2018	2019	2020
PJSC Gazprom	101.24	113.17	120.09	117.09	100.97
Gazprom energoholding	99.72	96.17	94.06	89.03	81.32
Gazprom Neft Group	16.18	13.31	14.33	16.04	16.65
Gazprom neftekhim Salavat	4.56	5.75	6.18	6.04	6.01
Sakhalin Energy	3.42	3.22	3.25	3.05	3.40
Other companies	3.07	2.21	2.06	5.20	1.97

The Gazprom Group GHG emission control and accounting system includes condition monitoring of process facilities, development and adoption of the Best Available Techniques (BAT) and innovative resource and energy saving technologies, corporate regulatory documents and information support for Gazprom's top management decisions.

In 2020, absolute GHG emissions of the Gazprom Group decreased by 11%, as compared to 2019 due to energy saving measures, innovations, growth in the use of technologies aimed at saving natural gas during repair works, decrease in consumption of natural gas for fuel use and the volume of transmitted products.

In 2020, prevention of methane emissions during GTL repair helped to avoid 25,832.8 thousand tons of CO_2e in GHG emissions.

GHG emissions dynamics at PJSC Gazprom by types of activities, 2016–2020, mln tons of CO_2e



	2016	2017	2018	2019	2020
Production	11.60	13.07	14.39	15.01	14.27
Transmission	82.20	92.28	97.52	93.65	77.61
Underground gas storage	1.20	1.34	1.44	1.33	1.13
Processing	5.41	5.46	5.71	5.99	6.83
Other types of activities	0.83	1.02	1.03	1.11	1.13

Decrease in absolute GHG emissions in the Gazprom Group by 11% and from mainstream activities of PJSC Gazprom by 13.9% in 2020 compared to the previous year is in alignment with SBTi criteria under CDP scope according to 1.5˚C scenario.

GHG emissions from PJSC Gazprom facilities in 2020 totaled 100.97 mln tons of CO_2e, with methane accounts for 25%.

Methane emissions at PJSC Gazprom by types of activities, 2020, mln tons of CO_2e

Type of activity	CH_4 emissions
Production	1.19
Transmission	23.82
Underground gas storage	0.42
Processing	0.03
Other	0.06

PJSC Gazprom takes measures to reduce absolute volumes of methane emissions, including under the international initiative “The Guiding Principles on Reducing Methane Emissions across the Natural Gas Value Chain”.

PJSC Gazprom created methane emissions monitoring system, developed necessary regulatory base, organized corporate control over gas leaks that is done by a special-purpose inspection OOO Gazprom gaznadzor irrespectively of subsidiaries. Inspection results are submitted to Gazprom for coordination and control over works performance. The Company adopts round-the-clock monitoring systems to detect methane in air and automatically alert on exceedance of its concentration (remote laser methane detectors). Detectors installed on helicopters or unmanned aerial vehicles (drones) are also used to identify methane at gas industry facilities. Works on satellite monitoring are underway.

According to the reporting data 2020, methane emissions from mainstream activities of Gazprom totaled 0.02% of produced gas, 0.24% of transmitted gas, and 0.03% of stored gas. Based on results of studies carried out with the use of the European Space Agency satellite data, Kayrros confirmed that methane emissions are aligned with gas loss values specified in Gazprom reports.

Gazprom participates in the development of advanced GHG emissions, in particular methane, monitoring methods. Satellite monitoring is among them. This method experiences rapid growth. Today, there are satellite systems used for online detection of large emissions that occur during operation of gas transmission systems.

With the support of Roskosmos, Gazprom launched the project on construction of the assembly plant for space vehicles. Apart from Yamal communication satellites, the plant will produce optical satellites for SMOTR-V Earth remote sensing system. They will expand geotechnical monitoring and control opportunities for protected zones to ensure industrial and environmental safety of Gazprom’s facilities. It is expected that 2024 will see launch of the first out of six SMOTR-V satellite.

GHG emissions at PJSC Gazprom by emission source categories, 2020, mln tons of CO_2e

Sources (processes)	Total	CO_2	CH_4
GHG emissions, total	**100.97**	**75.45**	**25.52**
Stationary fuel combustion	68.70	68.70	0.00
Flaring	2.26	2.18	0.08
Fugitive emissions	25.44	0.00	25.44
Other industrial processes	4.47	4.47	0.00
Air transport	0.07	0.07	0.00
Railway transport	0.03	0.03	0.00

In order to provide more reliable data on the impact of GHG emissions on the climate system and with due account of the recommendations of the Intergovernmental Panel on Climate Change (IPCC), as well as in accordance with the decision of the Conference of the Parties serving as the meeting of the Parties to the Paris Convention[4], PJSC Gazprom additionally uses Global Temperature change Potential over a 100-year time horizon. Thus, to represent fossil methane emissions (CH_4) in CO_2e, conversion factor 6 is used.

With account of Global Temperature change Potential, GHG emissions of the Gazprom Group totaled 190.31 mln tons of CO_2e, GHG emissions of PJSC Gazprom totaled 81.58 mln tons of CO_2e.

The biggest GHG emissions reduction effect is provided by the following technologies: gas supply to consumers via gas distribution stations, bypass of natural gas from the repaired section to the operated gas pipeline, use of gas from process piping of the compressor shop for own needs.

Significant GHG emissions reduction is achieved by using MCS to prevent methane venting into the atmosphere during repair works on the GTL. The program on natural gas saving with the use of MCS is participated by 13 gas transmission subsidiaries of PJSC Gazprom. The volume of gas saved in 2020 is estimated at 486 mln m^3.

Measures taken by gas producing subsidiaries aimed at gas loss reduction during operation and repair of wells significantly contribute into gas saving.

The implementation of energy-saving measures and the introduction of innovations made it possible to achieve the key performance indicators of Gazprom in 2020: the reduction of specific GHG emissions compared to the base year of 2018 was 7.7%.

PJSC Gazprom calculates indirect GHG emissions regarding the whole production chain.

Indirect energy GHG emissions at PJSC Gazprom by types of mainstream activities, 2020, mln tons of CO_2e

Production	0.30
Transmission	2.42
Underground gas storage	0.04
Processing	2.01

Indirect energy GHG emissions at the Gazprom Group, 2020, mln tons of CO_2e

PJSC Gazprom	4.77
Gazprom Neft Group	4.40
Gazprom neftekhim Salavat	2.56
Gazprom energoholding	0.00

The use of sold products amounts to over 90% of the total volume of oil and gas companies emissions[5]. Due to this fact, evaluation of Scope 3 GHG emissions is done for this category of high priority.

Volume of GHG emissions under Scope 3 for the Gazprom Group, 2020, mln tons CO_2e

Sold products	GHG emissions
Gas	872.11
Oil and gas condensate	74.16
Other energy resources	132.23
Total	**1,078.50**

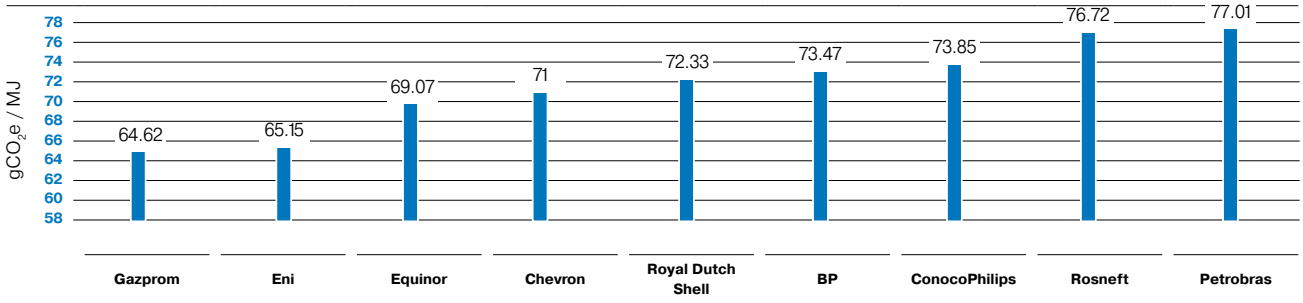
Carbon intensity of Gazprom Group's products combusted by end-users is 301.35 kg CO_2 / bbl o.e.

[4] Resolution 18 / CMA.1, Appendix, article 37.

[5] CDP Technical Note: Guidance methodology for estimation of Scope 3 category 11 emissions for oil and gas companies.

Gazprom participates in the Transition Pathway Initiative (TPI), which is a global initiative aimed at estimation of companies readiness to low-carbon economy transition. The TPI 2020 score shows that Gazprom's GHG emission factor is considerably lower, than other oil and gas companies.

Carbon intensity of the majors, 2019, CO_2e / MJ



Source: www.transitionpathwayinitiative.org/sectors/oil-gas

Use of renewable and secondary energy sources

The Gazprom Group supports and develops the use of alternative energy sources wherever it is economically and technically feasible, especially in remote or technologically isolated areas.

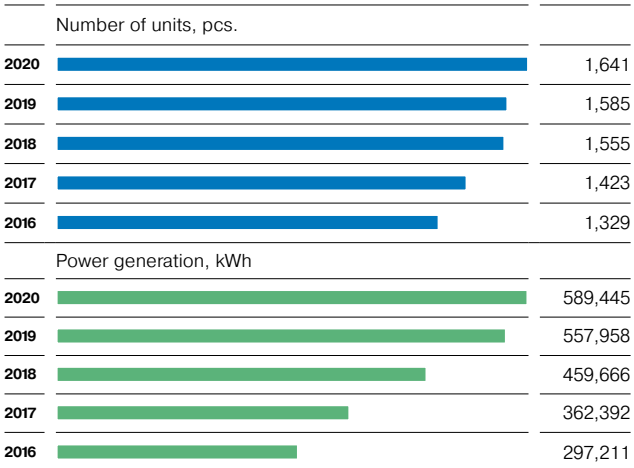
The Gazprom Group uses renewable energy sources (RES) and secondary energy sources (SES) for own needs and sale to external consumers. Solar and wind generators, gas flow heat and energy power converters are widely applied at production and gas trunkline transmission facilities, as well as gas distribution networks to provide current power supply to telemetry systems, cathodic protection of pipelines, lighting, etc.

In 2020, PAO TGK-1 (Gazprom energoholding) and OOO Nugush hydroengineering complex (Gazprom neftekhim Salavat) generated 13.28 bln kWh of power by means of RES hydrogenation. The main production volume is accounted for by the PAO TGK-1 hydroelectric power plants that contribute significantly to the green energy of the North-West Federal District of Russia (40% of installed PAO TGK-1 capacity is accounted for hydrogeneration, namely 40 HPP with a total capacity of around 2,900 MW).

In 2020, the Gazprom Group used 2,573 RES and SES –based power units, exclusive of hydroelectric sets, such as turbo-expanders, thermoelectric generators, solar modules and cells, wind generators. Cumulative volume of electrical power generated by these power units totaled 1,805.24 thousand kWh.

In 2020, actual power generated by solar power plant constructed in 2019 at Omsk PR amounted to 1,041.7 thousand kWh. The first phase of the project was completed in 2019. Decision on construction of the similar 20 MW electric power plant will be made in 2021.

Indicators of renewable and secondary energy sources use in PJSC Gazprom, 2016–2020



In 2020, Gazprom Neft launched the first filling station (FS) on solar cells in Yaroslavskaya region. Autonomous energy system installed at FS has 16 solar modules made in Russia. Equipment of the solar power station is adjusted for the regional climate, and is able to work effectively under the temperature range from –35°C to +31°C.

Electrical power generation from renewable and secondary energy sources in the Gazprom Group, 2018–2020

	Electrical power generation, kWh			Number of units, pcs.		
Generation type	**2018**	**2019**	**2020**	**2018**	**2019**	**2020**
All RES and SES types	12,844,199,280.1	11,703,054,790.2	13,281,763,422.7	2,272	2,358	2,689
Including PJSC Gazprom	459,666.3	557,958.2	589,444.7	1,555	1,585	1,641
Turbo-expanders	93,165.0	74,679.0	105,257.8	17	21	18
Including PJSC Gazprom	93,165.0	74,679.0	105,257.8	17	21	18
Thermoelectric generators	6,438.8	257,431.7	258,062.0	726	820	830
Including PJSC Gazprom	6,438.8	257,431.7	258,062.0	726	820	830
Solar and wind generators	483,060.3	354,136.5	1,441,922.0	1,411	1,399	1,725
Including PJSC Gazprom	360,062.5	225,847.5	226,125.0	812	744	793
Hydroturbines	12,843,616,616.0	11,702,368,543.0	13,279,958,181.0	118	118	116
Including PJSC Gazprom energoholding	12,819,013,716.0	11,673,658,262.0	13,248,799,100.0	115	115	113
Gazprom neftekhim Salavat	24,602,900.0	28,710,281.0	31,159,081.0	3	3	3

Scientific and technical support of environmental protection

Innovative research and development

The Gazprom Group companies place special emphasis on financing and promotion of the innovative scientific research, development and introduction of the best practices and technologies to focus on minimization of industrial impact on the environment and climate.

In 2020, the Gazprom Group completed R&D environmental protection works priced at RUB 252.5 mln, including the efforts pursued by corporate scientific research institutes – OOO Gazprom VNIIGAZ and OOO NIIgazekonomika.

Range of activities and immensity of tasks that Gazprom Group faces can be judged by topics of R&D projects carried out in 2020.

OOO Gazprom VNIIGAZ created a system of selective catalytic reduction (SCR) of nitrogen oxides in exhaust gases of gas compressor units (GCU) to align emission values to BAT-based EU standards. SCR reduces concentration of nitrogen oxides in exhaust gases of gas turbines to values not exceeding 50 mg/nm^3 and acceptable noise levels. The whole process is under control: operator can regulate not only gas turbine, but also concentration and content of emissions. SCR acceptance tests were held in OOO Gazprom UGS branch — Moscow UGS department. SCR test results were acknowledged positive and complying with EU standard requirements. It was recommended to carry out endurance tests in the future. SCR system efficiency factor is 90%. It can be accepted for commencement of production and further operation. Development of the Unified Design Approach and Collection of Standard Engineering Solutions for the System of selective catalytic reduction of nitrogen oxides in exhaust gases of GCU is underway.

Creation of the comprehensive hydrocarbon spill response technology for water bodies, coast lines and shorefronts located in offshore field development zones has been completed. This technology is based on joint use of 2-3 kW mobile laser unit, surfactant for water surface treatment and BIOROS bio agent for soil treatment. Hydrocarbon decontamination efficiency totaled 82.3–99.7% for soils, and 80.9–99.6% for water. Designed surfactant SOBIRATEL helps to localize hydrocarbon contaminations on the water surface. Its parameters overtop the world equivalents. Ability to contract hydrocarbon spill up to 99%, prevent it from spreading during 270 minutes, work effectively under 0 to +35˚C operating temperature range in fresh and salt waters are outstanding features of the agent. Subsequent to the results of these studies, applications for five patents were submitted.

Gazprom takes active part in the global process to define the place of natural gas in the new normal power industry and global economy.

Evolution of nature-like technologies for gas industry needs is one of the focal areas for R&D works financed by PJSC Gazprom and implemented by OOO Gazprom VNIIGAZ. In particular, creation of effective bioprotein production technology (new product from natural gas) is ongoing. Getting relatively cheap feed stuff with at least 70% protein content ensures food security of the country, and diversifies PJSC Gazprom business allowing for maximum rational use of fields with declining production. In 2020, Methylococcus capsulatus - producing strain of methane-oxidizing bacteria that can be used in industrial production - was selected and deposited along with the adjustment of the technology of its submerged cultivation. Source data for technology scaling of bioprotein production out of natural gas have been obtained, optimal fermentation conditions and process guidelines have been determined and developed. The project resulted in test batch of the product with protein content over 70%.

Biopreparation for restoring functional properties of building structures based on microorganisms with urease activity is another example of nature-like technologies. A special paste is put into concrete during repair. In case of damages (fractures, etc.) it restores functional properties of building structures by quick (up to 30 days) filling of defects. The preparation prevents undesirable processes that threaten stability of industrial structures, infrastructure and environment.

Gazprom's subsidiaries have successfully been introducing new engineering solutions at hydrocarbon fields of the Yamal Peninsula through 2020. They focus on the improving operational efficiency of difficult wells, in particular equipping wells with concentric tubing. From the ecological perspective, advantage of this technology is that there is no need for well blowing, and thus, there are no methane emissions into the atmosphere.

Another air pollution prevention project was implemented by OOO Gazprom dobycha Noyabrsk on the Ety-Purovskoye field. The end of 2020 saw commissioning of BCS with low-noise eco-friendly GCU with electric drive after equipment and automated systems testing.

The year 2020 saw drawing up of the corporate document STO Gazprom "Technology for disposal of residues and wastes of odorants and its storage tanks". This standard paved the way for PJSC Gazprom's and subsidiaries' practical application of an innovative technology for ozone treatment of different sulfur-containing components to neutralize hazardous odorant wastes, used and operated containers. This moves the process of natural gas odorization to a whole new level of environmental safety.

Low-carbon power sources trend strengthened position of hydrogen as an energy source. This opened up additional

opportunities for the gas industry to use methane for production of hydrogen energy carriers (hydrogen, methane-hydrogen fuel, etc). The work was launched to evaluate process restrictions, ecological and economic parameters, including impact on climate, human health, ecosystems and resources, production technologies, use of hydrogen and methane-hydrogen fuel. Obtained results demonstrate investors, consumers and other interested parties benefits of hydrogen production out of natural gas, and potential for carbon footprint reduction related to PJSC Gazprom gas supplies by using hydrogen fuel.

In recent times, development prospects of energy companies are more and more governed by carbon intensity of the main process flows. This was a reason for Gazprom to proceed with advancement of GHG emissions control systems, including scientifically grounded estimation of national GHG emission factors for federal bodies and international community, as well as elaboration of carbon footprint assessment and GHG emissions monitoring procedure. For example, in Schelkovo town located in the Moscow region there is an ongoing construction of the assembly plant for production of space vehicles — optical satellites SMOTR-V for the Earth's remote sensing equipped with tools for such monitoring. Gazprom carries out this project with the support of Roskosmos.

PJSC Gazprom engages institutes of the Russian Academy of Sciences to investigate problems associated with climate change adaptation technologies to ensure safety of process facilities under changing climate and geocryological conditions. The year 2020 saw completion of drafting the R&D project designed to zone territories by geocryological hazards, enhance efficiency of structural engineering, minimize costs for their protection, and upgrade the system of geotechnical monitoring with the use of the Russian instrumental base. Performed investigations helped to develop and implement comprehensive measures to adjust PJSC Gazprom's process activities to changing climate and geocryological conditions.

OOO Gazprom VNIIGAZ completed the following R&D projects:

— Development of the regulation method for natural gas consumption for own process needs and process losses of gas transmission via trunklines
— Analysis of PJSC Gazprom energy saving and energy efficiency improvement programs execution for the previous reporting period in 2020
— Analysis and updating PJSC Gazprom energy saving and energy efficiency improvement program for 2021, and drawing up PJSC Gazprom's 2022–2023 Energy Saving and Energy Efficiency Improvement Program

At the request of PJSC Gazprom, the year 2020 saw development of innovative high-performance methane adsorbents to enhance energy efficiency of natural gas storage. Due to lower pressure and adsorbed state of natural gas in micropores, adsorption systems ensure additional fire safety. Surveys' findings will help to advance natural gas storage systems, including transmission sector.

OOO NIIgazekonomika carried out the following R&D projects in the sphere of legal, environmental and economic regulation:

— Study of prospects of adsorption natural gas commercial use to regulate seasonal and peak irregularity in gas consumption
— Benchmarking of PJSC Gazprom's ecology and energy efficiency competitors (including foreign companies)
— Study of environmental and economic effects from implementation of process solutions in design documents

Annual actual economic effect from using findings of own R&D surveys at Group's organizations exclusive of third-party developments overtops RUB 10 bln for gas business.

It is worth mentioning that not each innovation is aimed at reaching considerable economic effect, as often utmost importance goes to safety of process flows and HSE.

Use of the best available techniques

PJSC Gazprom Innovative Development Program up to 2025 approved by the Decision No. 3099 of PJSC Gazprom Board of Directors as of 17 April 2018 is mainly driven by a set of interrelated measures that focus on the development and introduction of new technologies, innovative products and services aligned with or overtopping the global level, as well as arrangement of favorable conditions for advancement of innovative activities both in the Gazprom Group and related areas of the industrial production in Russia.

The Program envisages active cooperation with corporate and external scientific organizations within the scope of R&D works, state development institutions, higher educational establishments on organization of joint research and personnel training.

Environmental safety and energy performance of the Gazprom Group operating activities are improved mainly through adoption of innovative technical and technological solutions.

PJSC Gazprom actively participates in fulfillment of BAT principles: before 2014 — in a proactive manner, after 2014 — under federal law provisions. In 2020, PJSC Gazprom initiated amendments in ITS (BREF) 29-2017 Natural gas production. Amendments were approved by the Federal Agency on Technical Regulation and Metrology.

Transition of PJSC Gazprom to the best available techniques is done through the development and approval of the BAT Transition Roadmap, and elaboration of corporate documents, including R Gazprom 12-2.1-025-2019 Regulatory Environmental Protection documents. Gas supply systems. Methodical recommendations for drawing up Complex Environmental Permits.

In 2020, OOO Gazprom VNIIGAZ launched development of EP regulatory documents to ensure PJSC Gazprom's transition to process regulation principles based on the best available techniques: STO Gazprom Regulatory environmental protection documents. Gas supply system. Atmospheric air protection. Regulation of pollutant emissions. General requirements, and STO Gazprom Regulatory environmental protection documents. Gas supply system. Catalogue of environmental parameters of gas transmission equipment. Beyond that, evaluation methods for atmospheric emissions are updated on the basis of process values and included into the Register of the Ministry of Natural Resources of the Russian Federation.

Commitment to apply BAT at different stages of business activities is envisaged by the Company's Environmental Policy.

PJSC Gazprom's Science and Technology Prize

PJSC Gazprom's science and technology prize is awarded annually since 1998. It is an important constituent of the corporate R&D policy of Gazprom aimed at promoting innovations and securing the Company's technological leadership in the global energy business.

The Prize is awarded for remarkable projects in natural gas production, transmission, processing and utilization that culminated in development or advancement and most importantly effective application of new equipment, tools, materials and technologies.

As a rule, the majority of R&D projects nominated for the Prize have direct or indirect environmental effect.

In 2020, projects from 23 Gazprom's subsidiaries and 8 external organizations prepared by 126 authors were nominated for the Prize.

Submitted works were reviewed by the expert group represented by specialists from PJSC Gazprom and its subsidiaries. Experts evaluated projects relevance, novelty, scientific and technical level (research intensity), scope and scale of application, as well as financial viability of their use at PJSC Gazprom. In 2020, the following projects were among the Prize winners.

Application of innovative energy-saving approaches in gas transmission companies by upgrading diagnostics, repair and maintenance methods for shut-off and control valves

Nominee — OOO Gazprom transgaz Stavropol.

The authors developed mobile valve check laboratory. The field lab carries out a set of preventive works on maintenance, inspection, adjustment and repair of spring-loaded dump safety valves. The laboratory enables to perform the whole range of works in field conditions without using gas for process needs (atmospheric air is used as a reactant).

Developed innovative measures help to mitigate negative impact on the environment by reducing natural gas emissions into the atmosphere.

The project received two utility patents.

Development and introduction of airspace technologies for airborne surveillance of gas trunklines

Nominee — AO Gazprom space systems.

The authors met a relevant challenge — reduction in the use of expensive manned helicopters for airborne surveillance and acquisition of spatial data required for addressing critical production tasks of GTL operation.

The authors developed GTL monitoring technologies with the use of airborne unmanned and satellite acquisition to apply them in the control of protected zones and minimum distances. Authors also provided representation forms for monitoring results.

The project received state registration certificate for software application, and design patent.

Design and engineering solutions for effective and long-term operation of wells under complicated mining and geological conditions of PJSC Gazprom's underground gas storages abroad

Nominee — OOO Gazprom UGS.

The authors accomplished a vital task of increasing UGS wells' capacity by improvement of penetration methods. Suggested measures allow for cutting production string facing a pay zone, and removing old cement stone with colmated part of the bottomhole formation.

The project resulted in the development of the technology for ensuring high-integrity production bottomhole of UGS wells, including location in difficult mining and geological conditions, poor-cemented fine-grained and heterogeneous reservoirs, as well as fixation of the reservoir bed top.

The work received three invention patents.

Economic benefits from the work's findings are related to additional profits (due to well capacity increase) and reduction in OPEX for UGS wells.

Improving gas dynamic parameters of PJSC Gazprom's gas turbine units based on advanced numerical modeling methods

Nominee — OOO Gazprom transgaz Yugorsk.

The authors succeeded in essential task of improving gas dynamic stability of axial-flow compressors by upgrading over 100 GCU GTK-10-4.

For the first time in Russia, authors used modern computational gas dynamics methods to address applied problems of GCU operation, and carried out comprehensive experimental studies that confirmed validity of computational methods.

The project received three invention patents.

Development and introduction of the optimization technology for geodynamic monitoring at PJSC Gazprom's fields

Nominee — OOO Gazprom VNIIGAZ.

The authors developed optimization technology for geodynamic monitoring at PJSC Gazprom's fields. The technology consists of two parts: methodological and management.

The system of geodynamic monitoring control that was set up in the course of the work provides comprehensive analysis of the outcomes of all geodynamic monitoring observations carried out by PJSC Gazprom's subsidiaries, single reporting and its consolidated submission to Rostekhnadzor.

The main economic benefit of the optimization technology for geodynamic monitoring at PJSC Gazprom's fields is cost-saving for geodynamic test sites.

The project resulted in the development of three documents within PJSC Gazprom's standardization system, two invention patents, 43 publications and 2 monographies.

International cooperation

International environmental and energy performance cooperation is an integral part of PJSC Gazprom's activities in pursuing sustainable development targets.

The companies' scientific and technological communication in 2020 on environmental aspects of Gazprom's activities could serve as an impressive example of how much companies can achieve, if they are willing to engage in meaningful dialogue and follow the principles of equal and mutually beneficial partnership. Series of meetings with foreign partners aimed at relevant joint environmental and energy efficiency studies have been held within the scope of sci-tech cooperation programs.

Low-carbon development and GHG emissions reduction are becoming more and more pressing issues of the day. PJSC Gazprom always focused special attention to this topic in cooperation with foreign partners.

Role of natural gas in low-carbon development

In February 2020, the Round Table "The role of gas in decarbonization: best practices" presented information about natural gas potential in EU Green Deal and PJSC Gazprom's low-carbon development activities to the European Parliament members.

PJSC Gazprom participated in public discussions on EU Methane Strategy published in October 2020. A booklet illustrating PJSC Gazprom's best practices was posted on the website of the European Commission[6]. Together with other companies that signed the Guiding Principles on Reducing Methane Emissions across the Natural Gas Value Chain, PJSC Gazprom pays special attention to perfecting reports and validity of methane emissions data. The same work is underway in the International Gas Union (IGU).

Regulation and reduction of methane emissions were discussed at numerous webinars organized by Eurogas, and working group sessions of the UNECE Committee on Sustainable Energy, where Gazprom highlighted its position and existing practices.

Results of the independent survey carried out by a special-purpose company Kayrros with the use of satellite images confirm minimum methane emissions during supply of natural gas from PJSC Gazprom to Europe[7].

Sustainable and low-carbon development, energy efficiency, methane reduction emissions were discussed within sci-tech cooperation and information exchange work groups with Uniper, Wintershall Dea, Gasunie, OMV, Shell, Mitsubishi, and CNPC.

Experts of PJSC Gazprom addressed low-carbon development and hydrogen economy issues at the Work Stream "Internal markets" of Russia-EU Gas Advisory Council.

Ability to navigate changes is one of the companies' success factors. PJSC Gazprom together with its international partners achieve positive results in low-carbon development through continuous experience and the best practices exchange.

Hydrogen technologies

Hydrogen production and use, its classification and certification based on GHG emission values in the hydrogen production process chain was the most trendy topic discussed at the global level.

During the year, representatives of PJSC Gazprom delivered several presentations on hydrogen production from natural gas and the future of hydrogen economy at different international events: the Royal Dutch Gas Association meeting, sessions of the Strategy Committee and Hydrogen Economy Support Task of IGU, United Nations Economic Commission for Europe, panel discussions of the World Hydrogen Congress, sessions of the working group "Hydrogen and new gas types" of the German-Russian Feedstock Forum, and hydrogen cooperation initiative group of the Russian-German Chamber of Commerce.

An article about cost-effective and low-carbon methods of hydrogen production from natural gas was published in the IGU journal upon the outcomes of the work carried out by

[6] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12504-EU-methane-strategy/F541028

[7] https://twitter.com/Kayrros/status/1301557809868345344?s=03

PJSC Gazprom's representatives in the Committees "Strategy" and "Gas Distribution"[8].

PJSC Gazprom brought forward proposals for the European Commission as a potential basis for EU legislation drafting under the commenting procedure of the EU Hydrogen Strategy Roadmap[9].

Hydrogen Economy Prospects are jointly explored with Uniper, VNG, Wintershall Dea, Gasunie, Shell, ENGIE SNAM, KOGAS, ThyssenKrupp. There was a discussion with Linde and Siemens on producing methane-hydrogen mixture and its use as a gas turbine fuel to reduce CO_2 emissions. Organizational activities on the joint project for storing methane-hydrogen mixtures in the German UGS were continued. A pilot project on the construction of hydrogen filling station was reviewed with Hyundai Motor. Suggestions on projects for 2021 were formulated on the basis of mentioned work streams.

[8] http://isyscom.com/file_download/3/igu-oct2020_mag-lo-res.pdf
[9] https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12407-A-EU-hydrogen-strategy/F523992

Information disclosure

Information disclosure and environmental safety transparency is a keystone of the Gazprom Group operating principles.

Information disclosure performance criteria comprise: data reliability, timely presentation, regularity and credibility, its availability for state authorities, shareholders and investors, the public, mass media and other interested parties.

PJSC Gazprom official web-site www.gazprom.ru provides information on environmental aspects of the Gazprom Group activities in tabs “Environment” and “Media”. Tab “Investors” provides data on gas supplies, financial statements, sustainable development reporting, consolidated financial reporting according to IFRS, quarterly reporting, accounting statements, environmental reports.

Information on the current and future environmental and energy performance activities of Gazprom is constantly published in corporate magazines “Gazprom” and “Gas industry”, in newspapers and other periodicals of the Gazprom Group subsidiaries, such as “Puls Aksarayska” (OOO Gazprom dobycha Astrakhan), “Prometey” (OOO Gazprom transgaz Moskva), “Gazovy forpost” (OOO Gazprom transgaz Stavropol), “Gazovik” (OOO Gazprom dobycha Nadym) “Pererabotka” (OOO Gazprom pererabotka), “Sibirskaya neft” (PAO Gazprom Neft), etc.

PJSC Gazprom’s participation in climate and water CDP (previously – Carbon Disclosure Project) scores on information disclosure allows for demonstrating the corporate strategy on GHG emissions and water resource management to the global financial institutions and investors that consider this information while constructing investment portfolios.

Since 1995, PJSC Gazprom Environmental Report has been issued on an annual basis. Since 2010, PJSC Gazprom Sustainable Development Report has been published on a regular basis. Its sections “Rational use of resources” and “Environmental impact” provide detailed information on the strategy and tactics of rational use of natural resources, environmental protection, climate change, and cooperation with interested parties.

Following the information transparency principle, the Gazprom Group companies publish Environmental Policy guidelines, environmental news, environmental and sustainability reports, biological diversity preservation action plans, environmental monitoring reports, environmental impact assessment, information on public hearings on projects, oil spill response plans, and other content on their web-sites.

PJSC Gazprom holds public hearings for the majority of investment activities on an annual basis as it is compulsory according to the Russian legislation.

The Gazprom Group companies management’s commitment to information disclosure is confirmed by annual meetings with representatives of federal and regional mass media, which discuss rational use of natural resources, environmental protection and energy saving.

Gazprom monitors mass media to analyze public opinion on its environmental activities and further consider it for future planning and prompt managerial decision-making. The year 2020 saw 14,056 positive publications in mass media and Internet associated with environmental aspects of the Gazprom Group activities

Efficiency of corporate policy in this sphere is confirmed by independent experts.

PJSC Gazprom once again joined the leader ranks on indexes “Responsibility and transparency” and “Sustainable development vector” of the Russian Union of Industrialists and Entrepreneurs, which are based on analysis of the public corporate reporting of the companies which rank among Top 100 of the largest companies according to RAEX-600 and RBC-500 scores. Index results are subject to the annual independent audit by FBK Grant Thornton.

Gazprom energoholding power-producing companies were inside the top ten of the Environmental Disclosure Index of the fuel companies working in Russia in 2020 prepared by the Worldwide Wildlife Fund (WWF) of Russia. Analysis of the index participants was done by three main criteria: environmental management, environmental impact and readiness to disclose information on environmental impact in the course of production activities.

PJSC Gazprom’s achievement of top ranks in sustainable development, corporate responsibility and reporting is an evidence of the Company’s advancement in information disclosure and transparency.

Gazprom’s efforts in improving environmental situation in the regions of its presence were recognized by a large number of awards, certificates of merits, diplomas, letters of appreciation from federal, regional and local authorities, educational institutions and public organizations.

OOO Gazprom transgaz Tomsk project “Big Case Study: the Company’s Ecologist” was pronounced the winner of the

XVIII Vernadsky Ecological Award in the nomination "Environmental Education for Sustainable Development".

OOO Gazprom VNIIGAZ project "Conceptualization of the lifecycle ecological assessment for prospective low-carbon hydrogen production technologies" was acknowledged the winner of the Online Ecoprojects Contest of the Vernadsky Fund.

OOO Gazprom dobycha Yamburg was announced the winner of the XII annual Press Service 2019 Contest of PR specialists held in May 2020 in the nomination "The Best Social Project in Business". Charity project "Yamal Reserve. Startling Gydan" is dedicated to the utmost north national park of the West Siberia located beyond the Polar Circle. It is inhabited by 18 mammalian species, 76 bird species, including Red Book species, for example polar bear, Atlantic walrus, Gavia adamsii, Haliaeetus albicilla and Falco peregrinus.

In March 2020, OOO Gazprom Nedra opened a permanent exposition dedicated to offshore geological exploration (GE). Exposition space represents a drilling rig with markings, equipment and tools used at offshore platforms. Exhibit items and photos help to get insight into all types of offshore GE, including seismic surveys, offshore engineering investigations, magnetic and gravity prospecting, drilling and well testing. One show-bench is dedicated to environmental monitoring and EP as these are the areas of focused attention of the company. The event presented a unique Atlas of geological and hydrometeorological conditions of the Arctic and Far East seas of the Russian Federation – a joint project of PJSC Gazprom and OOO Gazprom Nedra.

In 2020, PJSC Gazrom became a general sponsor of the Original Russia Festival attended by over 105,000 people. The site exhibited 32 thematic and author expositions, 528 photos of 279 authors from 83 regions of Russia. The exhibition traditionally presented photo compositions of PJSC Gazprom subsidiaries. Attendees of the Festival discussed the pressing issues of sustainable development, conservation of biodiversity and environmental protection.

Conservation of biodiversity and voluntary environmental responsibility

Compliance with the Russian and international environmental norms and requirements, mitigation of the negative impact on the environment and taking any and all measures to preserve biodiversity and compensate possible damage to the environment are the keystones of the Environmental Policy that the Gazprom Group companies strictly adhere to.

Gazprom's concern about conservation of biodiversity, habitats of rare and threatened plants and animals is an important chain link in the Company's environmental activities. Prevention of the negative impact on offshore and onshore ecosystems is an initial condition for commencement of Gazprom's projects.

The Group's companies make an invaluable contribution into international, Russian and local flora and fauna preservation programs in regions of their presence.

In 2020, RUB 507.29 mln were spent on biodiversity and nature territories preservation, fisheries protection and reproduction.

In 2020, Gazprom's subsidiaries carried out a large amount of environmental projects oriented at the replenishment of bioresources and fisheries recruitment, including valuable fish.

Over 34.8 mln species of different fish, including valuable ones, were released into waters in 2020.

OOO Gazprom transgaz Moscow together with the Moscow region water biological resources state control, supervision and protection department of the Moscow-Okskiy territorial directorate of the Federal Fishery Agency, as well as reproduction supervisory department of FSBI Glavrybvod released 115 thousand of sterlets into the Oka river.

OOO Gazprom transgaz Saratov released 112 thousand of sterlet juvenile into the Volgograd water reservoir not far away from the town of Saratov. This is a traditional water bioresources reproduction campaign in the region.

Around 11 mln of peled juvenile and 8 mln muksun juvenile were released into the Ob-Irtysh basin rivers. They were grown on the request of the Gazprom Group companies.

Biodiversity at north latitudes of the Company's operation areas is preserved through bird protection systems, polymer protection systems at suspension insulators; traverse bars, where insulators are installed, are grounded.

Helicopter routes are mapped in the way to exclude impact on nesting areas. Populations are saved also through biotechnical measures suggested by scientists, including development of roost sites, and protecting nest trees. To control and evaluate efficiency of measures, new monitoring results are compared with data of previous years and with equivalent values of the control zone located outside the impact area of industrial facilities.

Special attention is paid to preservation of the lifestyle pattern of the Far North indigenous population, traditionally engaged in deer farming. Special crossings through pipelines, gas well clusters and motorways have been constructed to preserve habitual migration routes of reindeer herds.

Gazprom ensures fulfillment of environmental norms and requirements on the continental shelf and in the Arctic zone of the Russian Federation.

Subsidiaries of each region of the Company's presence develop and carry out Biological Conservation Action Plans for the Arctic zone of Russia.

The following field studies were completed in 2020 under the scope of the Action Plans:

— ichthyologic surveys, monitoring of offshore mammals, ornithological surveys in the Kara and Barents seas
— sampling of various types of water bioresources with a required frequency from different horizons of the Gulf of Ob (phytoplancton, zooplancton, zoobenthos, ichthyoplankton), registration of the species and numerical composition of fauna (mammals, birds) at the all-year oil offloading Arctic terminal facilities of OOO Gazpromneft-Yamal's the Novoportovskoye field near the Kamenny peak, and within the main oil transportation routes
— onshore ornithological studies, hydrobiological works, phytoplankton, zooplancton, zoobenthos, ichthyoplankton, ichthyologic surveys, and Atlantic walrus surveys in the Prirazlomy license block, water areas of Matveev, Golets, Dolgy islands of the Nenetsky State Natural Reserve, and Vaigach island (Lyamchina Bay)

Performed surveys and monitoring have not revealed any significant changes in ecosystems and confirm zero negative impact from the Company's activities on biodiversity of the Arctic regions.

The reporting year saw artificial reproduction of water biological resources in the Arctic regions by releasing over 8 mln specimens of valuable fish species.

Biodiversity conservation plans 2020 for the Arctic regions of Russia were completely fulfilled. Total expenditures amounted to over RUB 300 mln.

The Children's Ecological Station (CES) made the third research expedition to the Tazovsky Peninsula in summer sponsored by OOO Gazprom dobycha Nadym. The expedition "Birds of the Tazovsky Peninsula" revealed nesting sites of the red book gerfalcons on the Yamburgskoye OGCF. In 2021, red book bird species protection measures are envisaged. Expeditions investigated banks of Khadutte and Ngarka-Lymbarase rivers to find mammoth fauna paleontological discoveries.

Gazprom actively participates in implementation and financing of projects to identify and liquidate accumulated environmental damage sites in the Arctic zone.

The year 2020 summarized the two-year work to repair ecological damage generated in 1970–1980 on Kharasavey (Yamal). The township of the Karskaya oil and gas exploration expedition on the Kara Sea coast appeared in 1976. After completion of the GE works, production premises and other spaces became deserted and gradually sank into degradation. In 2019, the Company liquidated 41 facilities related to the airport of the former rotational camp. Another 11 structures were dismantled on the field's industrial base. In summer 2020, the works continued: the wellhead territory of 12 federally-owned geological and prospecting wells was totally cleaned out. Ferrous steel scrap, residual wood and car tyres were collected, packaged and brought away. Metal piles were disassembled, X-mas trees were painted, information plates installed. The total volume of construction debris accumulated during two years of facilities liquidation amounted to 1,200 m^3, which means the work of around 130 special-purpose vehicles. Almost 350 tons of scrap metal were removed.

Twenty five former production facilities, including those from the Karskaya oil and gas exploration expedition were liquidated in 2020 under the Cooperation Agreement between PJSC Gazprom and the Yamal-Nenets Autonomous District Government.

The first photobook "Yamal Reserve. Startling Gydan" dedicated to flora and fauna of the Gydansky National Park has been already widely recognized by the society.

In 2020, the Clear Coast Project celebrated its fifth birthday. This five-year period culminated in 43 ha cleaned in the Novy Port township and Kamenny Cape, and over 90 thousand m^3 of collected waste, old equipment, construction debris accumulated on unauthorized landfills near the Ob Bay and jeopardizing ecology and human health.

In 2020, the Gazprom Group companies proceeded with charity support of socially valuable nature protection, social and culture initiatives.

A set of nature conservation measures under the scope of the Preservation Program for Amur Leopards in Russia was undertaken in 2020 through cooperation of ANCO Amur Leopards and PJSC Gazprom:

— arrangement of frontiers (bringing power grids to frontiers on the Gamov peninsula)
— advancing protection system of the Leopards Land national park
— bioengineering measures
— fire prevention measures
— land survey works

In 2020, 122 Amur leopards were registered on the territory of Russia (109 — in 2019, and 35 — in 2010). Thus, the number of Amur leopards increased four times, as compared to the start of the program's implementation.

PJSC Gazprom continues to support the Nature Conservation Program "Preserving population of Amur tigers in the natural habitat". In 2020, ANCO "Center for Investigations and Preservation of the Amur Tiger Population in Russia" undertook a set of measures. In the reporting year, five federal SPNA located in the Amur tigers habitat obtained new equipment for firefighting, area security and tourist infrastructure development.

Gazprom Neft expedition studied the life of the endangered Atlantic walruses in the Barents Sea. Gazprom Neft completed annual ecological expedition in the South-East part of the Barents Sea. Studies 2020 proved stable number of the endangered Atlantic walruses.
Comprehensive monitoring is carried out by the company in this area since 2010. The state of walruses, their number and behavior are acknowledged indicators of the ecological well-being. Annual surveys explore habitats of these animals, their migration routes, feeding and reproduction sites, monitor dynamics in their number and health of the population.

PJSC Gazprom took part in the Memory Garden International Campaign with 27 mln trees planted – the number of fatalities in the Great Patriotic War.

In 2020, OOO Gazprom transgaz Saint-Petersburg made a charitable donation to the Marine Mammals Preservation Fund "Ringed Seal Friends". Funding resources were spent for safeguarding red-listed marine mammals in the Gulf of Finland. By the order of the Ministry of Natural Resources, Ringed Seal Friends Fund currently is strategizing for preservation of the Baltic ringed seal in Russia, and

participates in development of the same strategy for Ladoga ringed seal. This Fund is the only Saint-Petersburg organization that elaborates and puts into practice measures aimed at preserving these animals in the natural habitat.

A large-scale project on the study of the Neva river bottom was organized in 2020 with the support of Gazprom transgaz Saint-Petersburg. Specialists of the National Center for Underwater Studies and the Center for Underwater Studies of the Russian Geographical Society explored 80% of the river delta within the city and recorded 150 hydroacoustic anomalies representing interesting research cases. The expeditions held during the year revealed unique submerged objects: boat-shaped frames, barges 50- and 30m long, peasant decked vessel 12m long in the Big Neva, wooden frame of the XIX century with an admiralty anchor near the Hermitage, barge with ship items near the Menshikov Palace, etc. During investigations, divers use coordinates submitted by hydroacoustic scan group, examine and videotape frame fragments, register their position on the bottom, sample wood for radiocarbon analysis that can help to determine the age of objects.

By developing voluntary environmental responsibility mechanisms, PJSC Gazprom implements additional large-scale nature conservation measures in the regions of its presence, namely organization and participation in contests, workshops, environmental meetings, clean-up days, environmental campaigns. These arrangements are aimed at fostering of the ecological culture, education и awareness, and PJSC Gazprom image making as environmentally and socially responsible company.

As tradition demanded, all the Group companies participated in the All-Russian Environmental Clean-up Day "Green Spring — 2020" under the aegis of the V.I. Vernadsky non-governmental ecological fund.

Under the auspices of the All-Russian Ecological Campaign "Green Russia", OOO Gazprom transgaz Nizhny Novgorod carried out 24 clean-up days participated by 1,500 company's workers. This campaign resulted in cleaning of 111 ha in eight regions of Russia and collection of over 55 tons of waste.

The workers of OOO Gazprom transgaz Ufa made eco-ascent on the Zuby Shurale rocks of the Karatash hill. Participants of the ascent represented by different branches of the company, including whole families with children collected rubbish from the rocks top.

Irkutsk LPD GTL Gazprom transgaz Tomsk in cooperation with Irkutsk regional environmental public organization "My Baikal" and supported by the town's administration scavenged the coast of the Angara river, and 2km of the riverfront. Specialists of the Kirinsky gas producing department — the branch office of OOO Gazprom dobycha shelf Yuzhno-Sakhalinsk conducted environmental campaign at the shore of the Lunsky Bay located on the north-east coast of the Sakhalin island. The Bay pertains to the regional nature monument. The branch office collected over 5 m^3 of rubbish from the Lunsky Bay coast, mainly plastic that inflicts damage to flora and fauna.

In 2020, the Gazprom Group held 2,200 clean-up days. The Company's workers cleaned 2,000 sites (area over 2,900 ha), planted over 60 thousand seedlings of trees and underwoods.

OOO Gazprom transgaz Tomsk run environmental campaign at the shore of the Somon lagoon. It is a narrow water body separated from the Chikhachev Bay by sand bars. This is a nature monument located in the eastern part of the Chikhachev Bay on the coast of the Tatar Strait that separates the continent and the Sakhalin island near De-Kastri township. The company's workers cleaned the shore from household rubbish left by holidaymakers and high tides.

OOO Gazprom dobycha Nadym conducted environmental campaign "Clean Forest". The clean-up day was supported by 40 workers of the company who cleaned suburban territory near Nadym airport.

September 2020 saw completion of the second stage of the photo expedition to Verkhne-Tazovsky State Nature Reserve located in Krasnoselkupsky area of the Yamal-Nenets Autonomous District. This trip was organized by OOO Gazprom dobycha Yamburg. Unique materials will be published in the photobook about Verkhne-Tazovsky Reserve. The expedition's goal is to collect data for the educational project "Yamal Reserve".

Irkutsk LPD GTL Gazprom transgaz Tomsk participated in the annual campaign "Plant a tree — grant life to the planet"

devoted to the 75th anniversary of the victory in the Great Patriotic War. Over 3 thousand of pine seedlings were planted in SPNA “Sinyushnaya gora”. The main goal of the campaign is to commemorate the Great Patriotic War and to reconstruct “green shield” of the town.

AO Gazprom gazoraspredeleniye Kurgan took part in the forest planting under the scope of the All-Russian Campaign “Preserve a Forest”. Kurgan forestry acquired 7 thousand 3-year old pine seedlings. Pine forest near Koshkin village, Belozyuorsky region, suffered from fire in 2010. After the study of the territory, specialists made a decision to deforest the area and plant new pine seedlings to restore a beautiful pinery. The campaign resulted in planting 1.8 ha of the forest.

OOO Gazprom transgaz Kazan in cooperation with SP Suburban Forestry of the Ministry of Forestry of the Republic of Tatarstan, and Volga-Kama Interregional Directorate of Rosprirodnadzor held a traditional annual event “Forest planting day” that saw planting of 4 thousand of seedlings within over 1 ha area.

Glossary of main terms and abbreviations

Name	Definition
AGCCS	Automated gas contamination control station
APG	Associated petroleum gas. Mixture of gases and vaporous hydrocarbon and non-hydrocarbon components emitted from oil wells and oil-in-place in the process of its separation
BAT	Best available technique
BCS	Booster compression station
Biodiversity (biological diversity)	The whole variety of living forms of different habitats, including onshore, offshore and other water ecosystems and their constituent ecological complexes
BPA	Basic production assets
CDP	International project that runs the global disclosure system to manage the environmental impacts of companies
CGTU	Comprehensive gas treatment unit
CNG FS	Compressed natural gas filling station
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
CS	Compressor station
EMS	Environmental management system
EnMS	Energy management system
Environment	Set of nature components, natural-anthropogenic as well as man-made objects
Environmental audit	Independent comprehensive documented assessment of compliance of the economic or other entity with environmental requirements, standards, regulatory documents and international standards, drawing up recommendations to improve entity's activities
Environmental damage	Negative change in the environment caused by pollution, which entailed degradation of natural ecological systems and depletion of natural resources
Environmental impact assessment (EIA)	Type of activity aimed at identification, analysis and accounting of direct, indirect and other consequences to the environment from planned business and other operations to make a decision on possibility or impossibility of their implementation
Environmental management	Part of the general corporate management system with a clear organizational structure aimed at reaching Environmental Policy provisions by implementation of environmental protection programs
Environmental monitoring	Comprehensive system of observations over environmental state, estimation and forecast of environmental conditions changes under the impact of natural and man-made factors
Environmental protection (EP)	Measures aimed at preservation and recovery of the environment, rational use and reproduction of natural resources, prevention of negative environmental impact of business and other activities and consequences management
Environmental protection requirements	Obligatory conditions, restrictions or their combination applicable to business and other activities stipulated by environmental laws, statutes, regulations, federal norms and rules, as well as other environmental regulatory documents
Environment quality	State of the environment characterized by physical, chemical, biological and other values and (or) their combination
Environmental review	Inspection of documents and (or) documentation that substantiate planned business and other activities for their conformance to environmental requirements, existing technical regulations and legislation to prevent negative impact of such activities on the environment
Environmental safety	Security of the environment and vital human interests from possible negative impact of business and other activities, natural and man-made emergencies and their consequences
Energy saving	Implementation of legal, organizational, scientific, production, technical and economic measures aimed at effective (rational) use of fuel and energy resources and introduction of renewable power sources into economic turnover. Energy-saving is a critical mission in preserving natural resources
Environmental supervision	System of measures aimed at prevention, identification and restraint of environmental legislative violations, ensuring compliance of economic and other entities with requirements, standards and regulatory documents in the sphere of environmental protection
EU	European Union
FES	Fuel and energy sector
FER	Fuel and energy resources

FS	Filling station
Greenhouse gases (GHG)	Gases that presumably cause global greenhouse effect. The main greenhouse gases in order of their estimated contribution into the Earth's heat balance are water steam, carbon dioxide, methane, nitrogen, sulphurylfluoride, halocarbons and nitrogen oxide
GCF	Gas condensate field
GCU	Gas pumping unit
GDS	Gas distribution station
GE	Geological exploration
GMF	Gas motor fuel
GPP	Gas processing plant
GTL	Gas trunkline
HPS	Heat power station
HSE	Health, safety and environment
IFRS	International financial reporting standards
IGU	International Gas Union
IMS	Information management system
ISO 14001:2015	International standart ISO 14001:2015 - Environmental management systems
ISO 50001:2018	International standart ISO 50001:2018 - Energy management systems
LNG	Liquefied natural gas
LPD GTL	Linear production department of gas trunklines
LS	Linear section
MCS	Mobile compressor station
MCU	Modular compressor unit
Natural complex	A set of natural objects functionally and naturally related to each other and incorporated by geographical and other corresponding features
Natural object	Natural ecological system, natural landscape and their constituent elements that preserved natural features
Natural resources	Nature components, natural objects and nature and man-made objects that are used or can be used in the course of business and other activities as energy sources, products and consumables, and that have consumer value
NGV	Natural gas vehicle
Negative environmental impact (NEI)	Impact of economic and other activities, which consequences lead to adverse changes in the environmental quality
OEC	Operational environmental control
OEM	Operational environmental monitoring
OGCF	Oil gas condensate field
OPEX	Operational expenditure
Pollutant	Substance or mixture of substances that occur in amounts and (or) concentrations exceeding specified limits for exposure to chemicals, including radioactive and other substances and microorganisms, and generate a negative impact on the environment
PR	Petroleum refinery
R&D	Research and development work
RES	Renewable energy sources
SCR	Selective catalytic reduction
SES	Secondary energy sources
SFEC	Specific fuel equivalent consumption

Specially protected natural area (SPNA)	Land, water and air zones with natural complexes and objects having special nature protection, scientific, cultural, esthetic, recreation and wellness significance with exclusive security arrangements, totally or partially removed from the economic use by the decision of state bodies. Specially protected natural areas pertain to national heritage
Transition Pathway Initiative (TPI)	International project which assesses companies' preparedness for the transition to a low carbon economy
UGS	Underground gas storage
UGSS	Unified gas supply system
VOC	Volatile organic substances
Waste management	Activities on collection, accumulation, transportation, processing, recovery, treatment, disposal of waste activities on collection, accumulation, transportation, processing, recovery, treatment, disposal of waste

Russian Business Structutres

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

Units of Measurement

Unit	Definition
bln	billion
c.e.	coal equivalent
g	gram
Gcal	billion calories
GJ	billion joule
GW	billion watt
ha	hectare (ten thousand square meters)
hr	hour
kg	kilogram
kW	thousand watts
m^3	cubic meter
mg	milligram
MJ	megajoule
mln	million
MW	million watts
ncm	cubic nanometer
t	ton
toe	ton of oil equivalent
W	watt
Wh	watt-hour

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Independent Practitioner’s Limited Assurance Report on the information on direct and indirect energy greenhouse gas emissions from the main activities of PJSC Gazprom (production, transmission, processing and underground gas storage) and other indirect emissions of Gazprom Group in 2020

To the Shareholders and Management of PJSC Gazprom

Introduction

We were engaged by the Management of PJSC Gazprom (hereinafter – the “Management”) to undertake a limited assurance engagement on the information on direct and indirect energy greenhouse gas emissions from the main activities of PJSC Gazprom (production, transmission, processing and underground gas storage) and other indirect greenhouse gas emissions of Gazprom Group in 2020 (hereinafter – the “information on GHG emissions”) with a conclusion providing limited assurance that nothing has come to our attention that causes us to believe that the Management`s Statement that the information on GHG emissions is prepared in accordance with the applicable criteria (set out below in “Applicable Criteria” section of this report) and is free from material misstatement, is not, in all material respects, fairly stated.

The information on GHG emissions from the main activities is presented in the table “GHG emissions dynamics at PJSC Gazprom by types of activities, 2016–2020, mln tons of CO_2e”, table “Methane emissions at PJSC Gazprom by types of activities, 2020, mln tons of CO_2e”, table “Indirect energy GHG emissions at PJSC Gazprom by types of mainstream activities, 2020, mln tons of CO_2e” and table “Volume of GHG emissions under Scope 3 for Gazprom Group in 2020, mln tons of CO_2e" in section “Greenhouse gas emissions” of PJSC Gazprom’s Environmental Report 2020 (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 in accordance with the applicable criteria (set out below in section “Applicable Criteria” section of this report) and for all 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 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 PJSC Gazprom; developing assumptions and estimates, which are reasonable in the current circumstances; maintaining sufficient documentation in relation to the information on GHG emissions.

Our Responsibilities and Applicable Standards

Our responsibility is to express a conclusion on the Management's Statement on the information on GHG emissions based on procedures performed and 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's Statement that the information on GHG emissions has been prepared in accordance with the applicable criteria (set out in the "Applicable Criteria" section of this report) and is free from material misstatement, is, in all material respects, 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 *International Code of Ethics for Professional Accountants (including International Independence Standards)* 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 accordingly maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

Procedures Performed

A limited assurance engagement undertaken in accordance with ISAE 3410 involves assessing the suitability, in the circumstances of PJSC Gazprom, of the applicable criteria (set out below in the "Applicable Criteria" section of this report) as a basis for the preparation of the information on GHG emissions, assessing the risks of material misstatement of the information on GHG emissions whether due to fraud or error, responding to the assessed risks as required in the specific circumstances of the engagement, and evaluating the overall presentation of the information on GHG emissions. The nature, timing and extent of the 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, whether due to fraud or error, our understanding of the activities of PJSC Gazprom and Gazprom Group, 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, 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.

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Our engagement also included: assessing the appropriateness of the particular GHG emissions included in the information on GHG emissions; the suitability of the applicable criteria (set out below in the "Applicable Criteria" section of this report) used in preparing the information on GHG emissions 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 and the reasonableness of estimates made by Management.

The procedures we performed were based on our professional judgment and included inquiries, observation of processes, 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 of the information on GHG with applicable criteria (presented in the "Applicable criteria" section of this report);
- Assessment of the reasonableness and suitability of key assumptions;
- Inquiries to obtain an understanding of conditions of the operations impacting the information on GHG emissions;
- Interviewing representatives of the Management and responsible employees of PJSC Gazprom regarding internal procedures regulating the collection of data used in the preparation of the information on GHG emissions;
- Inquiries regarding and analysis of information to assess the completeness of the emission sources, data collection methods, assessment of input data and assumptions relevant in the circumstances of the engagement;
- Corroboration of the data used in the preparation of the information on GHG emissions with data from public sources, specialized and non-specialized, to assess completeness, accuracy and consistency of such data;
- 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 is prepared, in all material respects, in accordance with the applicable criteria (set out below in the "Applicable Criteria" section 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];
- CDP Technical Note: Guidance methodology for estimation of scope 3 category 11 emissions for oil and gas companies[5].

Management's Statement

Management states that the following information on GHG emissions included in section "Greenhouse gas emissions" of the Report and presented in the tables

"GHG emissions dynamics at PJSC Gazprom by types of activities, 2016–2020, mln tons of CO_2e" for the year 2020

—	Production	**14.27**	million tonnes of CO_2-equivalent
—	Transmission	**77.61**	million tonnes of CO_2-equivalent
—	Processing	**6.83**	million tonnes of CO_2-equivalent
—	Underground gas storage	**1.13**	million tonnes of CO_2-equivalent

"Methane emissions at PJSC Gazprom by types of activities, 2020, mln tons of CO_2e"

—	Production	**1.19**	million tonnes of CO_2-equivalent
—	Transmission	**23.82**	million tonnes of CO_2-equivalent
—	Processing	**0.03**	million tonnes of CO_2-equivalent
—	Underground gas storage	**0.42**	million tonnes of CO_2-equivalent

"Indirect energy GHG emissions at PJSC Gazprom by types of mainstream activities, 2020, mln tons of CO_2e"

—	Production	**0.30**	million tonnes of CO_2-equivalent
—	Transmission	**2.42**	million tonnes of CO_2-equivalent
—	Processing	**2.01**	million tonnes of CO_2-equivalent

[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

[5] https://www.cdp.net/en

PJSC Gazprom

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— Underground gas storage **0.04** million tonnes of CO_2-equivalent

"Volume of GHG emissions under Scope 3 for Gazprom Group, 2020, mln tons of CO_2e"

— Gas **872.11** million tonnes of CO_2-equivalent

— Oil and gas condensate **74.16** million tonnes of CO_2-equivalent

— Other energy resources **132.23** million tonnes of CO_2-equivalent

Total: **1,078.50** million tonnes of CO_2-equivalent

was prepared in accordance with the applicable criteria (set out in the "Applicable Criteria" section 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's Statement that the information on GHG emissions has been prepared in accordance with the applicable criteria (set out in the "Applicable Criteria" section of this report) and is free from material misstatement, is not, in all material respects, fairly stated.

Restriction of Use of Our Report

Our limited assurance report relating to the information on GHG emissions has been prepared for the Shareholders and the Management of PJSC Gazprom 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

18 May 2021

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